RioTinto

Notice to ASX

30 November 2022

Investor Seminar presentation

Attached is the presentation to be given at the investor seminar today in London at 8.00am (GMT) / 7.00pm (AEDT) by Rio Tinto Chief Executive Jakob Stausholm and other executives.

The presentation slides and the live webcast can also be accessed at
https://www.riotinto.com/en/invest/presentations/2022/investor-seminar-london

Contacts

Please direct all enquiries to
media.enquiries@riotinto.com

Media Relations, UK

Matthew Klar
M +44 7796 630 637

David Outhwaite
M +44 7787 597 493

Media Relations, Australia

Matt Chambers
M +61 433 525 739

Jesse Riseborough
M +61 436 653 412

Media Relations, Americas

Simon Letendre
M +1 514 796 4973

Malika Cherry
M +1 418 592 7293

Investor Relations, UK

Menno Sanderse
M +44 7825 195 178

David Ovington
M +44 7920 010 978

Clare Peever
M +44 7788 967 877

Investor Relations, Australia

Tom Gallop
M +61 439 353 948

Amar Jambaa
M +61 472 865 948

Rio Tinto plc

6 St James's Square
London SW1Y 4AD
United Kingdom

T +44 20 7781 2000
Registered in England
No. 719885

Rio Tinto Limited

Level 43, 120 Collins Street
Melbourne 3000
Australia

T +61 3 9283 3333
Registered in Australia
ABN 96 004 458 404

This announcement is authorised for release to the market by Steve Allen, Rio Tinto's Group Company Secretary.

riotinto.com

Rio Tinto

Investor Seminar

30 November 2022

Cautionary and supporting statements

This presentation has been prepared by Rio Tinto plc and Rio Tinto Limited (together with their subsidiaries, "**Rio Tinto**"). By accessing/attending this presentation you acknowledge that you have read and understood the following statement.

Forward-looking statements

This presentation includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts included in this report, including, without limitation, those regarding Rio Tinto's financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto's products, production forecasts and reserve and resource positions), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "should", "will", "target", "set to" or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption arising in connection with the Ukraine conflict and the Covid-19 pandemic. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto's present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto's actual results, performance or achievements to differ materially from those in the forward-looking statements include, but are not limited to: an inability to live up to Rio Tinto's values and any resultant damage to its reputation; the impacts of geopolitics on trade and investment; the impacts of climate change and the transition to a low-carbon future; an inability to successfully execute and/or realise value from acquisitions and divestments; the level of new ore resources, including the results of exploration programmes and/or acquisitions; disruption to strategic partnerships that play a material role in delivering growth, production, cash or market positioning; damage to Rio Tinto's relationships with communities and governments; an inability to attract and retain requisite skilled people; declines in commodity prices and adverse exchange rate movements; an inability to raise sufficient funds for capital investment; inadequate estimates of ore resources and reserves; delays or overruns of large and complex projects; changes in tax regulation; safety incidents or major hazard events; cyber breaches; physical impacts from climate change; the impacts of water scarcity; natural disasters; an inability to successfully manage the closure, reclamation and rehabilitation of sites; the impacts of civil unrest; the impacts of the Ukraine conflict and the Covid-19 pandemic; breaches of Rio Tinto's policies, standard and procedures, laws or regulations; trade tensions between the world's major economies; increasing societal and investor expectations, in particular with regard to environmental, social and governance considerations; the impacts of technological advancements; and such other risks identified in Rio Tinto's most recent Annual Report and accounts in Australia and the United Kingdom and the most recent Annual Report on Form 20-F filed with the United States Securities and Exchange Commission (the "SEC") or Form 6-Ks furnished to, or filed with, the SEC. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements. These forward-looking statements speak only as of the date of this report. Rio Tinto expressly disclaims any obligation or undertaking (except as required by applicable law, the UK Listing Rules, the Disclosure Guidance and Transparency Rules of the Financial Conduct Authority and the Listing Rules of the Australian Securities Exchange) to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in Rio Tinto's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Nothing in this presentation should be interpreted to mean that future earnings per share of Rio Tinto plc or Rio Tinto Limited will necessarily match or exceed its historical published earnings per share. Past performance cannot be relied on as a guide to future performance.

Disclaimer

Neither this presentation, nor the question and answer session, nor any part thereof, may be recorded, transcribed, distributed, published or reproduced in any form, except as permitted by Rio Tinto. By accessing/attending this presentation, you agree with the foregoing and, upon request, you will promptly return any records or transcripts at the presentation without retaining any copies.

This presentation contains a number of non-IFRS financial measures. Rio Tinto management considers these to be key financial performance indicators of the business and they are defined and/or reconciled in Rio Tinto's annual results press release, Annual Report and accounts in Australia and the United Kingdom and/or the most recent Annual Report on Form 20-F filed with the SEC or Form 6-Ks furnished to, or filed with, the SEC.

Reference to consensus figures are not based on Rio Tinto's own opinions, estimates or forecasts and are compiled and published without comment from, or endorsement or verification by, Rio Tinto. The consensus figures do not necessarily reflect guidance provided from time to time by Rio Tinto where given in relation to equivalent metrics, which to the extent available can be found on the Rio Tinto website.

By referencing consensus figures, Rio Tinto does not imply that it endorses, confirms or expresses a view on the consensus figures. The consensus figures are provided for informational purposes only and are not intended to, nor do they, constitute investment advice or any solicitation to buy, hold or sell securities or other financial instruments. No warranty or representation, either express or implied, is made by Rio Tinto or its affiliates, or their respective directors, officers and employees, in relation to the accuracy, completeness or achievability of the consensus figures and, to the fullest extent permitted by law, no responsibility or liability is accepted by any of those persons in respect of those matters. Rio Tinto assumes no obligation to update, revise or supplement the consensus figures to reflect circumstances existing after the date hereof.

Cautionary and supporting statements (cont.)

Rio Tinto's Iron Ore Mineral Resource and Ore Reserve estimates on Slide 47 were reported in Rio Tinto's 2021 Annual Report released to the ASX on 24 February 2022 and available at riotinto.com.

- The 29Bt of Mineral Resources comprise: from IOC (categorised as ">65% Fe" due to the ability to upgrade the feed) 0.2 Bt @ 40.8% Fe of Measured Mineral Resources, 0.6 Bt @ 38.6% Fe of Indicated Mineral Resources, and 0.9 Bt @ 38.3% Fe of Inferred Mineral Resources (for which the Competent Persons were M McDonald (PEGNL), B Power (PEGNL), and R Way (PEGNL)); from Simandou (categorised as ">65% Fe") 0.4 Bt @ 66.8% Fe of Measured Mineral Resources, 1.6 Bt @ 65.2% Fe of Indicated Mineral Resources, and 0.8 Bt @ 65.3% Fe of Inferred Mineral Resources (for which the Competent Person was K Tindale (AusIMM)); and from the Pilbara (with all Bolgeeda, Brockman Process Ore, Channel Iron Deposit and Detrital Mineral Resources categorised as "<61% Fe", and all Brockman and Marra Mamba Mineral Resources categorised as ">61% Fe") 1.9 Bt @ 59.4% Fe of Measured Mineral Resources, 4.7 Bt @ 60.2% Fe of Indicated Mineral Resources, and 18.3 Bt @ 59.7% Fe of Inferred Mineral Resources (for which the Competent Persons were N Brajkovich (AusIMM), P Savory (AusIMM) and C Kyngdon (AusIMM)).
- The 3.2Bt of Ore Reserves comprise: from IOC (categorised as ">65% Fe" due to the ability to upgrade the feed) 0.3 Bt @ 65.0% Fe of Proved Ore Reserves and 0.2 Bt @ 65.0% Fe of Probable Ore Reserves (for which the Competent Persons were S Roche (AusIMM), R Williams (PEGNL), and P Ziemendorf (AusIMM)); and from the Pilbara (with all Pisolite Ore Reserves categorised as "<61% Fe", and all Brockman and Marra Mamba Ore Reserves categorised as ">61% Fe") 1.7 Bt @ 60.9% Fe of Proved Ore Reserves and 1.0 Bt @ 61.0% Fe of Probable Ore Reserves (for which the Competent Persons were L Vilela Couto (AusIMM), C Gagne (AusIMM), A Menaria (AusIMM) and R Sarin (AusIMM)).

The Western Range Ore Reserve estimate on Slide 53 was reported in a release to the ASX dated 14 September 2022 titled "Western Range Mineral Resources and Ore Reserves" which is available at Resources & reserves (riotinto.com). The 165 Mt of Ore Reserves comprise 109 Mt @ 62.1% Fe of Proved Ore Reserves and 56 Mt @ 61.7% Fe of Probable Ore Reserves. The Competent Person responsible for reporting the Ore Reserves was R Bleakley (AusIMM).

The Mineral Resource estimates for the Rhodes Ridge JV on Slide 54 were reported in Rio Tinto's 2020 Annual Report released to the ASX on 22 February 2021 (and form part of the Pilbara Mineral Resource estimates reported in Rio Tinto's 2021 Annual Report released to the ASX on 24 February 2022) which are available at riotinto.com. The 6.7 Bt of Mineral Resources (2020) comprise 0.8 Bt @ 62.4% Fe of Indicated Mineral Resources, and 5.9 Bt @ 61.5% Fe of Inferred Mineral Resources. The Competent Persons responsible for reporting these Mineral Resource estimates were P Savory (AusIMM), N Brajkovich (AusIMM) and C Kyngdon (AusIMM).

The Mineral Resource estimate for Simandou on Slide 54 was reported in Rio Tinto's 2021 Annual Report released to the ASX on 24 February 2022 and available at riotinto.com. The 2.9 Bt of Mineral Resources comprise 0.4 Bt @ 66.8% Fe of Measured Mineral Resources, 1.6 Bt @ 65.2% Fe of Indicated Mineral Resources, and 0.8 Bt @ 65.3% Fe of Inferred Mineral Resources. The Competent Person responsible for reporting this Mineral Resource estimate was K Tindale (AusIMM).

Rio Tinto is not aware of any new information or data that materially affects any of the above Mineral Resource or Ore Reserve estimates and confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The form and context in which each Competent Person's findings are presented have not been materially modified. Mineral Resources are quoted on a 100 per cent basis, as dry in-situ tonnes. Mineral Resources are reported exclusive of Ore Reserves.

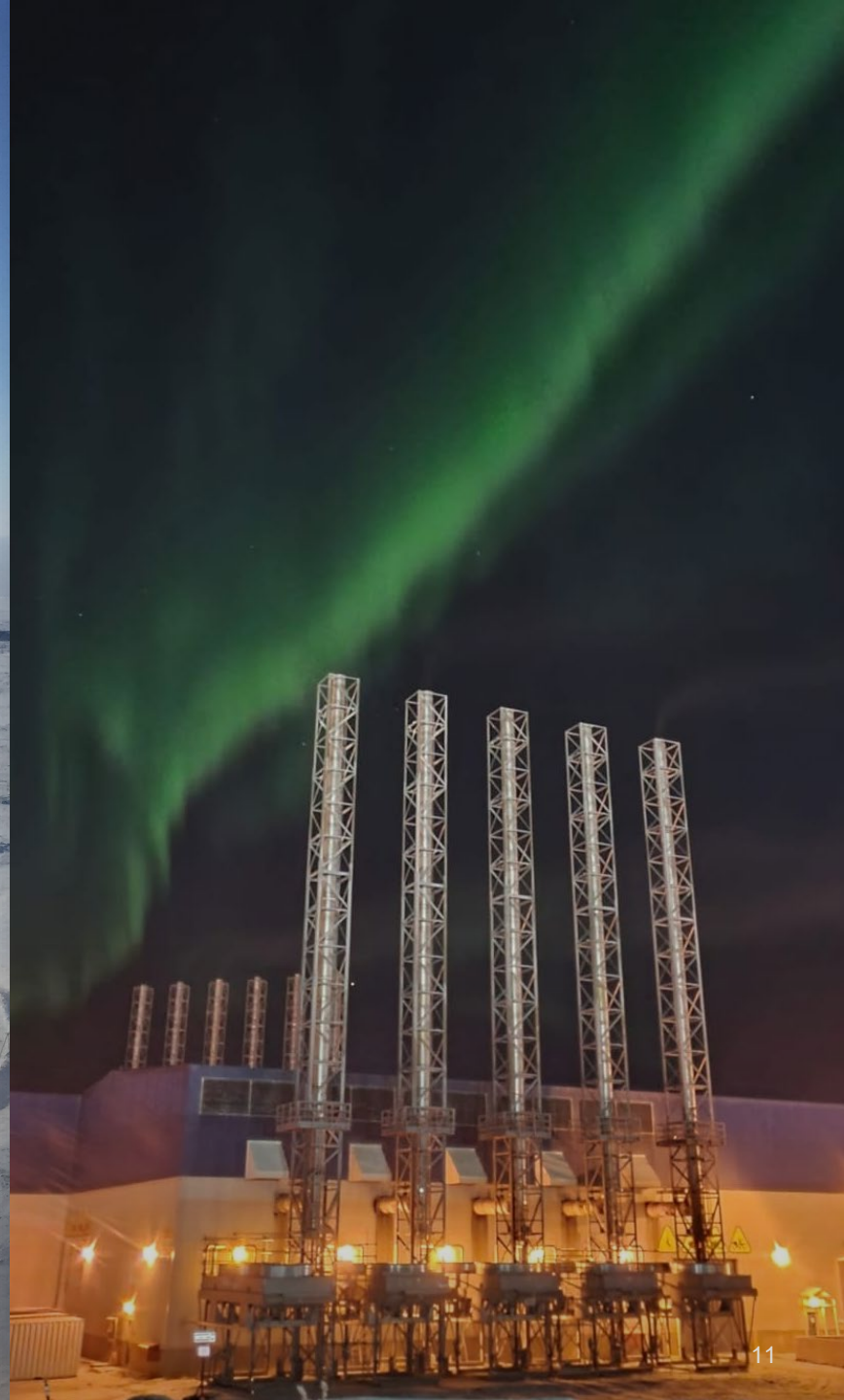
Agenda

GMT	AEDT	Topic	Presenter
08:00 – 08:10	19:00 – 19:10	**Culture share**	Angela Bigg, President, Diavik Diamond Mine
08:10 – 08.20	19:10 – 19:20	**Progressing with purpose**	Jakob Stausholm, Chief Executive
08:20 – 08.35	19:20 – 19:35	**Panel 1: Our culture journey** ***Moderated by James Martin***	Isabelle Deschamps, Chief Legal Officer Bold Baatar, Chief Executive, Copper Kellie Parker, Chief Executive, Australia
08:35 – 08:45	19:35 – 19:45	**Market fundamentals**	Vivek Tulpule, Head of Economics & Markets
08:45 – 09:00	19:45 – 20:00	**Technology solutions**	Nigel Steward, Chief Scientist
09:00 – 09:15	20:00 – 20:15	**Decarbonisation - our pathway**	Mark Davies, Chief Technical Officer Alf Barrios, Chief Commercial Officer
09:15 – 09:30	20:15 – 20:30	**Iron Ore**	Simon Trott, Chief Executive, Iron Ore
09:30 – 09:50	20:30 – 20:50	**Q&A session 1**	All
09:50 – 10:10	20:50 – 21:10	**BREAK**	
10:10 – 10:25	21:10 – 21:25	**Panel 2: Best operator** ***Moderated by Isabelle Deschamps***	Arnaud Soirat, Chief Operating Officer Simon Trott, Chief Executive, Iron Ore Kellie Parker, Chief Executive, Australia
10:25 – 10:40	21:25 – 21:40	**Aluminium**	Ivan Vella, Chief Executive, Aluminium
10:40 – 10:55	21:40 – 21:55	**Panel 3: Excel in Development** ***Moderated by Kellie Parker***	Mark Davies, Chief Technical Officer Bold Baatar, Chief Executive, Copper Simon Trott, Chief Executive, Iron Ore
10:55 – 11:10	21:55 – 22:10	**Capital allocation and financials**	Peter Cunningham, Chief Financial Officer
11:10 – 11:30	22:10 – 22:30	**Q&A session 2**	All

Culture share

Angela Bigg, President, Diavik Diamond Mine

Diavik Diamond Mine, Yellowknife



Jakob Stausholm

Progressing with purpose

Rio Tinto Iron and Titanium Quebec Operations – Sorel Tracey

Partnering for shared success

Progressing projects to open up growth

A new approach to cultural heritage

Deepening impact of the Safe Production System


Best Operator
Impeccable ESG credentials
Excel in development
Social licence

Co-management of Country

Yinhawangka Aboriginal Corporation co-designed management plan

Modernising and rebuilding relationships

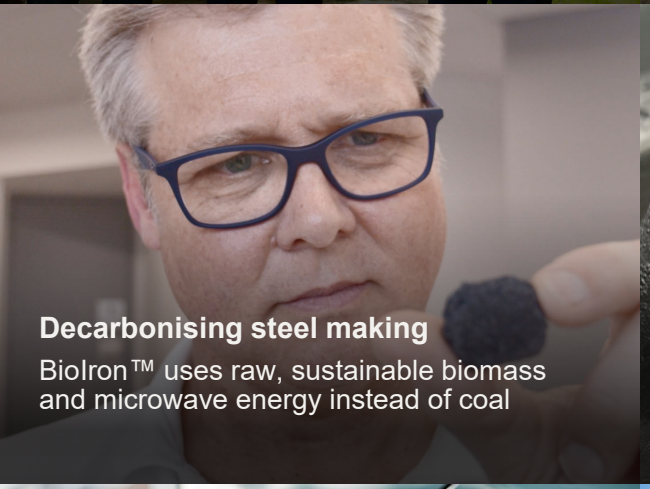
New agreements with Yindjibarndi Aboriginal Corporation and Puuti Kunti Kurrama and Pinikura Aboriginal Corporation

Decarbonising our RTFT operations

C$737 million partnership with the Government of Canada

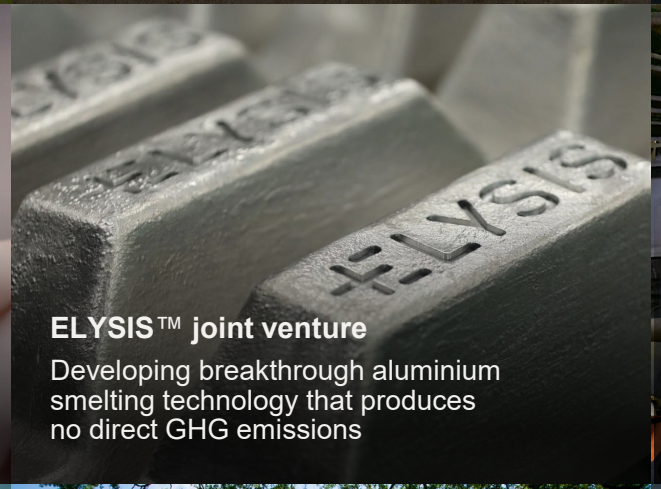
Relationship reset

A new agreement with the Government of Mongolia for Oyu Tolgoi



Decarbonising steel making

BioIron™ uses raw, sustainable biomass and microwave energy instead of coal



ELYSIS™ joint venture

Developing breakthrough aluminium smelting technology that produces no direct GHG emissions

Extracting critical minerals from waste and by-products

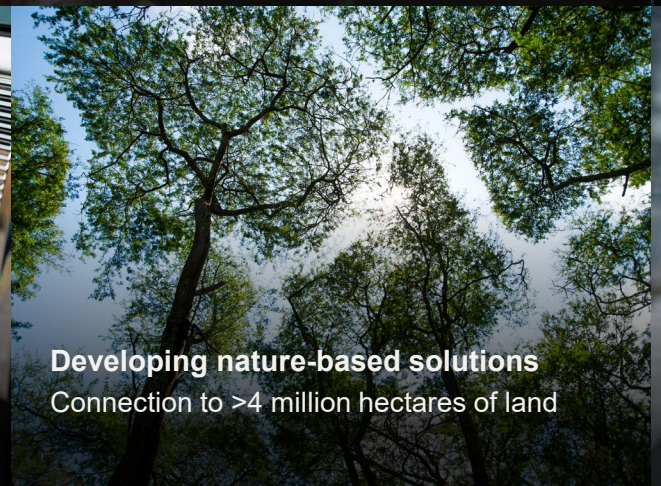
Tellurium and scandium

Pilbara renewables

34MW solar plant at Gudai-Darri iron ore mine, Western Australia

Rincon Lithium Project acquisition

A long-life, scalable resource



Developing nature-based solutions

Connection to >4 million hectares of land

Safe Production System

Deploying the Safe Production System site-by-site to continuously improve

Increasing Indigenous leadership

7x number of Australian Indigenous leaders since 2020

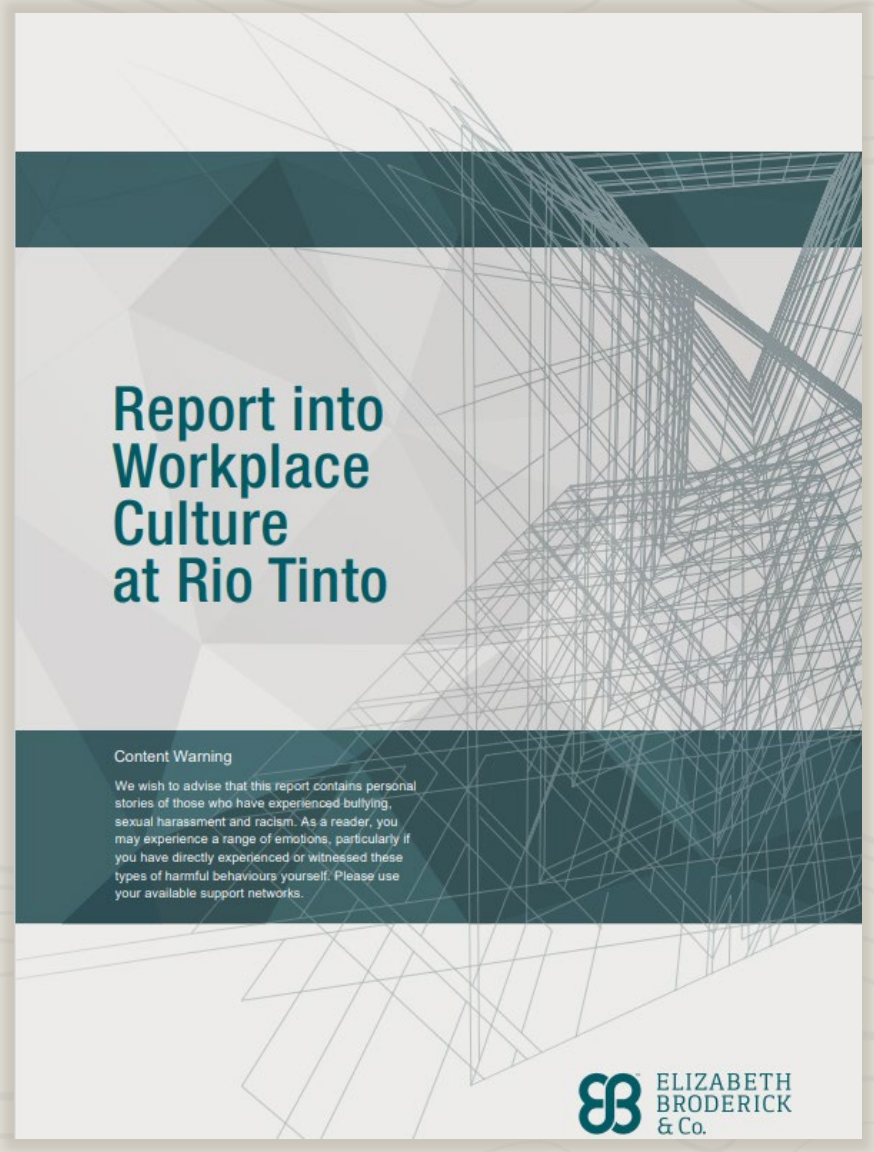

Finding better ways to provide the materials the world needs
Zero Harm

Panel session 1

Our culture journey

Isabelle Deschamps, Bold Baatar, Kellie Parker

Moderated by James Martin

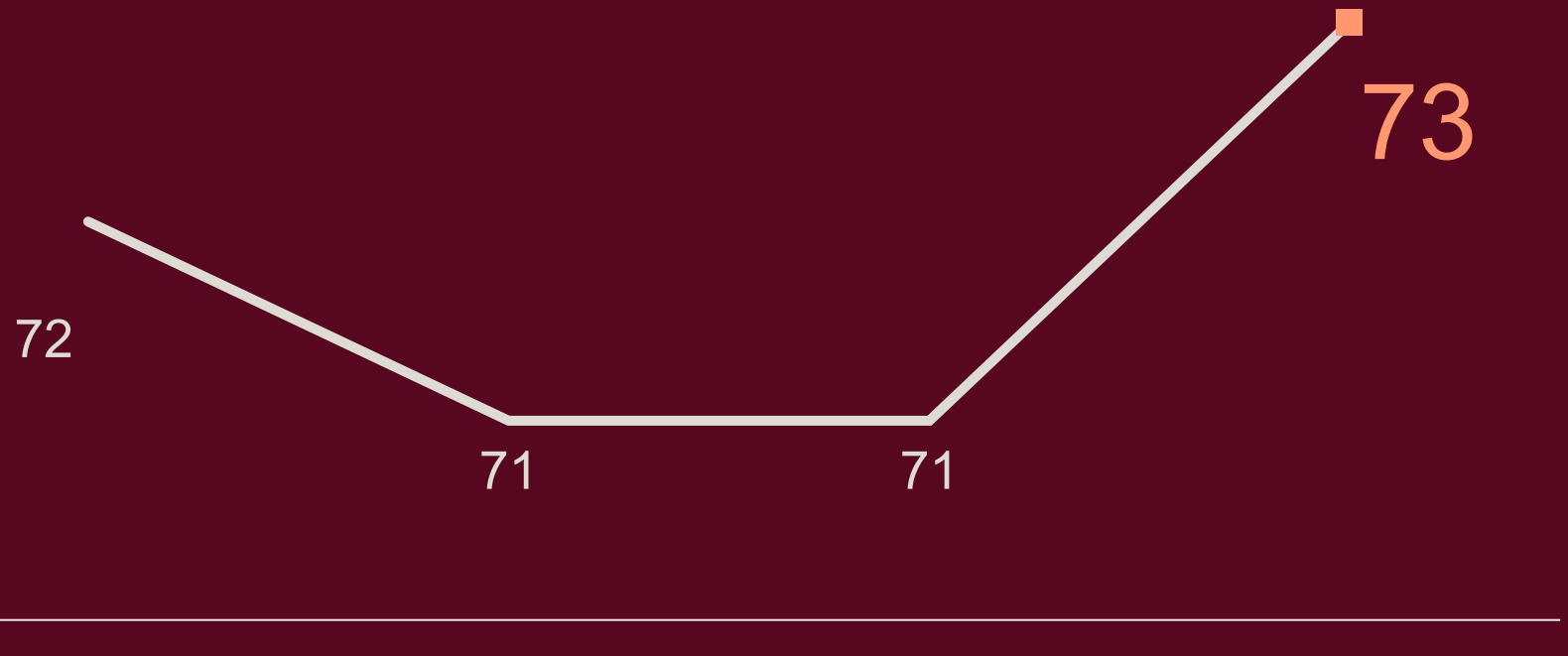


Transparency

Dialogue

Trust

Engagement scores improving [1]



[1]Percentage score for employee survey question regarding employee happiness in the workplace

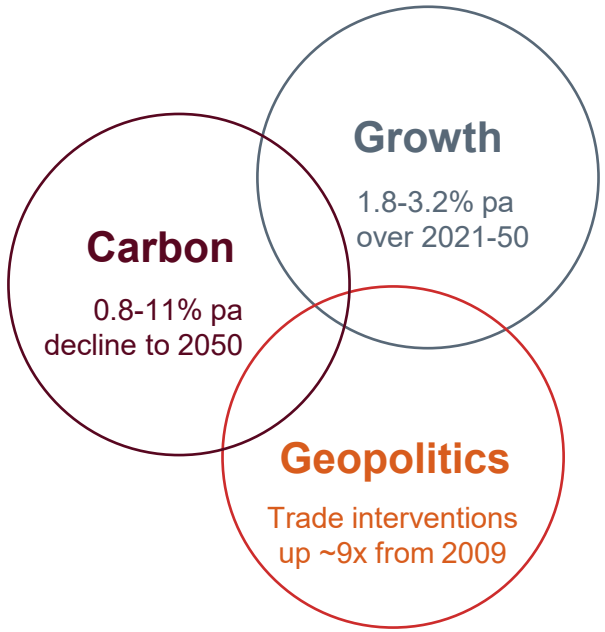
Vivek Tulpule

Market fundamentals

Tokyo, Japan

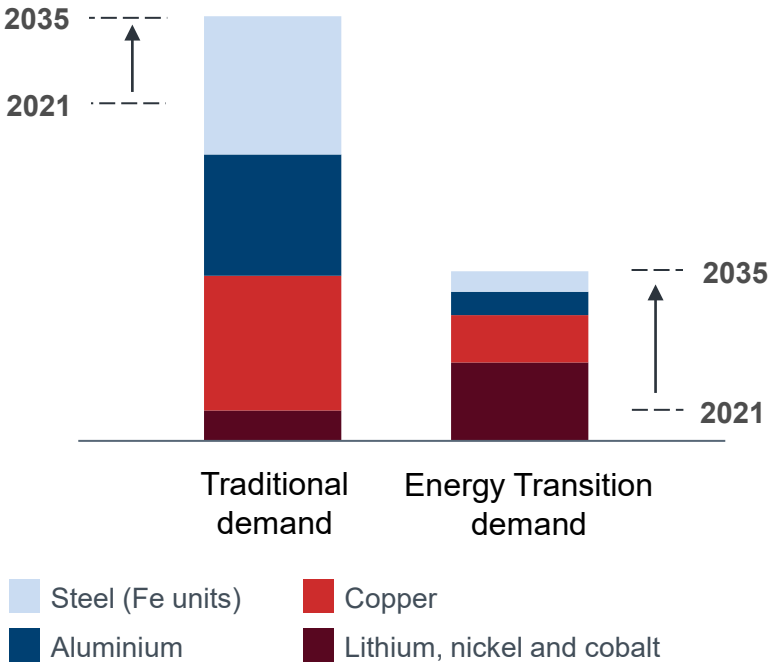
Global trends driving commodity demand

Key drivers of global economy[1]



Total commodity demand by 2035[2]

<2°C scenario
Copper equivalent basis



Recycling share of total demand

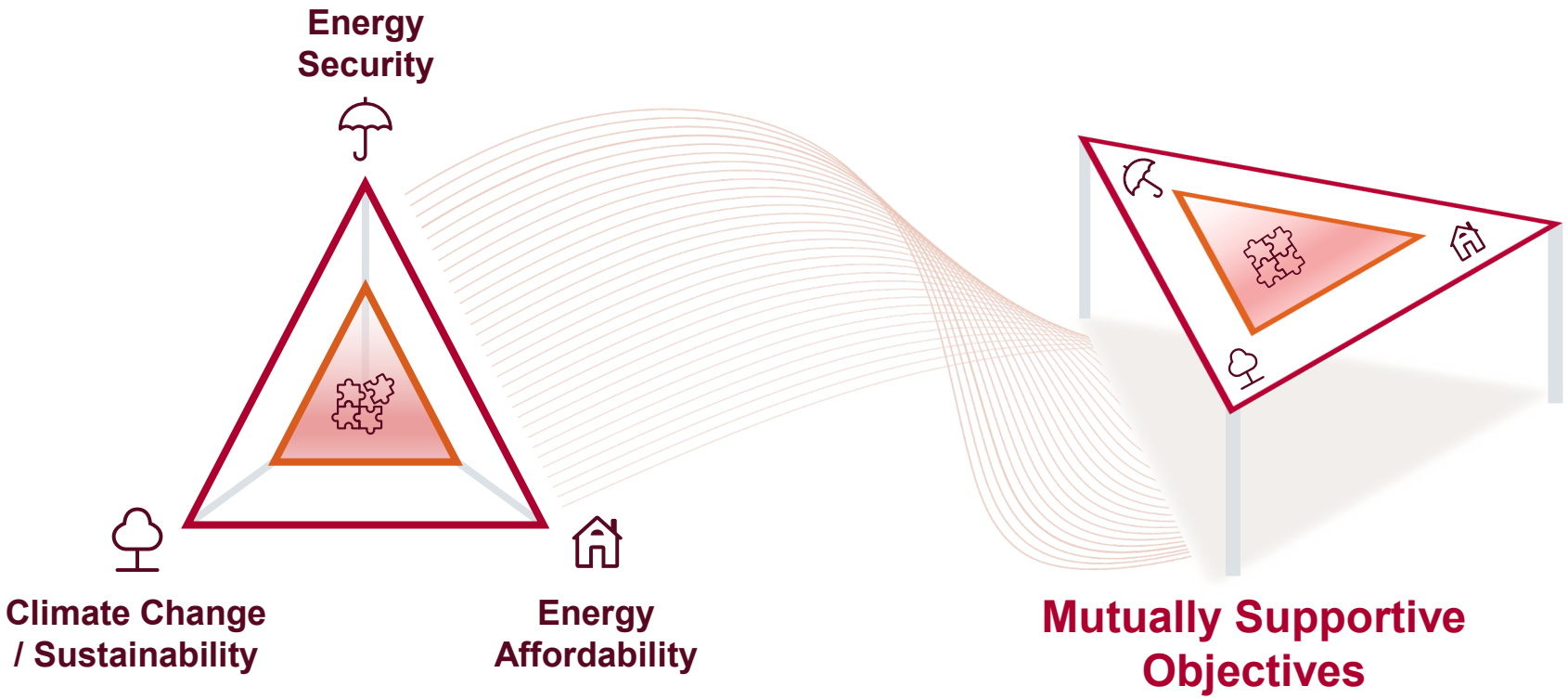
Current to 2035 (<2°C scenario)

Aluminium	28% to 35%
Copper	31% to 35%
Steel Fe units equivalent	36% to 50%
Lithium, nickel and cobalt[3]	25% to 15%

[1] Growth and carbon projections from Rio Tinto Group scenarios (11% per annum decline in CO_2 emissions based on 2021-49 period in net zero by 2050 pathway). Trade interventions from Global trade alert database [2] Copper equivalent demand uses average annual prices from 2017-21 with finished steel demand in iron ore equivalent units. Energy Transition demand calculated on a gross basis [3] Recycling share of total demand is currently higher due to the existing traditional use of nickel in industry and then declines as battery demand grows faster than recycling

Energy trilemma to energy tripod

A shift in the energy market paradigm is taking place…



Low-cost renewables (needed to reach climate goals) will increase energy security reducing scope for price disruption over time

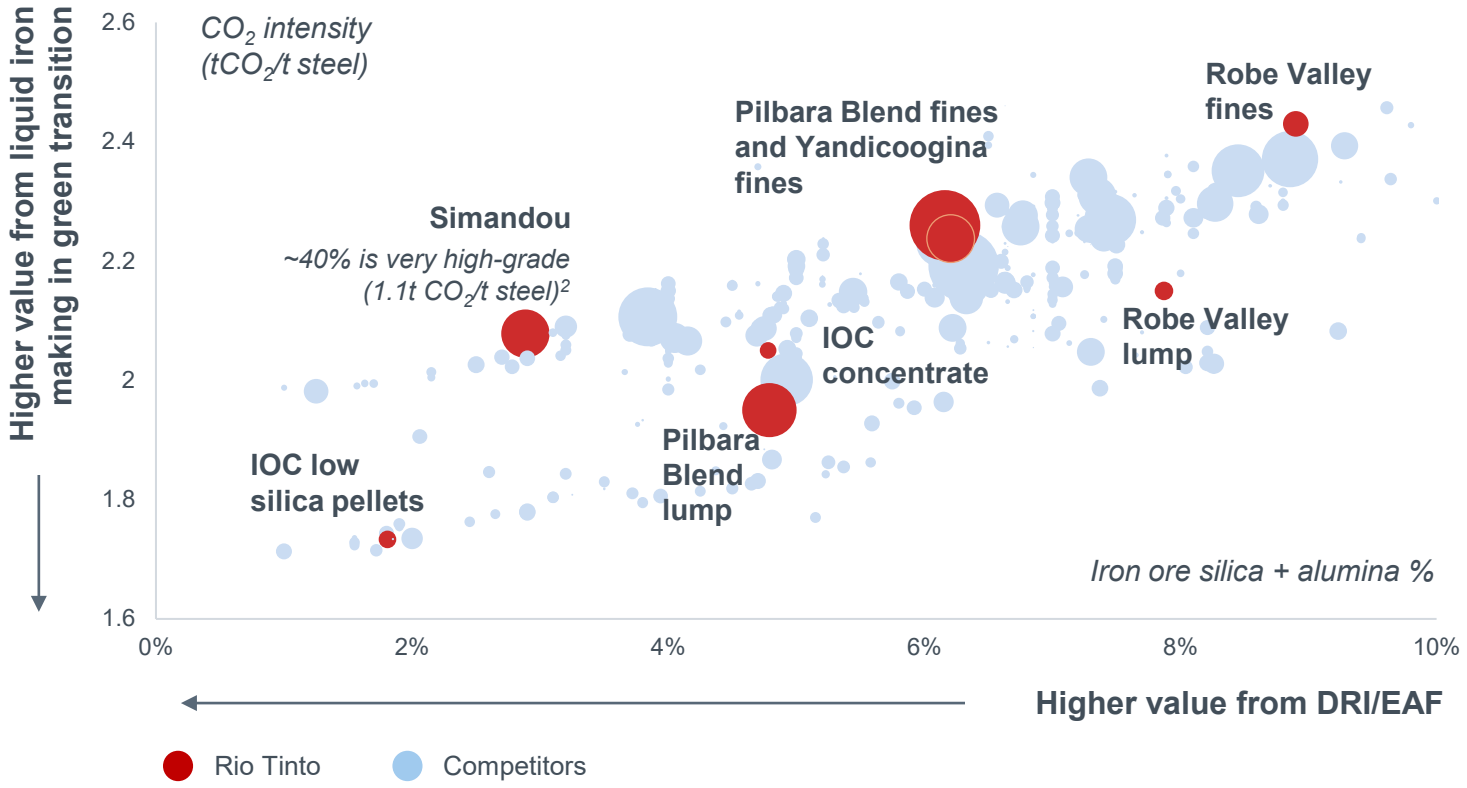
US Inflation Reduction Act provides ~$200 billion incentives and support by 2030 to firm these linkages

Europe's REPowerEU Plan will allow members to access around €300 billion in loans and grants to accelerate renewable investment and increase energy efficiency and security[1]

[1] €225 billion of the remaining Recovery and Resilience Facility (RRF) loans plus new grants resulting in a total amount close to €300 billion, European Commission.

Steel decarbonisation will affect the value of iron ores

Iron ore products – Steelmaking CO_2 emissions (BF/BOF)[1]



Industry decarbonisation efforts are focusing on direct reduction and liquid iron solutions:

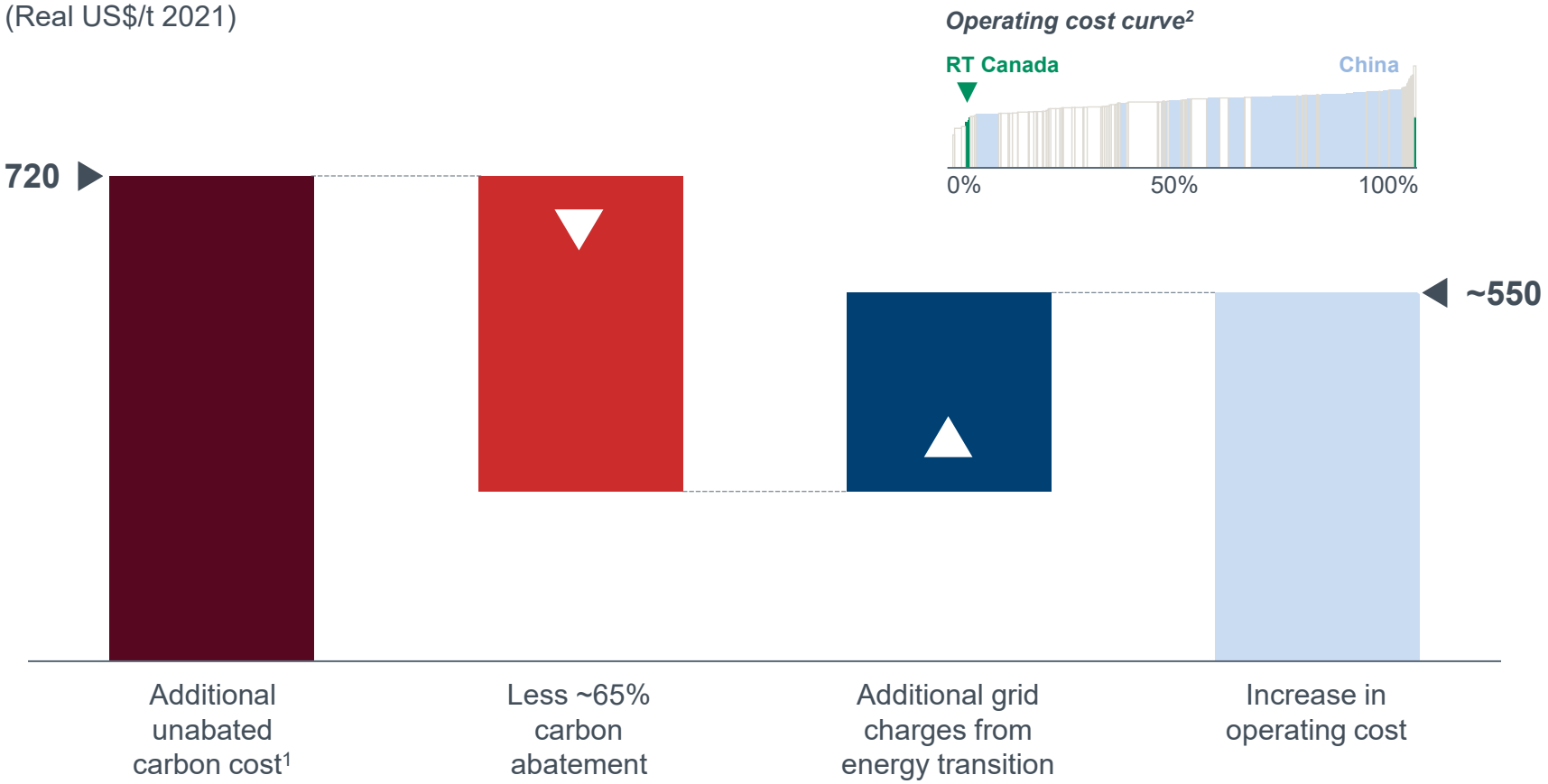
- Direct reduction does not remove impurities, and significantly benefits high grade iron ore value
- Liquid iron solutions will start with incremental blast furnace abatement followed by more transformative solutions
- During the transition to green steel, ores with low iron making CO_2 emissions are well positioned

[1] Represents steelmaking emissions per tonne of liquid steel for each iron ore feedstock under today's BF/BOF technology (China average archetype), Product volumes (represented by the bubble size) and silica + alumina content represent 2021 levels, except Simandou (blocks 3 and 4) which starts production at a later date.
[2] The part of the Simandou resource that is very high grade resource has silica + alumina of ~1.6% and CO_2 emissions 1.1t CO_2/t steel under gas DRI/EAF. Does not include Scope 1 and 2 iron ore emissions (scope 3 downstream only). Source: Rio Tinto

Hydro-based aluminium even more attractive

Chinese aluminium smelter cost sensitivities

(Real US$/t 2021)



Over half of current Chinese smelting produces >14t CO_2 per tonne aluminium vs. global average of 12t CO_2 per tonne of aluminium

Decarbonising electricity grid can abate about 65% of Chinese CO_2 from the current captive power model

Switching to grid-based power will incur network costs that initially rise with increased intermittent generation

[1] Using a total carbon intensity (direct and indirect) based on an average marginal coal-fired aluminium smelter in China and a $43 per tonne carbon penalty consistent with IEA's 'Stated Policies' scenario by 2040, World Energy Outlook 2022

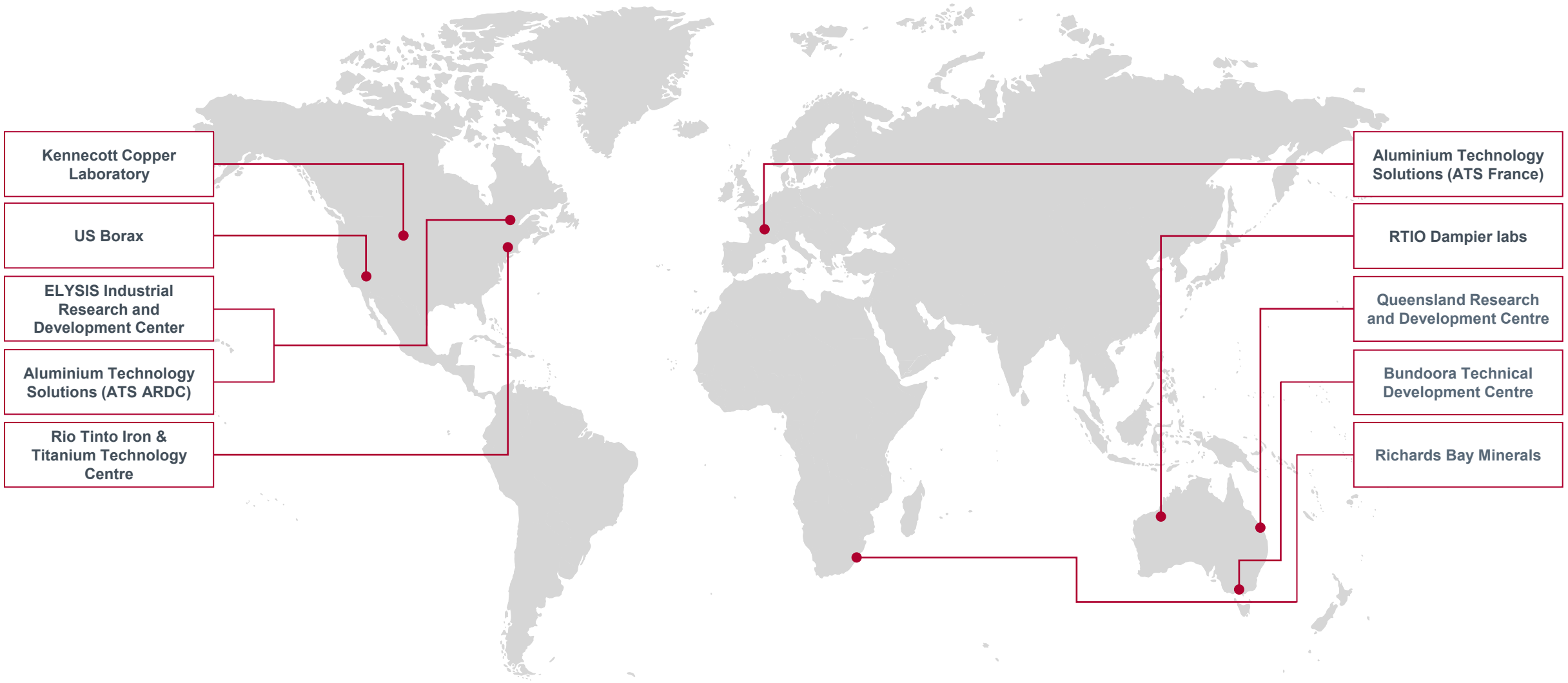
[2] Operating cost curve consistent with a ~$43 carbon penalty in China

Nigel Steward

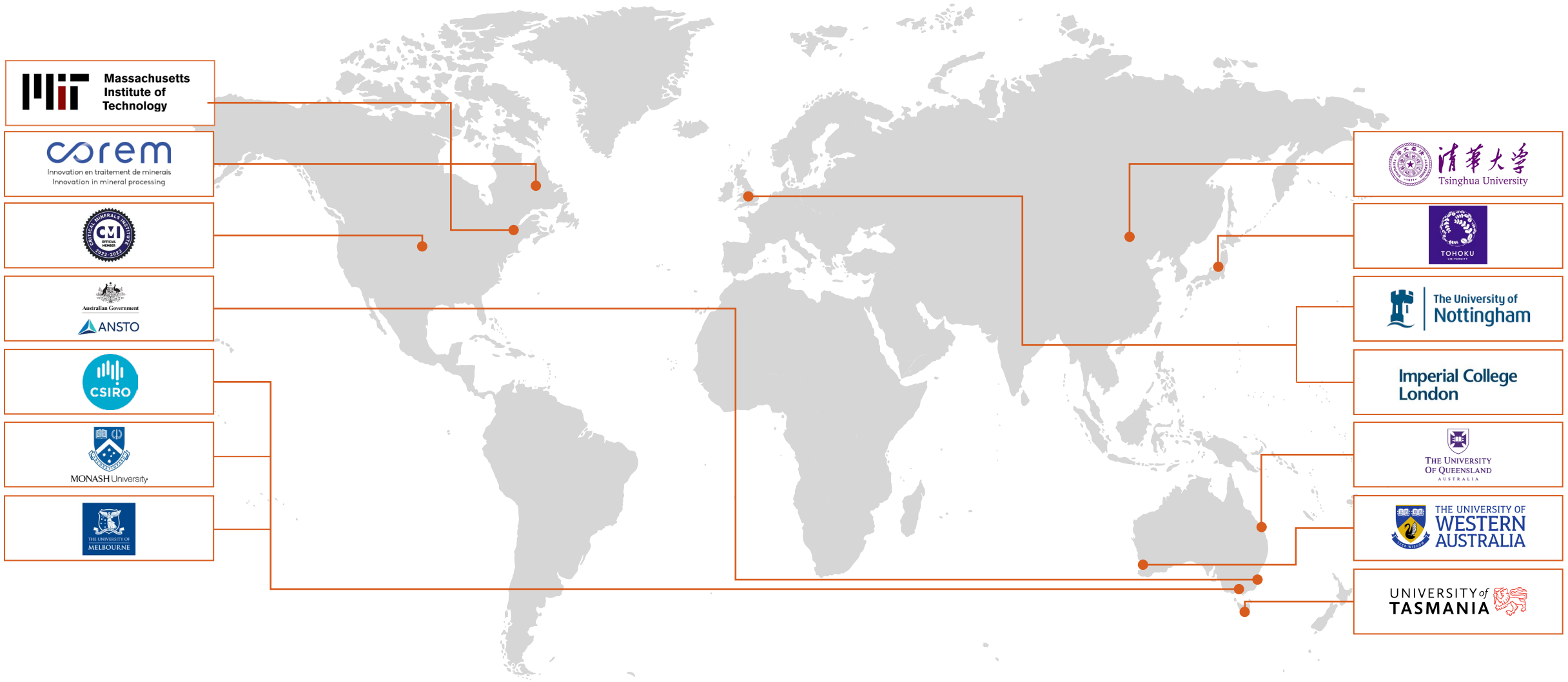
Technology solutions

Hydropower, the Saguenay

A strong global R&D footprint…



…complemented by partnerships



Disciplined technology roadmap

Health & Safety
9 projects

Reducing frontline exposure to hazards

Managing health and wellbeing of our people

ESG
19 projects

Reducing water consumption

Improving water treatment

Dry tailings

Dry processing

Closure

Growth
32 projects

Discovering new orebodies

Reducing capital intensity

Creating new revenue streams

Carbon
21 projects

Green steel and low carbon products

Storage options

Green processing

Green energy

Green fleet

Productivity
54 projects

Maximise value from each ore body

Equipment utilisation

Automation

Energy efficiency

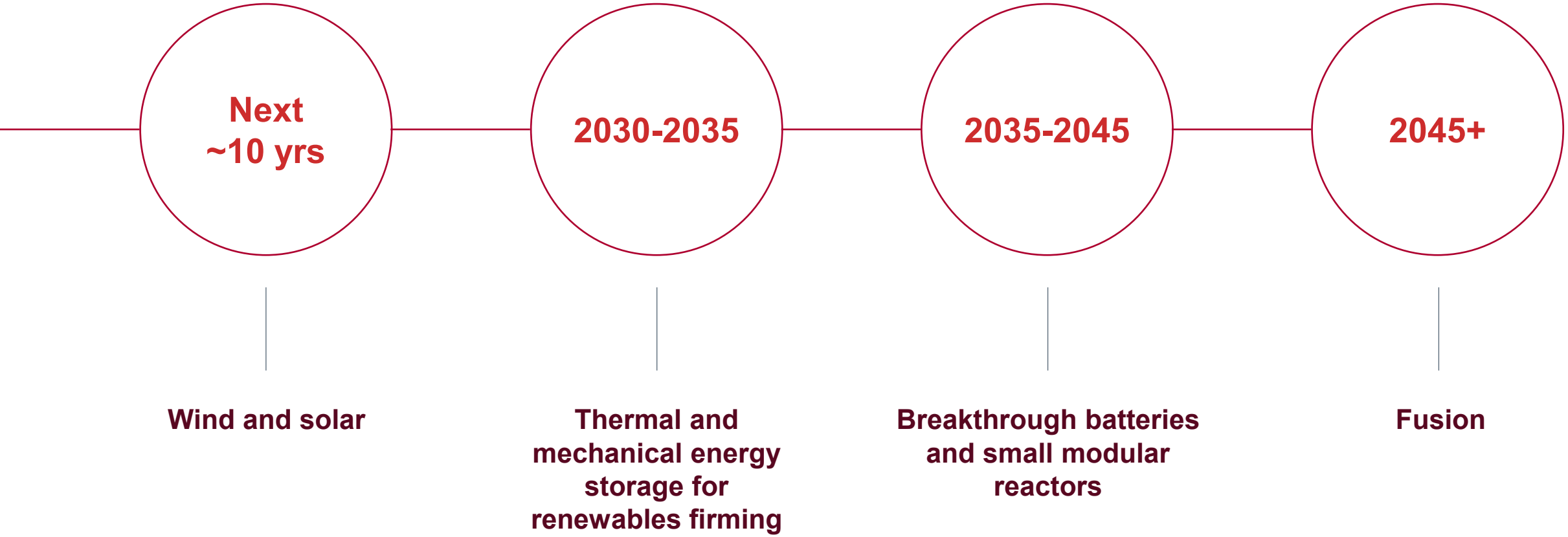
Impeccable ESG credentials

Excel in Development

Best Operator

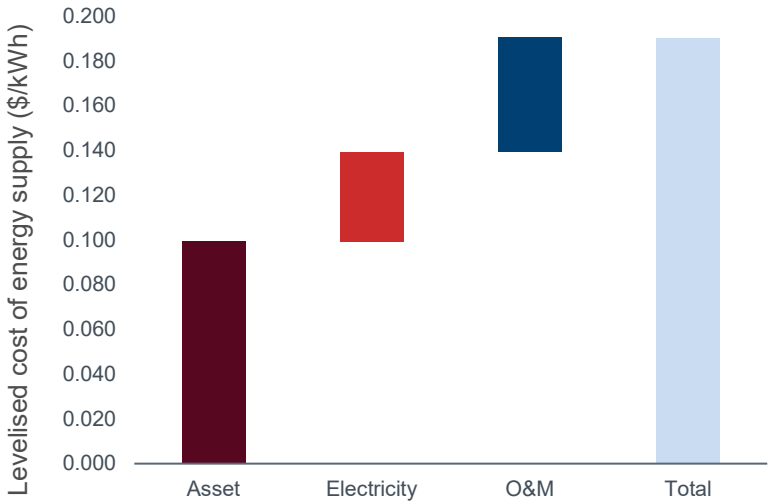
Social Licence

Transition and the global energy mix



Firming and storage options

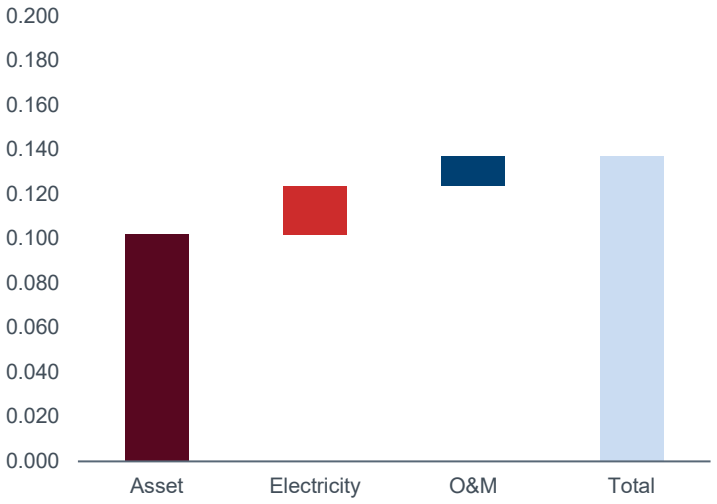
Mechanical



Electro-mechanical storage has the scale required by our operations, but capex and low Round Trip Efficiency (RTE) makes these solutions very expensive

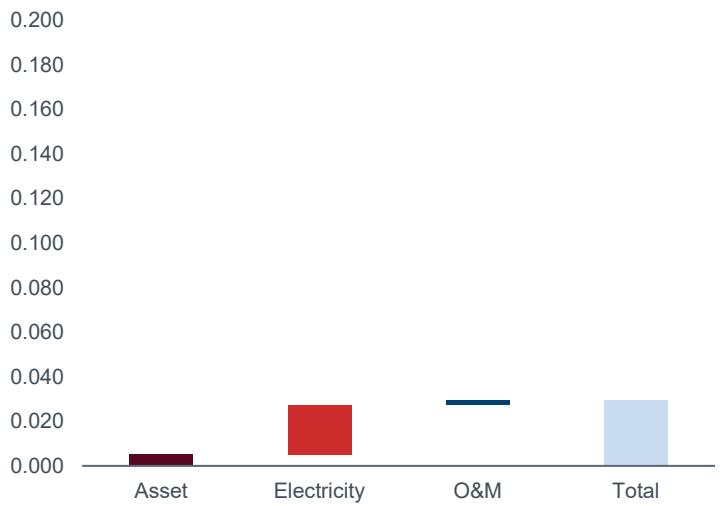
In the short term, firming of renewable electricity will have to come from conventional power sources like Hydro, Gas Turbine and Nuclear which are more cost effective, or we can revert to flexible demand management from our assets, e.g. a FlexPower Aluminium smelter

Electrochemical



Lithium-Ion Batteries are not practically scalable above 8hrs of stored energy, hence they will not be suitable for 24/7 firming solutions required by our operations

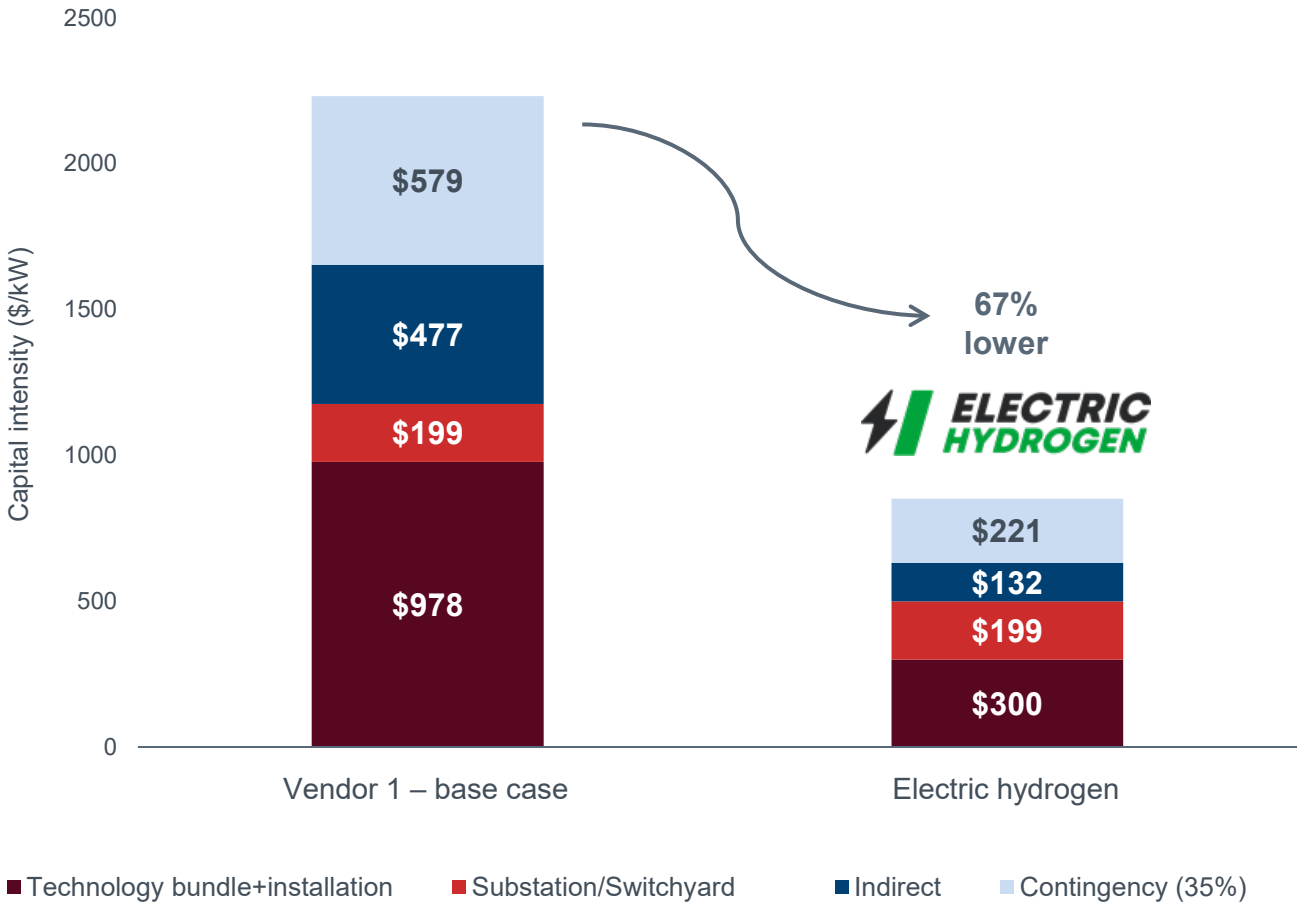
Thermal



Electricity to heat solutions provide a scalable option at a low capex and very high RTE

An ideal solution for our alumina refineries, and other hydrometallurgical plants

Hydrogen requires abundant low-cost green energy and lower capital costs



Rio Tinto investment in Electric Hydrogen start-up to lower cost of hydrogen

Potential hydrogen uses:

- Reductant for zero-carbon steel making
- Ilmenite reduction at RTFT and RBM
- Fuel for calcining in our alumina refineries

Currently uneconomic, as well as energy and capital intensive

Competitive green hydrogen will need very low-cost green electricity at scale and lower capital costs

Hydrogen leakage: ~1% per day of hydrogen is lost when stored in liquid form – global warming potential 5-16x that of CO_2 driving the production of hydrogen close to its point of use

Source: Ocko and Hamburg, "Climate consequences of hydrogen emissions" Atmos.Chem.Phys., 22, 9349-9368, 2022

Fleet electrification will require time and technology breakthroughs

Current state
Diesel fuel

2022-2035
Biodiesel and biofuels

2028-2045
Electrification

Battery pathways

	Drill	Charge	Dozer	Loader	Truck
Trial stage 2024					
Early deployment 2026					
At scale					

Diesel Cable power Battery Electric

Breakthrough technologies create new revenue streams

Green aluminium

Low carbon aluminium

Apple has used the world's first aluminium from zero carbon smelting at an industrial scale ELYSIS cell

AP4X amperage increase implementation at the Alma smelter resulted in a 2.7% increase in production of low carbon aluminium

Processing waste


Rio Tinto Fer et Titane


Nuton™ technology pilot plant, Bundoora, Australia

Critical minerals from waste

Scandium production at Rio Tinto Fer et Titane (RTFT) from spent acid stream

Tellurium production at Kennecott delivering a new domestic supply to the US Solar industry

Spodumene concentrate produced at RTFT

Copper from waste

Nuton™ and related sulphide leaching technology targeting legacy copper waste and traditional orebodies with detrital challenges

Commercialising through strategic partnerships in the Americas

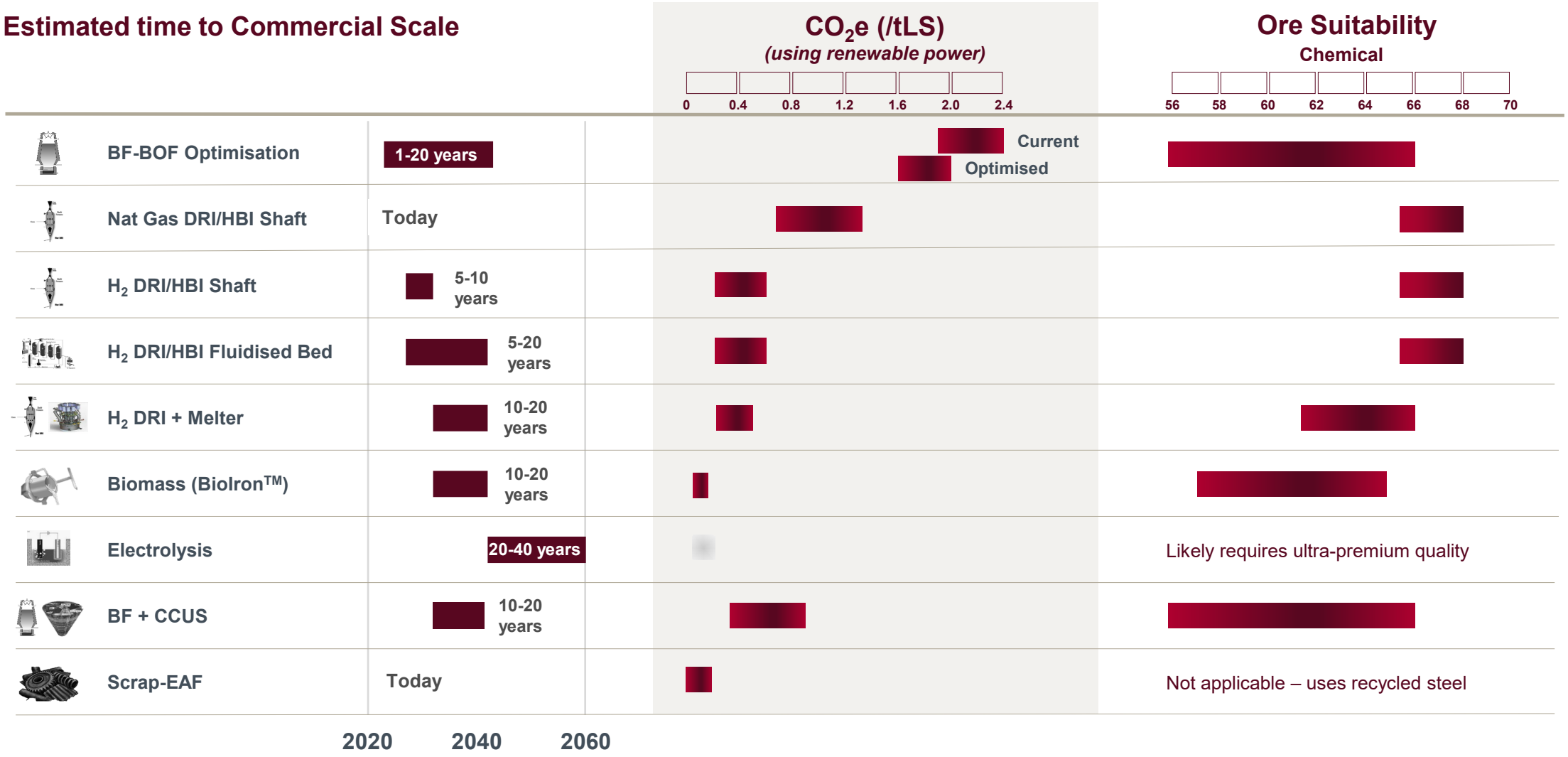
Carbon mineralisation


Tamarack, Minnesota

Storing carbon as rock

Rio Tinto-led team exploring carbon storage potential at the Tamarack nickel joint venture in central Minnesota

Green steel pathways: range of potential technology options available



Our technology journey

Achieved

- Creation of Chief Scientist's Office – driving R&D integration and delivery across the company
- One of the largest and most balanced technology and R&D portfolios in the mining industry
- Leading on automation and remote operations
- First producer of zero carbon aluminium from ELYSIS™ and first scandium producer in North America

Improving

- Growing capabilities in battery materials
- Biodiesel and biofuels for our mobile fleet
- Introduction of smaller and more efficient equipment at mine sites – e.g. automated road-sized trucks
- Partnering to support the production of zero carbon steel

Developing

- Ramp-up of solar and wind deployment to meet an increasing proportion of our electricity needs
- Battery electric haul trucks
- Accelerating ELYSIS™, Nuton™, and production of Lithium and critical materials
- Storing CO_2 in rock through carbon mineralisation

Excelling

- Providing firmed zero carbon energy to support 24/7 operational needs
- Innovation leader in providing materials produced with a zero carbon and superior ESG footprint to drive the energy transition
- Being fastest to translate new ideas into sustained business value

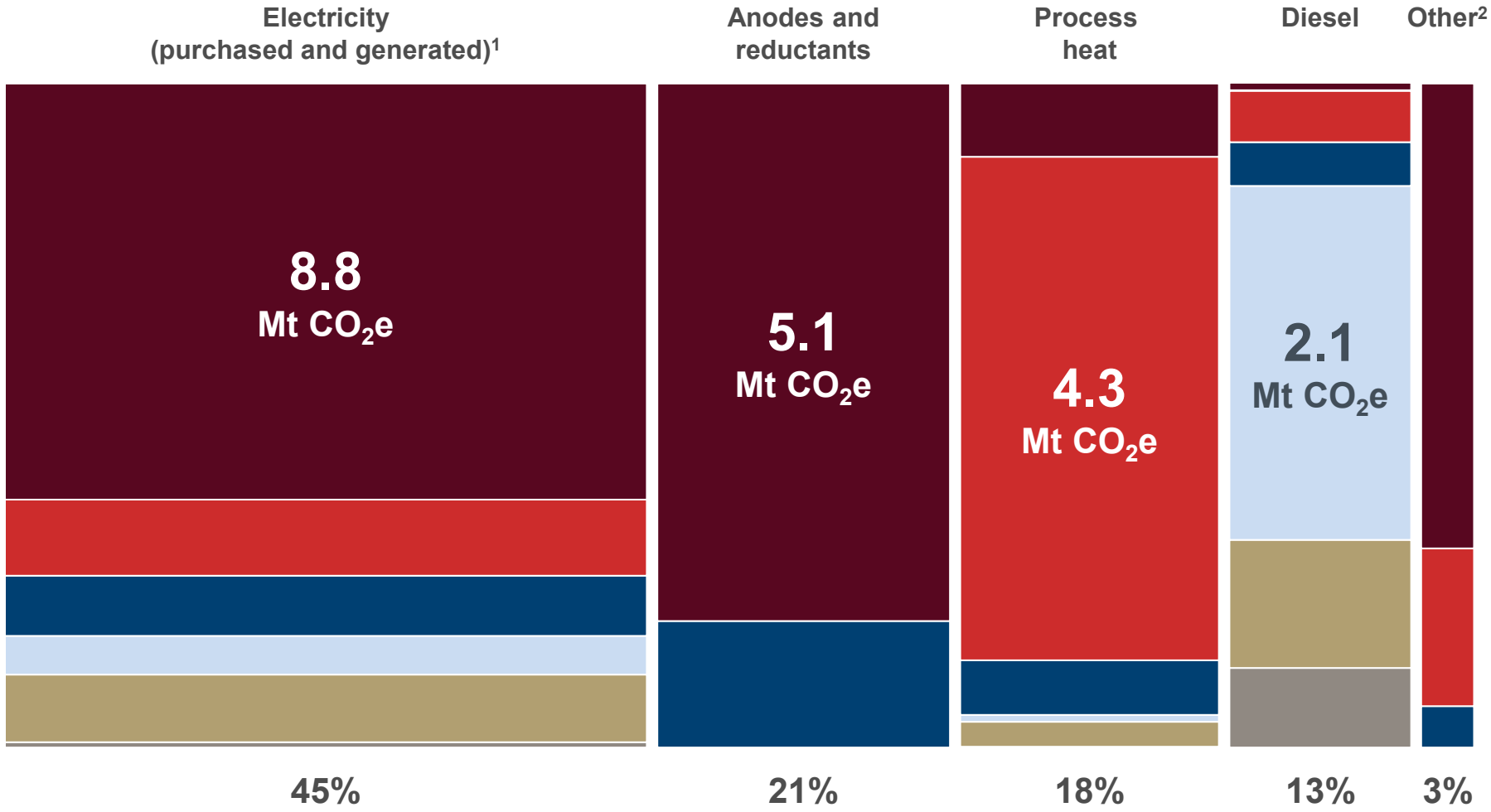
Mark Davies and Alf Barrios

Decarbonisation – our pathway

Kennecott, US

Processing accounts for the majority of our carbon footprint

Our scope 1 and 2 emissions



2021

equity basis

31.1

Mt CO_2e

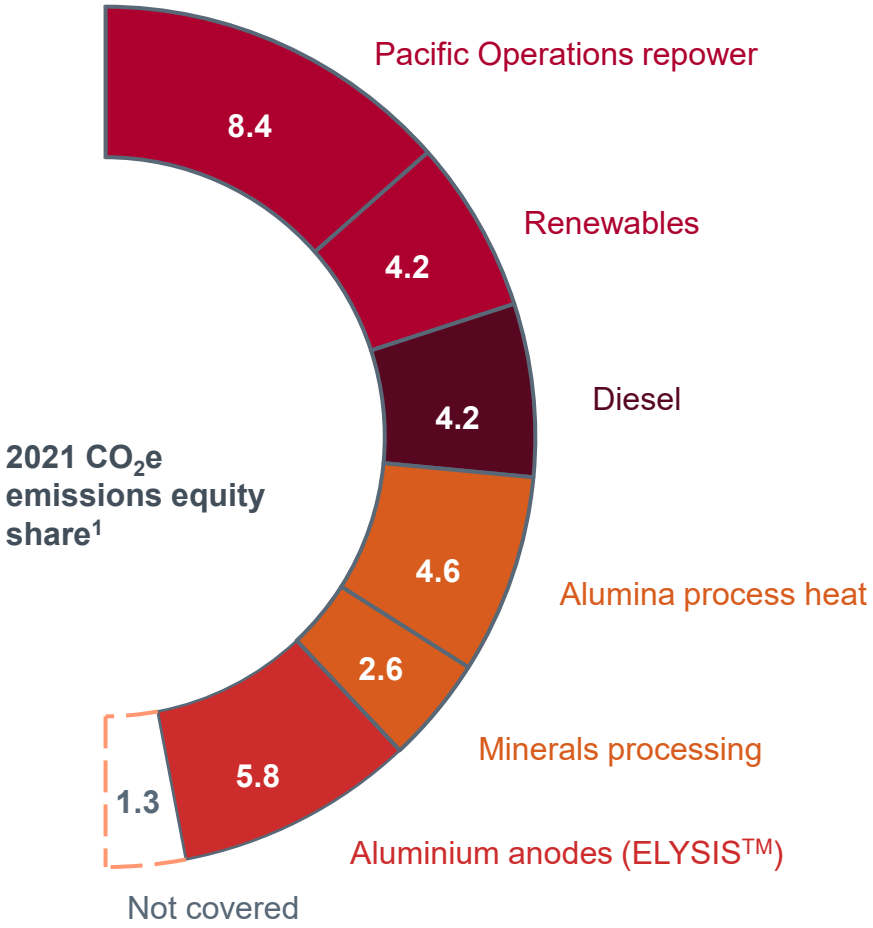
~80% processing **~20% mining**

- Aluminium
- Bauxite & Alumina
- Minerals
- Iron Ore
- Copper
- Other

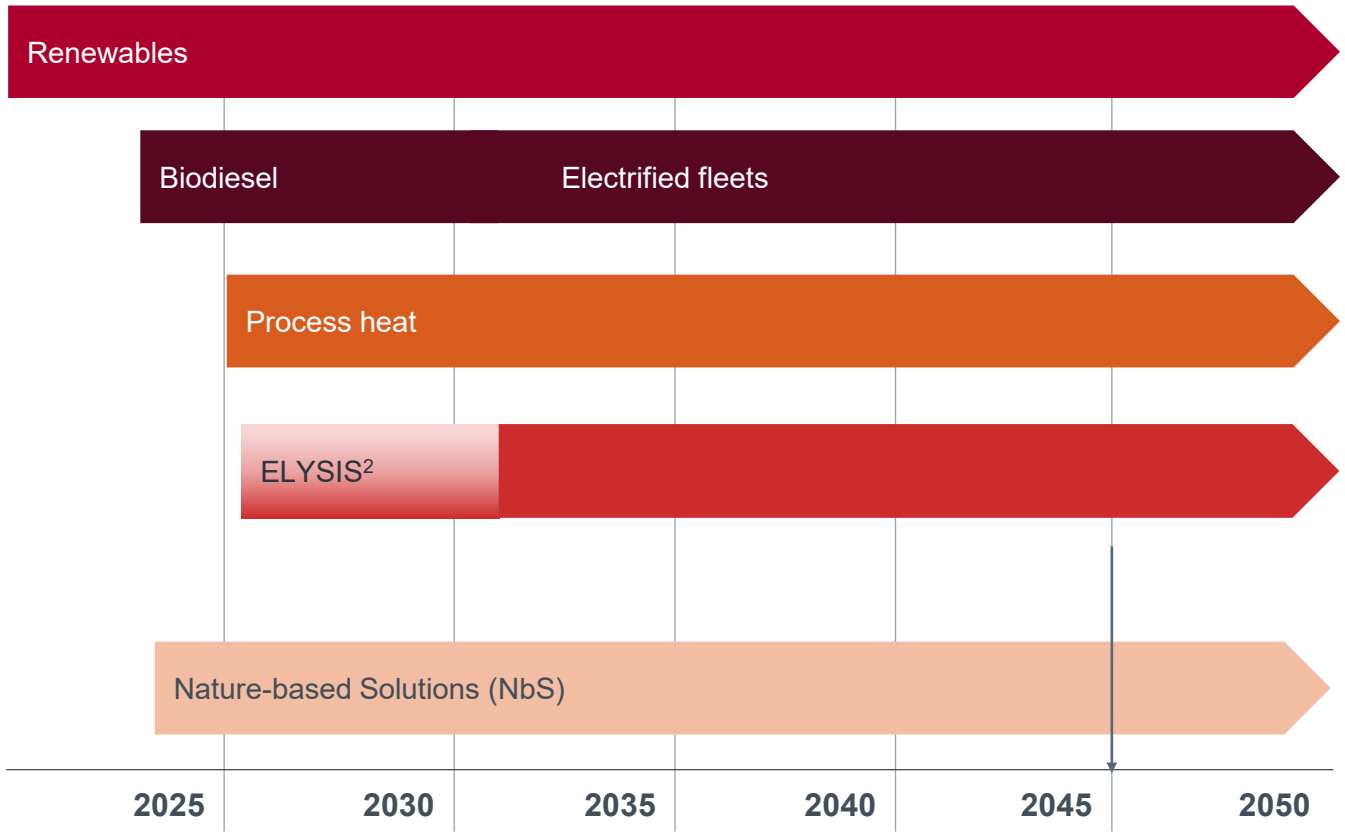
[1] Electricity emissions based on current Scope 2 carbon accounting approach as outlined in the published Scope 1, 2 and 3 Emissions Calculation Methodology 2021
[2] Other includes land management and process emissions

Executing our ambitious plan towards net zero by 2050

Six large abatement programmes…



…with Nature-based Solutions part of the plan

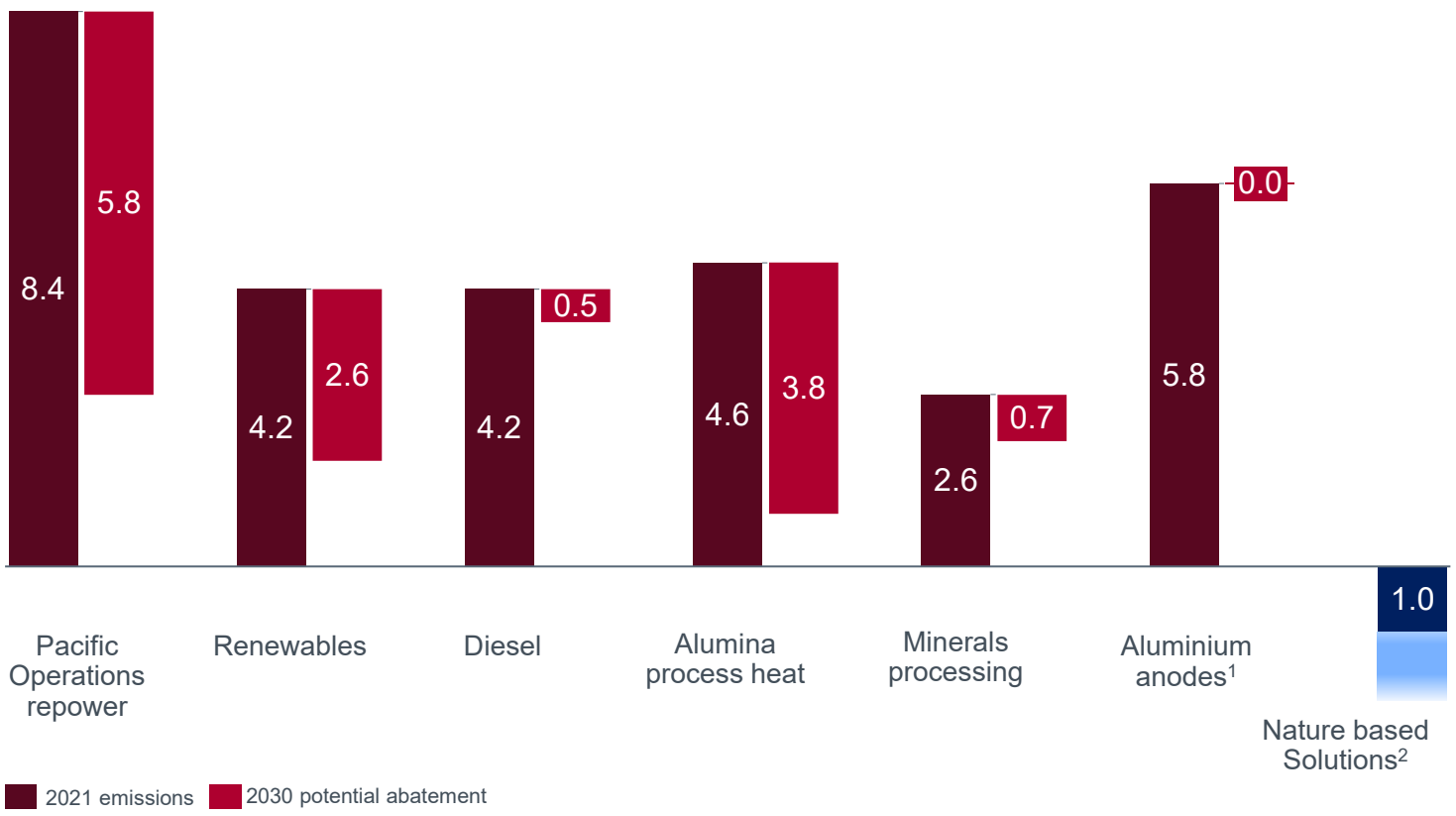


RioTinto

[1] Six global programs cover 94% of group emissions, with residual emissions contained in processing facilities and land management
[2] ELYSIS expected to be deployed for growth rather than abatement between 2026 and 2033

Pursuing an abatement pathway to reach our 2030 target

Mt CO_2e emissions by major abatement programmes – equity share



2018 CO_2e emissions baseline	**32.5**
Emissions reductions to 2021	(1.4)
2021 CO_2e emissions	**31.1**
Growth	1.0
Abatement programmes	(13.4)
Other[3] required (includes NbS)	(2.4)
2030 CO_2e emissions (50% reduction from baseline)	**16.3**

New projects will need to be carbon neutral or have emissions mitigated elsewhere in the portfolio

[1] Aluminium anodes pre-2030 is contributing to growth of Net Zero Aluminium rather than abating existing production tonnes and is therefore showing no abatement to 2030
[2] Nature-based Solutions projects are expected to result in CO_2 removals and avoided emissions
[3] Other will flex over time based on abatement project delivery, growth, closures and asset changes

Path to 2030: select renewable and process heat projects already underway

Renewables

Self-delivered → Market-based

Pilbara
3% of group emissions[1]

1GW

↓1.0 Mt CO_2 by 2030[2]

<$50/t Carbon price

234MW solar and 200MWh storage delivered 2023-2026

Progressing expandable sites for 1GW and beyond

RBM
5% of group emissions

0.6GW by 2030 100% basis

↓1.4 Mt CO_2 potential @ 100% renewable

2.5% of South African national renewables

130MW solar PPA signed

200MW wind PPA in progress

Pursuing regional partnerships to reach 100% renewables

Boyne Smelter
13% of group emissions

4GW New Australian generation

↓4.0 Mt CO_2 equity share

>2% Australian 2030 CO_2 goal

Request for proposals for 4GW of green energy

13% reduction in Group CO_2 emissions by 2030

Process heat

RTFT
3% of group emissions

C$ 737m investment

↓670 kt CO_2 potential[3]

Up to 70% emissions[3]

BlueSmelting

Increases critical minerals

Partnership with Government of Canada

QLD alumina assets
14% of group emissions

$1.2m Hydrogen feasibility

↓3.8 Mt CO_2 potential

↓82% emissions

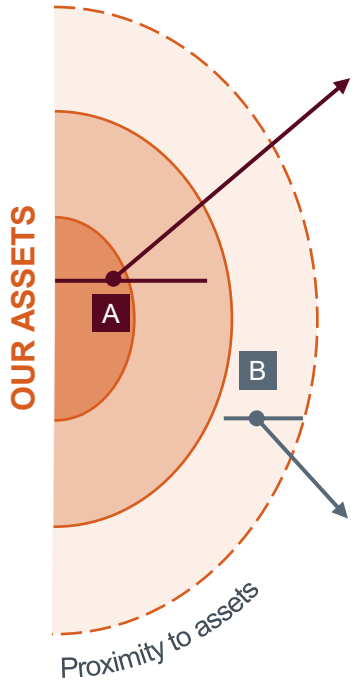
Electrification of gas and coal boilers and ↑40% steam efficiency through digestion projects

Partnership with ARENA and Sumitomo to trial Hydrogen Calcination

[1] Percentages shown denote programme coverage of 2021 group emissions (equity basis)
[2] Based on gas and diesel displacement to 2030
[3] BlueSmelting project when fully implemented based on 2021 RTFT emissions

Increased role of Nature-based Solutions to support our ambitious targets

Two-pronged approach to secure high-quality credits



A

Developing Nature-based Solutions

- High-quality projects on or near our assets
- Connection to >4 million hectares of land
- Eight large-scale projects progressed to feasibility studies
- Potential ~500k hectares of land under conservation, restoration and sustainable management
- Community and biodiversity benefits

B

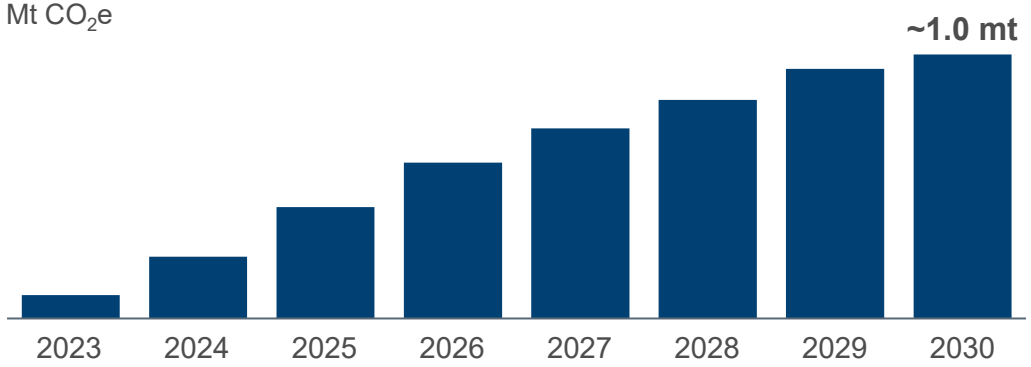
Market Activity

- Securing high-quality carbon credits
- Identifying options to move into co-financing and co-development for the long-term

Assessments show scale and favourable economics

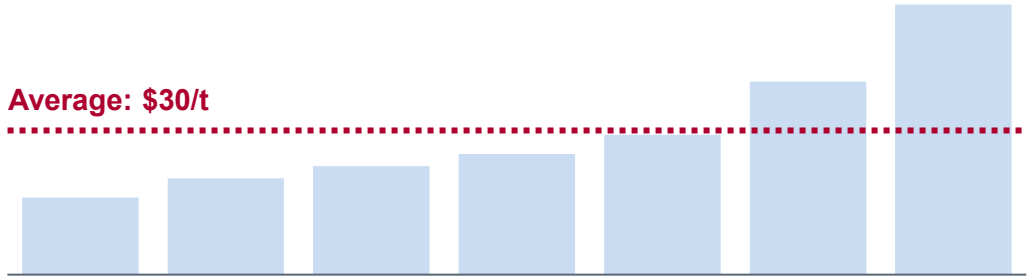
Development run-rate first four projects (preliminary)

Mt CO_2e



Estimated development cost

$/t CO_2e



Projects range in price (~$20-$50/t)[1]

[1] Range reflects project types (conservation, land management, reforestation) and landscapes (forest, mangroves, pastoral), with allocation for biodiversity and socio-economic benefits

We are scaling up Nature-based Solutions close to our assets

Generating carbon credits and positive outcomes for people and nature

---

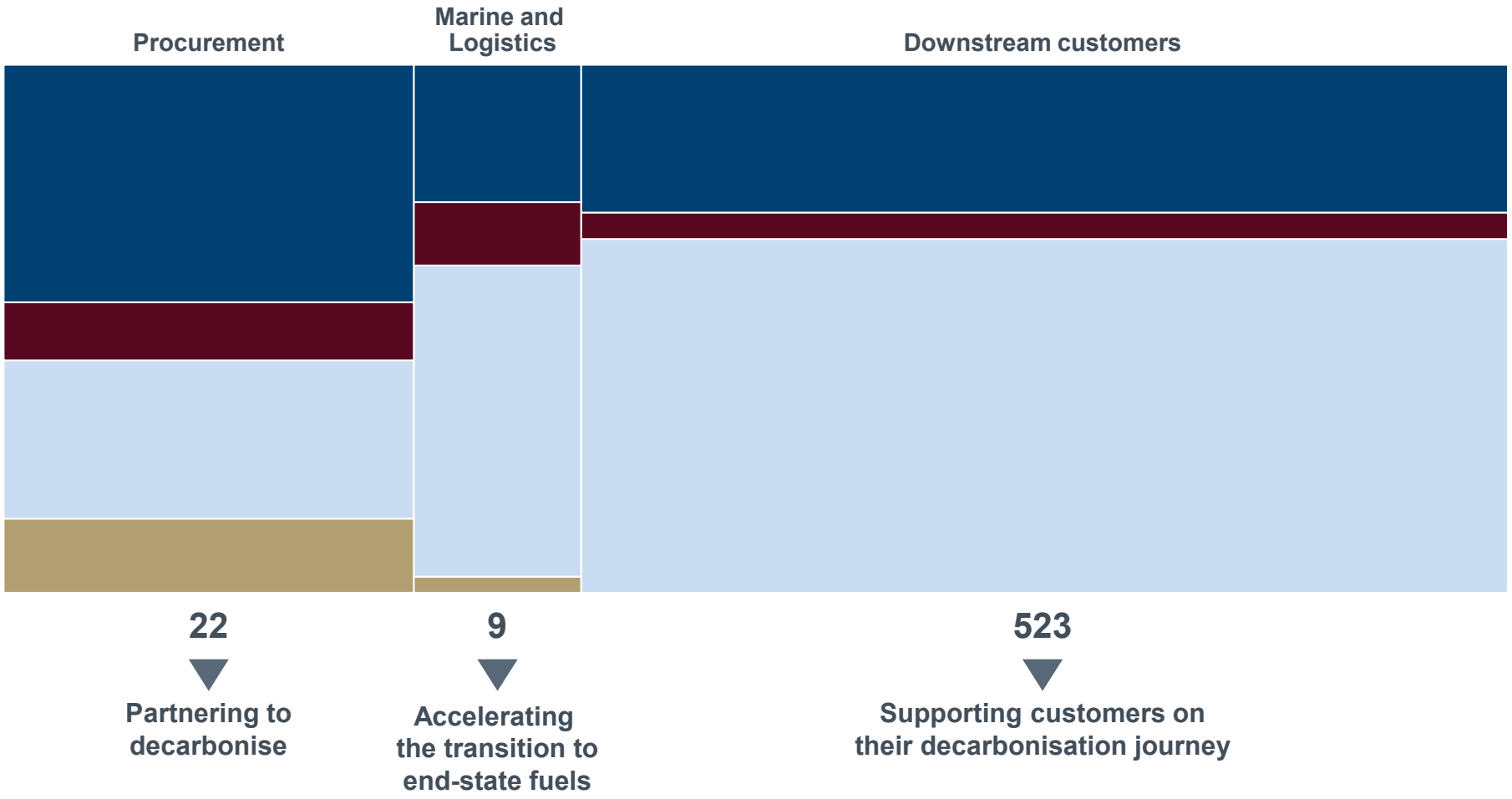
For example – a 500 hectare community-driven project:

- 640,000 seedlings from local village nurseries
- 2,300 community members involved
- Tree species with strong carbon capture yields (~8 - 12t/ha)
- ~90% of investment going directly to community members for services

Additionality	Permanence	Human Rights & Social Safeguards	Ecological safeguards	Real Carbon Reductions

RioTinto

Supply chain emissions: scope 3



2021

equity basis

554

Mt CO_2e

- Minerals
- Aluminium
- Iron Ore
- Copper

Supporting our customers in their decarbonisation journeys

Multi-commodity, low-carbon and critical minerals

- Prioritising growth in materials needed for the transition
- Comprehensive green offer, with technical support
- Deeper partnerships with end-customers (OEMs)

Providing traceability to the end consumer

- Responding to customer traceability, transparency needs
- Over 110 customers signed up for START platform
- QR codes piloted on Corona beverage cans to enable more informed choices for consumers

Supporting our customers - steel decarbonisation

1	2	3	4	5	6
Blast Furnace Optimisation	**Pilbara Beneficiation**	**BioIron™**	**H_2 DRI + Melter**	**High-Grade DRI**	**Iron Ore Portfolio**
Optimising current technology	**Upgrading our Pilbara ores**	**Ironmaking with Pilbara ores Pathway 1**	**Ironmaking with Pilbara ores Pathway 2**	**Entry to high-grade green iron market**	**Bringing high-grade ore to the market**
Multiple collaborations with customers	Finding optimal stage(s) along the steelmaking value chain to remove impurities	Developing an alternative steelmaking route to H_2 DRI	Developing H_2 DRI with melter for Pilbara ores	Entering H_2 HBI market and demonstrate new tech using RT ores	e.g. Simandou

Key Partnerships

SALZGITTER AG Mensch, Stahl und Technologie · Metso:Outotec · NIPPON STEEL · KOBELCO · MACQUARIE University SYDNEY·AUSTRALIA · Imperial College London · BlueScope · 清華大學 Tsinghua University

Materials Processing Institute · posco · BAOWU · SEDGMAN ONYX · University of Nottingham UK | CHINA | MALAYSIA · Australian National University · CHINALCO · 首钢集团 SHOUGANG GROUP

Iron ore

Simon Trott

Pilbara, Western Australia

A global portfolio with products for today and tomorrow

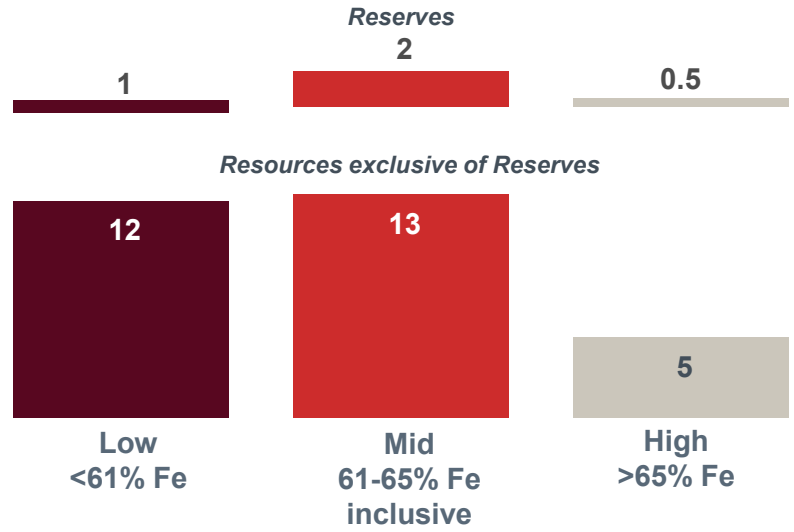
Unrivalled global resource portfolio

Strategic differentiators

- Pilbara Infrastructure
- Joint Venture Partnerships
- Scale & Resilience
- Product Grade Spread

Resources for a compelling product suite

Global Mineral Resources & Ore Reserves[1]
Billions of dry tonnes, published grades



Pilbara
Pilbara Blend
Green steel application pathways

Iron Ore Company of Canada
High-grade, low-impurity products with Direct Reduction Iron market presence

Simandou
Blast furnace feed or Direct Reduction Iron products

China Portside
Global blending capability providing greater customer access

[1] See supporting references for categorisation of Rio Tinto's Mineral Resources and Ore Reserves on slide 3

Delivering in 2022

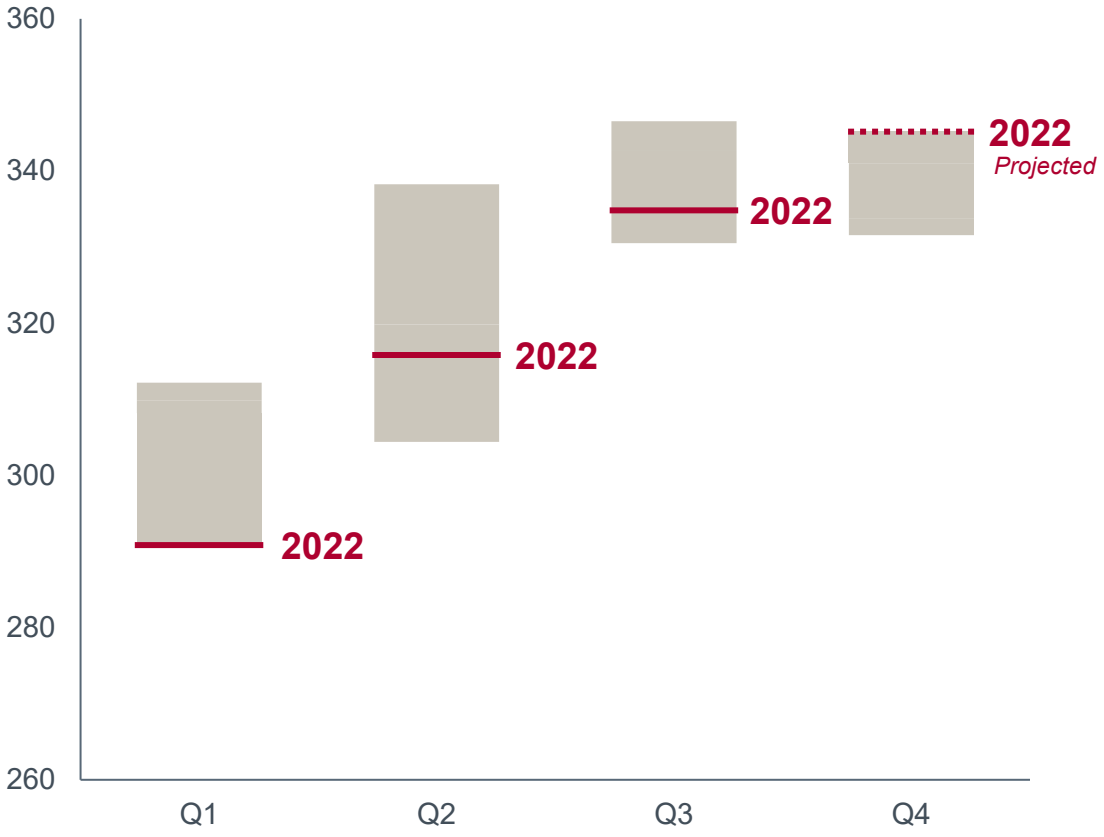
	2022 Outcomes	Looking forward
Best operator	Record material movement. Strong H2 production Strong performance at IOC Safe Production System delivering	**We approach 2023 with momentum**
Excel in development	120Mt of Pilbara mines commissioning Unlocked Western Range Project and Rhodes Ridge JV Simandou JV incorporation	**Mine developments provide replacement or growth options** **Rhodes JV underpins our competitive position for decades**
Impeccable ESG credentials	34MW Gudai-Darri solar farm commissioned Initial funding for 100MW Pilbara coastal solar farm as part of Phase 1 BioIron™ successful pilot	**Progress towards a lower cost renewables powered business** **Developing green steel pathways at the next level of scale**
Social license	Three fold increase[1] in spend with indigenous businesses Agreements with Yinhawangka and Yindjibarndi PKKP remedy and co-management agreements	**Positioning for a future defined by access to country**
People at our Heart	Everyday Respect report released with actions in place Village upgrades and enhanced amenities Improved diversity and 7% uplift for Respect on employee survey	**Building a values based performance culture**

[1] Three fold increase in Pilbara Iron Ore indigenous spend since 2018

Momentum building quarter on quarter

Mine production ranges by quarter[1]

(2019 to 2022, Mt/a)



	2023 focus areas	Next 5 years
Mines	Ramp-up new mines Drive productivity with SPS Asset reliability and pit health	Next tranche of mine developments Low-cost volume creep
Rail & Port	Mitigate system interface losses Track health and cycle time	High density ore upgrade Blending (Pilbara and China) to optimise product mix Replace stockyard equipment

[1] Minimum and maximum range is based on annualised quarterly figures for the period 2019-2022

Performance uplift across early SPS deployments

↑ **6%**
at deployed sites
Employee satisfaction

↓ **Up to 46%**
improvement at deployed sites
All Injury Frequency Rate

Tom Price

↑ **19%**
AHS equipment utilisation

↑ **14%**
HG production daily rate

Brockman 4

↑ **33%**
Weekly total material movement

↑ **9%**
Monthly Production from baseline

2021
Pilots at West Angelas, Yandicoogina

2022
2 full deployments at Tom Price & Brockman 4

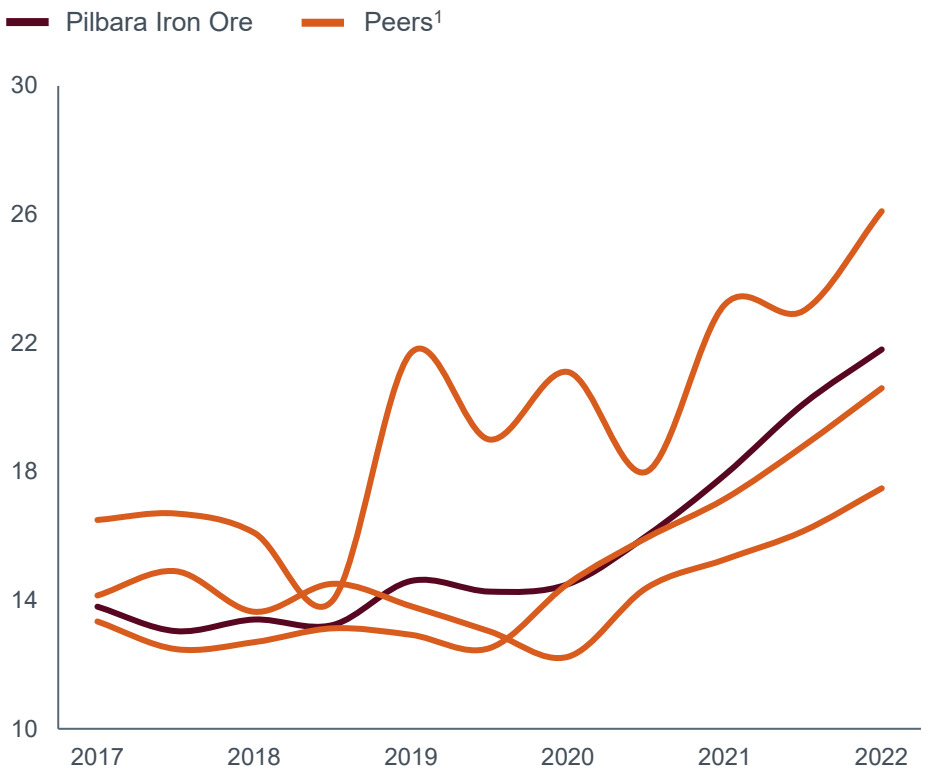
2023
Further deployments across mines, rail, ports & ops centre

Deliver up to 5Mt production uplift in 2023

Costs reflect investment in improving asset health and mining sector input prices

2022 Forecast vs 2021

Unit cost history
(US$/t FOB)



Uncontrollable

Sector input prices

↑ **2 x**
Diesel

↑ **5 – 10%**
Materials & Labour

Economic

↓ **12%**
Exchange Rate

↑ **>7%[2]**
Inflation

Controllable

Work Index

↑ **12%**
Mine Work Index

↑ **4%**
Total Maintenance hours

Productivity

↑ **+340Mt**
2022 H2 production rate

↓ **7%**
Plant unscheduled loss

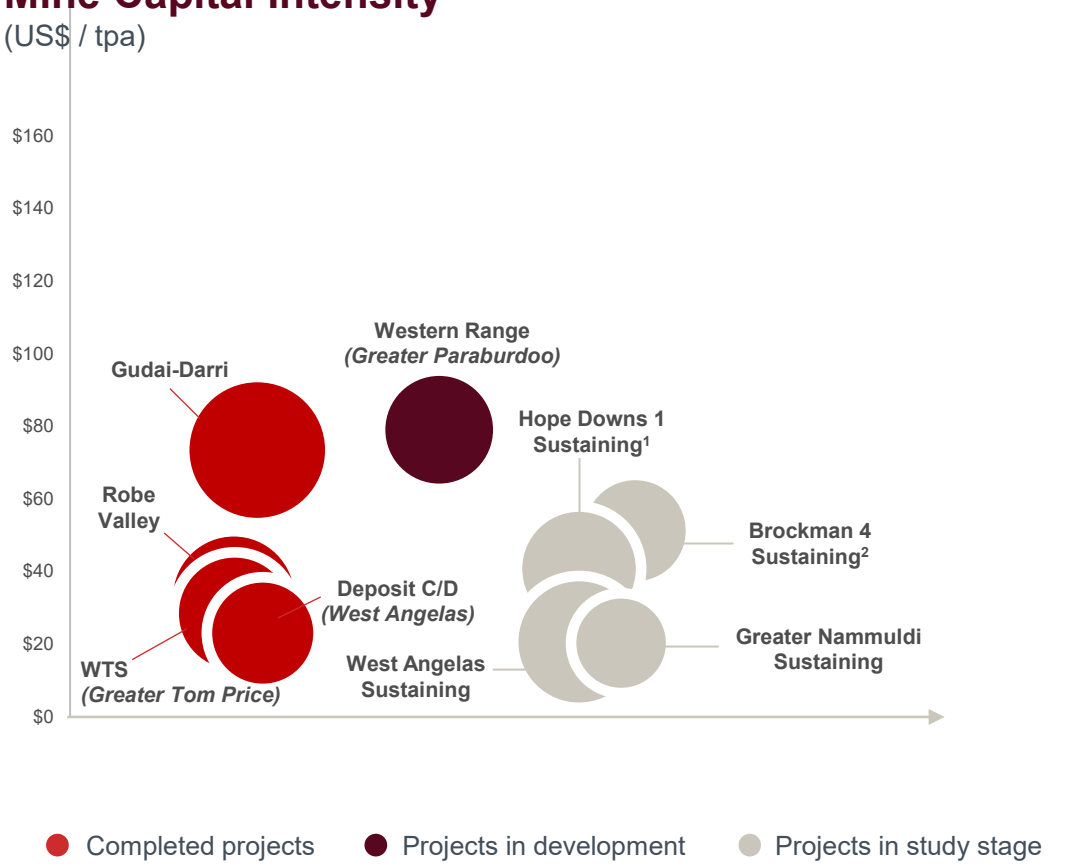
↑ **4%**
Truck effective utilisation

[1] Unit cost for peers are based off publicly available sales, revenue and EBITDA data, with adjustments made for comparison to RTIO's reporting method and products
[2] Cost inflation sourced from Australian Bureau of Statistics, Producer Price Indexes

We are delivering an improved mine portfolio that maximises Pilbara Blend

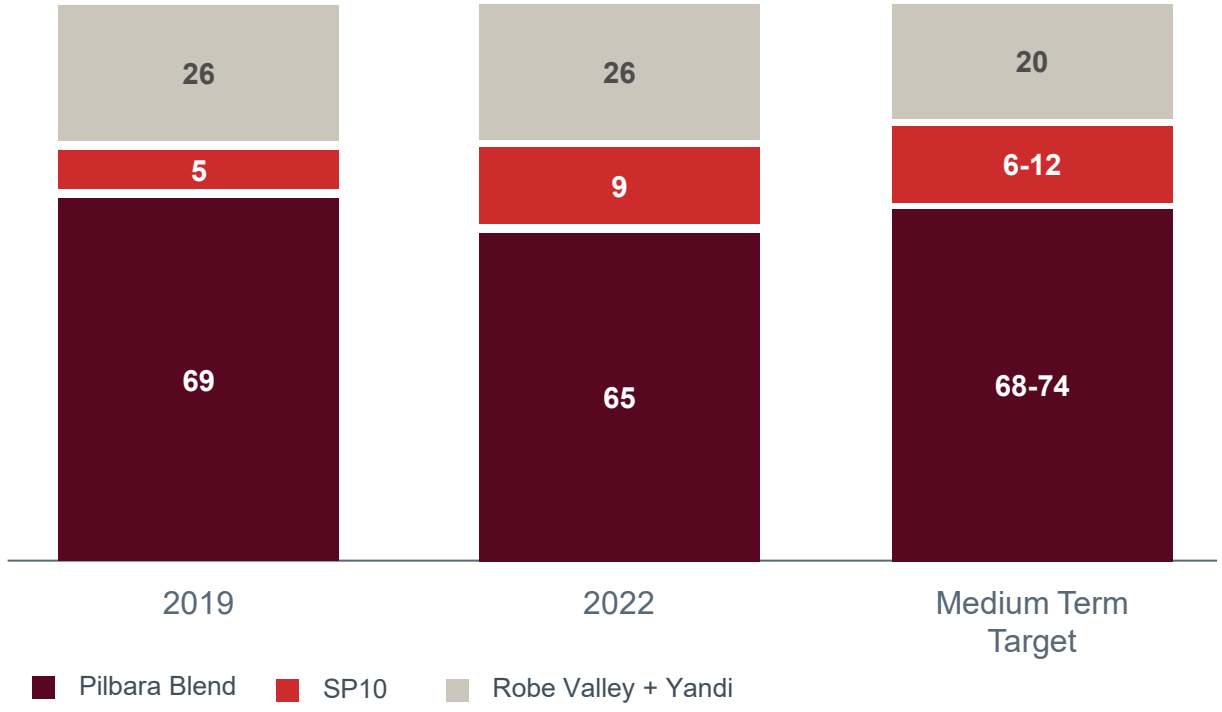
Mine Capital Intensity

(US$ / tpa)



Shipments by Product

(%)



[1]Hope Downs 1 sustaining includes Bedded Hilltop and Hope Downs 2
[2]Brockman 4 sustaining includes Brockman Syncline 1

Western Range represents our first co-designed mine with Traditional Owners

Strong ties with China's leading steel maker

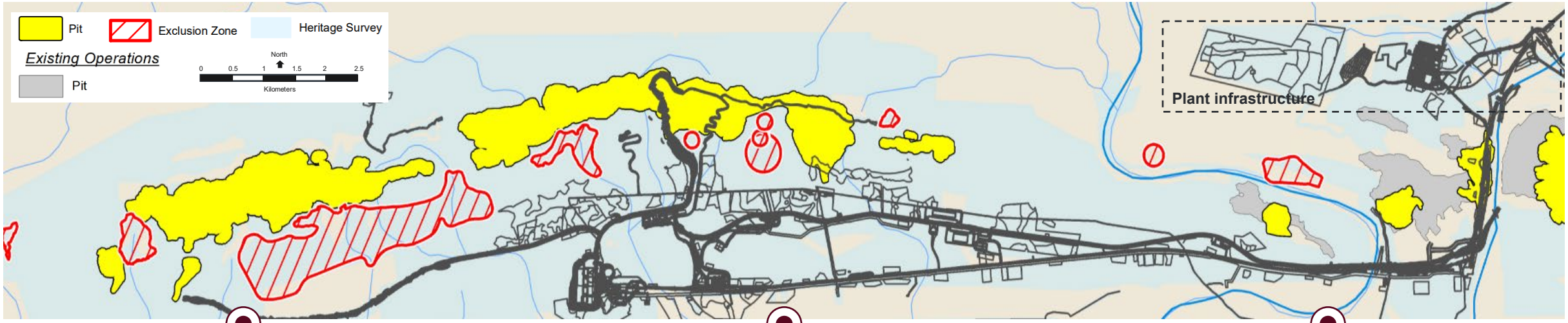
Agreed new Western Range JV with China Baowu Steel Group (Baowu, 46%)

Strengthen Pilbara Blend

25Mt/a of Pilbara Blend process capacity through the Paraburdoo mining hub with first ore in 2025

Tier 1 asset

High grade 165Mt @ 62.0% Fe[1], leveraging existing infrastructure with low cost mining



Cultural heritage protected

Significant sites identified by the Yinhawangka Traditional Owners are protected

Impact minimised

Rigorous and ongoing consultation informed mine designs and infrastructure layout

Return to Country commitments

Integrated closure planning and progressive rehabilitation to limit the development footprint

[1] See supporting references at Slide 3

Rhodes Ridge will underpin our competitive position for decades to come

Large, high grade and compact

Iron Ore Resources and Reserves[1]
(Billions of tonnes)

Area
(km²)

Rhodes Ridge (Australia)

6.7Bt @ 61.6% Fe

Resources

Including:
5.7Bt @ 62.3% Fe
0.5Bt @ 64.0% Fe

6.7

1,800 km²
30km x 60km

Simandou Blocks 3 & 4[2] **(Guinea)**

2.8Bt @ 65.5% Fe

Resources

2.8

+ Blocks 1&2[2]

1,250 km²
25km x 50km

Carajas[3] **(Brazil)**

2.9Bt Resource at 62.8% Fe
6.1Bt Reserve at 65.8% Fe

Resources exclusive of Reserves

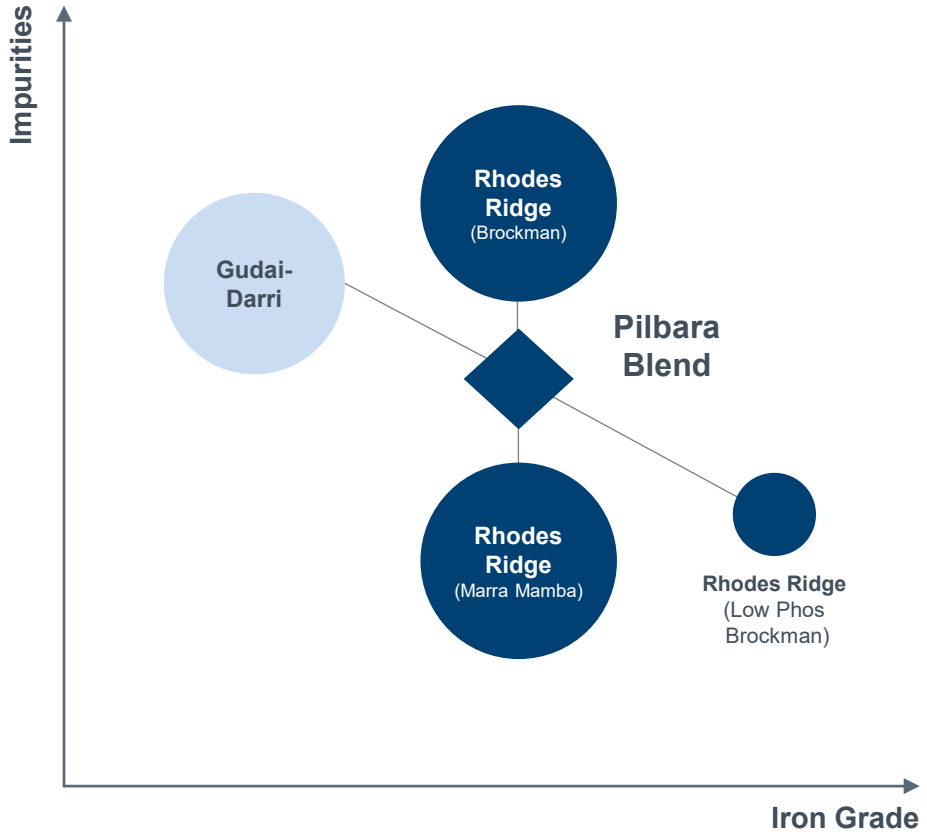
2.9

Reserves

6.1

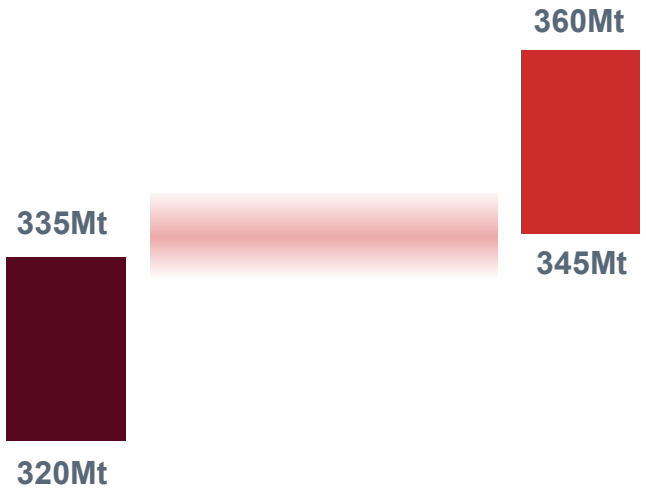
3,750 km²
75km x 50km

Perfect for Pilbara Blend



[1] See supporting references at Slide 3
[2] Rio Tinto owns 45.05% of Simandou Blocks 3 and 4, which contains a Mineral Resource of 2.8Bt at 65.5% Fe. Simandou Blocks 1 & 2 are owned by Winning Consortium Simandou (WCS). UBS 'Global Research and Evidence Lab' dated 25 May 2022 estimated Mineral Resource of ~2.7Bt and Ore Reserve of ~1.8Bt at 65.5% Fe
[3] Based on publicly reported data. Vale's Carajas Resource (Northern System) is sourced from the Form 20-F as filed with the Securities and Exchange Commission on April 14, 2022. Vale reports Mineral Resources exclusive of Ore Reserves and therefore exclusive Mineral Resources have been shown with Ore Reserves for visual comparison purposes

System outlook and guidance



2023 Guidance[1]

Shipments: 320 – 335Mt (100% basis)

Unit costs: $21.0 - $22.5/t (0.70 A$:US$)

Sustaining capital: ~$1.8 billion
Decarbonisation investment: $0.3 billion

Mid Term Guidance[1]

Shipments: 345 - 360Mt (100% basis)

[1] Subject to market and other conditions

Our journey

Commissioned:

Robe Valley & Gudai-Darri

Partnerships:

PKKP remedy and co-management agreements

Modernised the Rhodes Ridge JV with Wright Prospecting

Co-designed mine plan with Yinhawangka for Western Range

JV with Baowu to develop Western Range

Agreements with Yindjibarndi Aboriginal Corporations

Achieved

Operational Performance:

Strong system performance H2

Early benefits of SPS

Ramp up projects

Social licence:

Engagement with communities

Everyday Respect progress

Decarbonsation:

Initial funding for 100MW Pilbara Coastal Solar

Improving

Operational Performance:

Wider and deeper SPS rollout

Next tranche of replacement mines

Decarbonsation:

Progress toward 1GW

Developing

Most valued Iron Ore business:

Best operator

Values based performance culture

Diverse product portfolio, positioned for green steel

Deep and enduring partnerships

Excelling

Rio Tinto

Panel session 2

Best Operator

Arnaud Soirat, Simon Trott, Kellie Parker

Moderated by Isabelle Deschamps

Weipa operations, Queensland

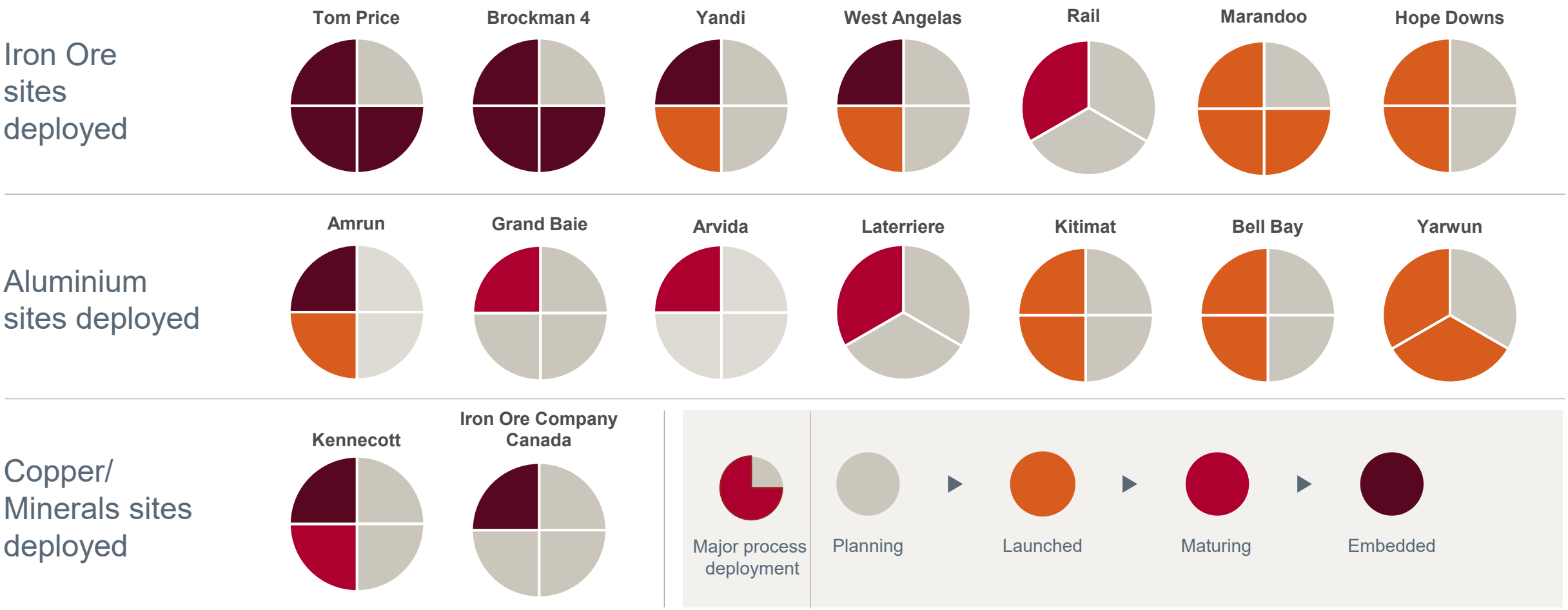
Safe Production System (SPS)

Best operator

Building a lasting competitive advantage with our people. We want to empower them to safely run assets that are in control, capable and performing better than any of our competitors.

Care | Courage | Curiosity

Site-by-site progression: 30 deployments in 16 sites (end of November)



2022 performance uplift at deployment sites

Safety

8% ↑

Year on year improvement in AIFR

People

3% ↑

People Survey scores higher than the rest of their site

Equipment utilisation

5% ↑

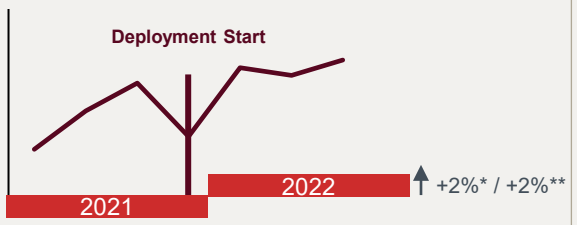
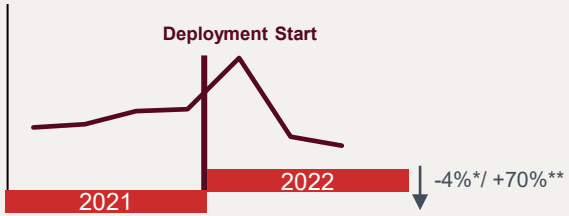
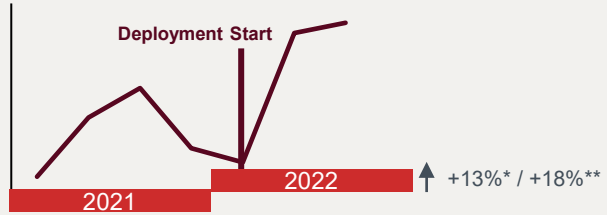
Improved online time when compared to the same period last year

Variability

↓ 7%

Process variability reduction

Improvements across safety, people and productivity

SPS impact	Kennecott concentrator	IOC concentrator	Amrun fixed plant
Safety Practices and training have improved safety* performance *AIFR measured at the asset 	**AIFR** **42%** improvement YTD compared to 2021	**AIFR** **44%** improvement YTD compared to 2021	**AIFR** **29%** improvement YTD compared to 2021
People Our measure of engagement over bi- annual surveys show significant improvements in empowerment across lighthouse sites 	**Employee Satisfaction** **6%** improvement compared to the rest of the site. Strongest in empowerment and inclusion	**Employee Satisfaction** **5%** improvement compared to the rest of the site across collaboration, empowerment and resources	**Employee Engagement** **64%** improvement compared to the rest of the site in employee participation in the people survey
Productivity SPS supports operating time by addressing asset stability and availability 	**Operating Rate** (monthly) 	**Standard Deviation** (quarterly controllable) 	**Operating Time** (quarterly without shipping constraint) 

* Absolute change – from deployment start date (data excludes shipping constraints)
** Improvement change – from deployment start date (data excludes shutdowns & shipping constraints)

Performance uplift across early SPS deployments in Iron Ore

↑ **6%[1]**
at deployed sites
Employee satisfaction

↓ **Up to 46%[1]**
improvement at deployed sites
All Injury Frequency Rate

Tom Price

↑ **19%**
AHS equipment utilisation

↑ **14%**
HG production daily rate

Brockman 4

↑ **33%**
Weekly Total Material Movement

↑ **9%**
Monthly production

2021
Pilots at West Angelas, Yandicoogina

2022
Full deployment at Tom Price and Brockman 4

2023
Further deployments across Mines, Rail, Ports & Ops Centre

Deliver up to 5Mt production uplift in 2023

RioTinto

[1] All metrics relate to Pilbara Iron Ore

Global priorities in 2023

Deployment sites	New sites			Total Sites*
	2021	2022	2023	
Iron Ore	2	5	2-6	9-13
Aluminium	1	6	1	8
Copper	1	0	0	1
Minerals	1	0	1	2
Total	**5**	**11**	**4-8**	**20-24**

Priorities in 2023:

- Rolling out at new sites and going deeper at existing sites where we have already deployed to increase sustainable impact
- Focus on improving asset health and performance to stabilise production variability
- Identify key Kaizens (problem solving opportunities) to address high-priority improvements, with replication across Rio Tinto
- Upskill our people through training programmes

RioTinto

* 43 eligible sites across Rio Tinto

Ivan Vella

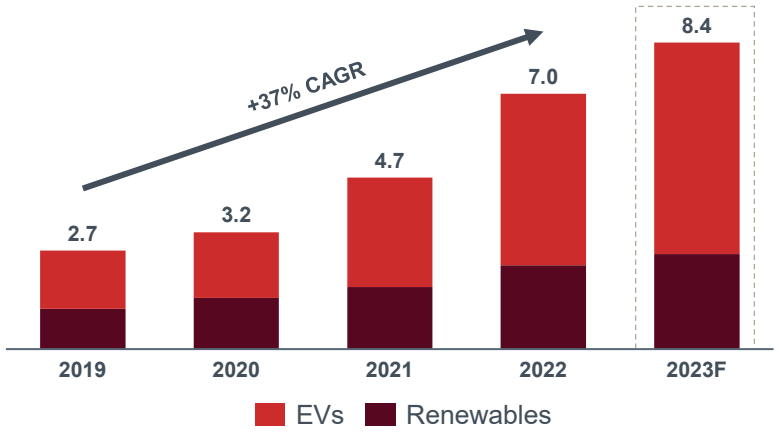
Aluminium

Kemano tunnel, British Columbia

Positioned to meet customers' needs in energy transition

Energy transition demand

Aluminium consumption from green applications
Mt

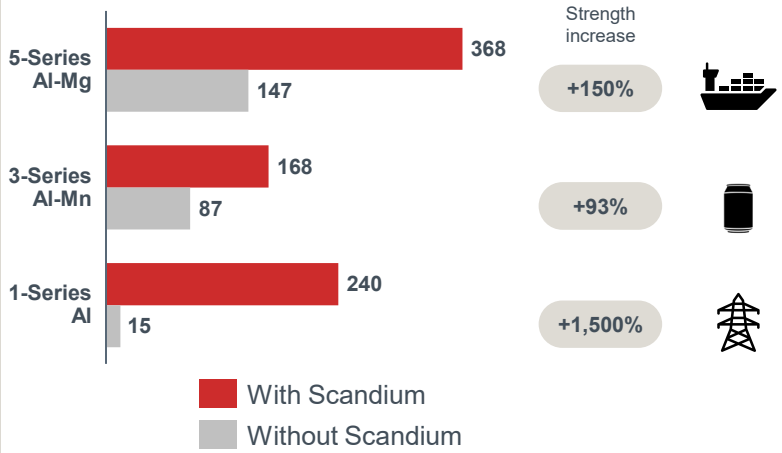


Sources: Rio Tinto, CRU

Energy transition-led demand drives overall growth – 9% of total aluminium demand but over 60% of growth in 2023

Material innovation – Scandium

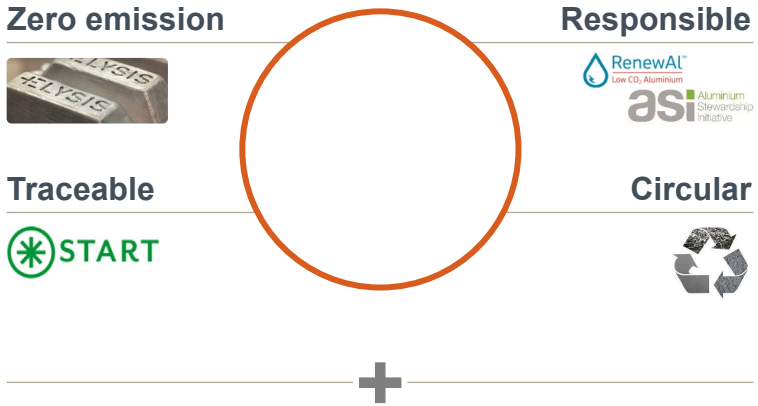
Aluminium yield strength
Mega Pascals, for selected aluminium alloy series



Source: scale-project.eu

Leveraging Rio Tinto's leading Scandium production to develop high strength and high-performance aluminium alloys

Commercial value proposition



Proximity to customers

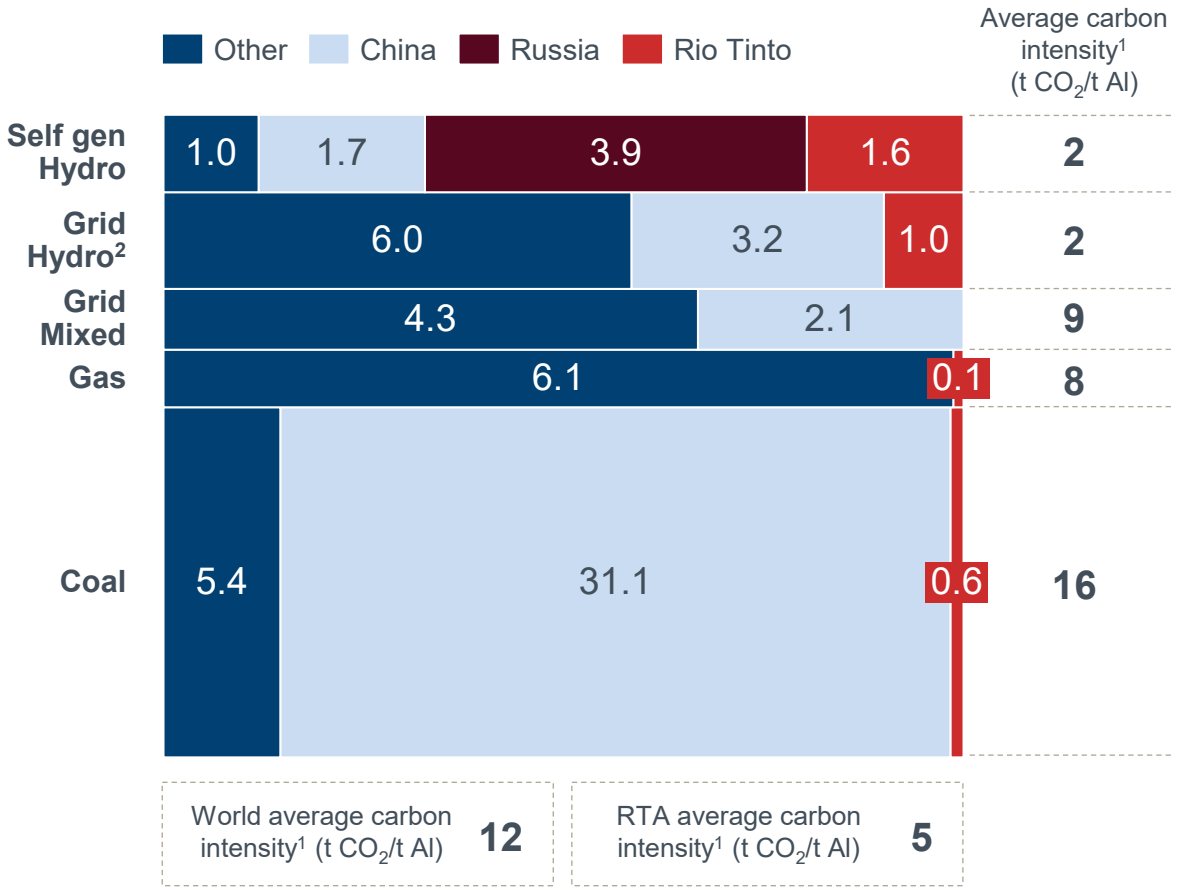
Leading technical support & Alloy development

Aluminium has a key role to play in delivering a net zero world

Privileged low-carbon hydro resources in North America

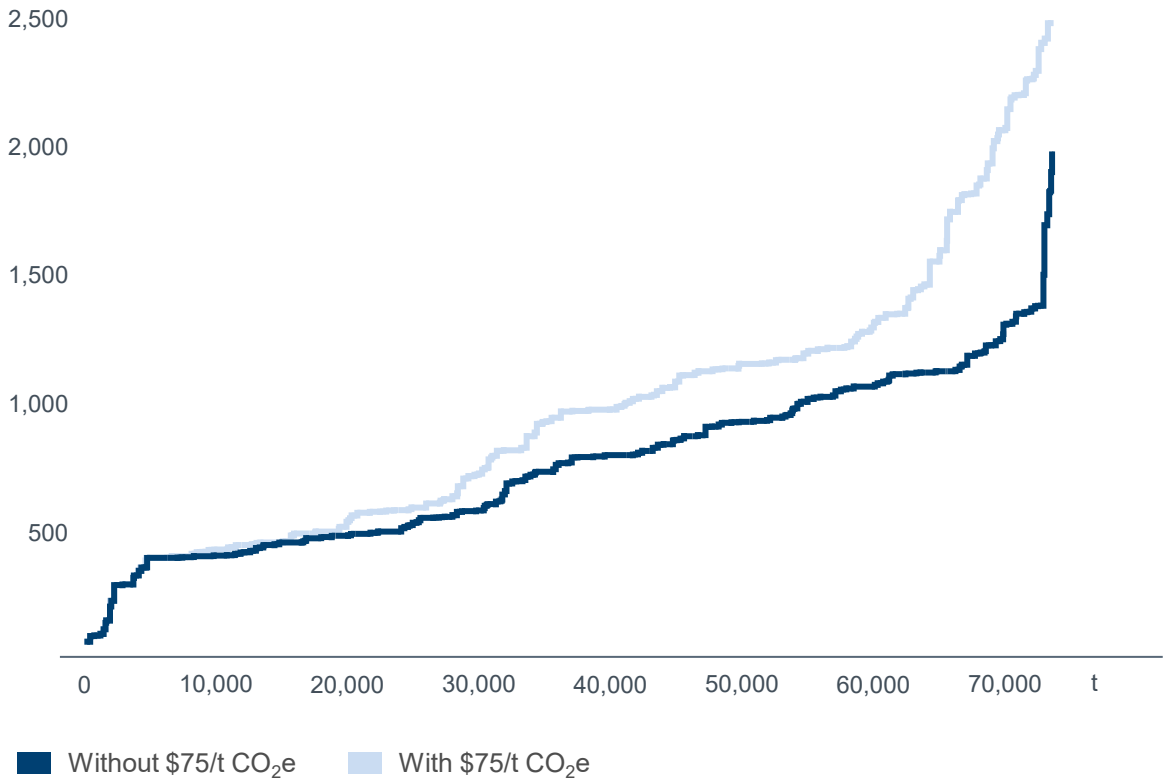
Global aluminum production by energy source

Mt



2023 global aluminium smelters energy cost curve

$/t

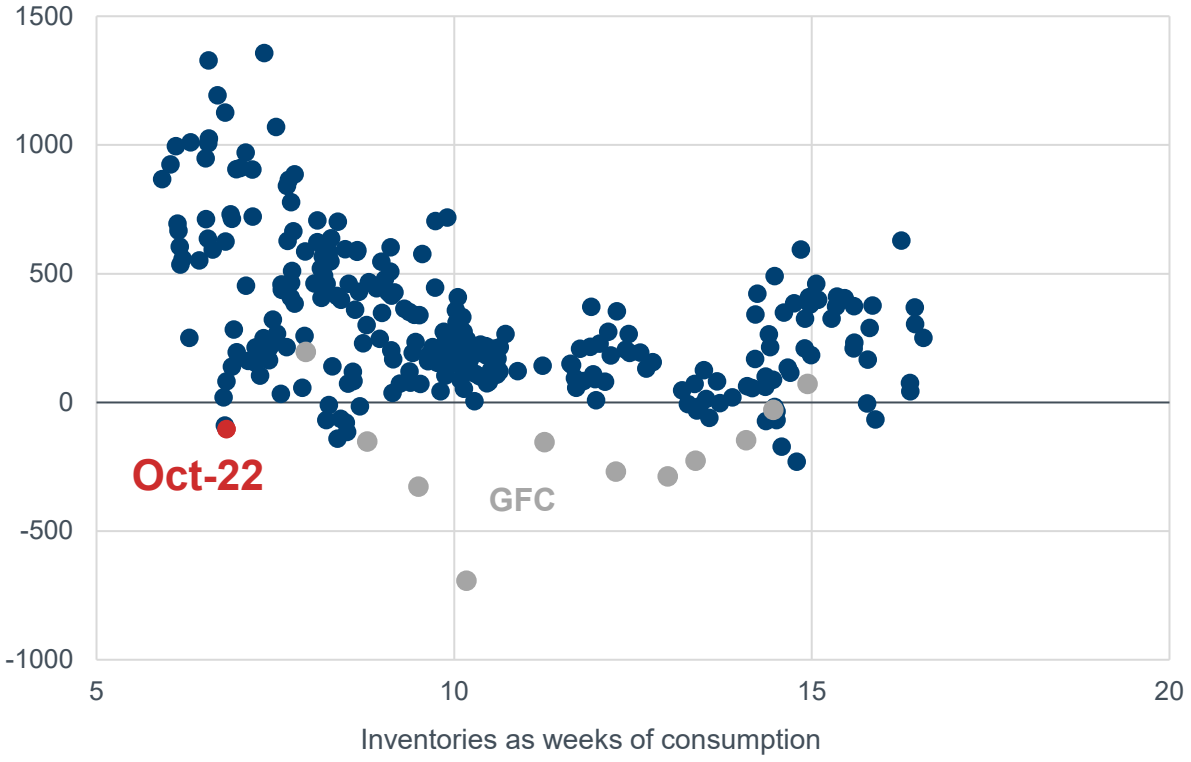


[1] Scope 1 and 2 emissions for aluminium smelting only [2] RT grid hydro including JVs in Canada & New Zealand, plus Bell Bay and ISAL
Sources: Rio Tinto, CRU

Current market conditions are short term and cyclical

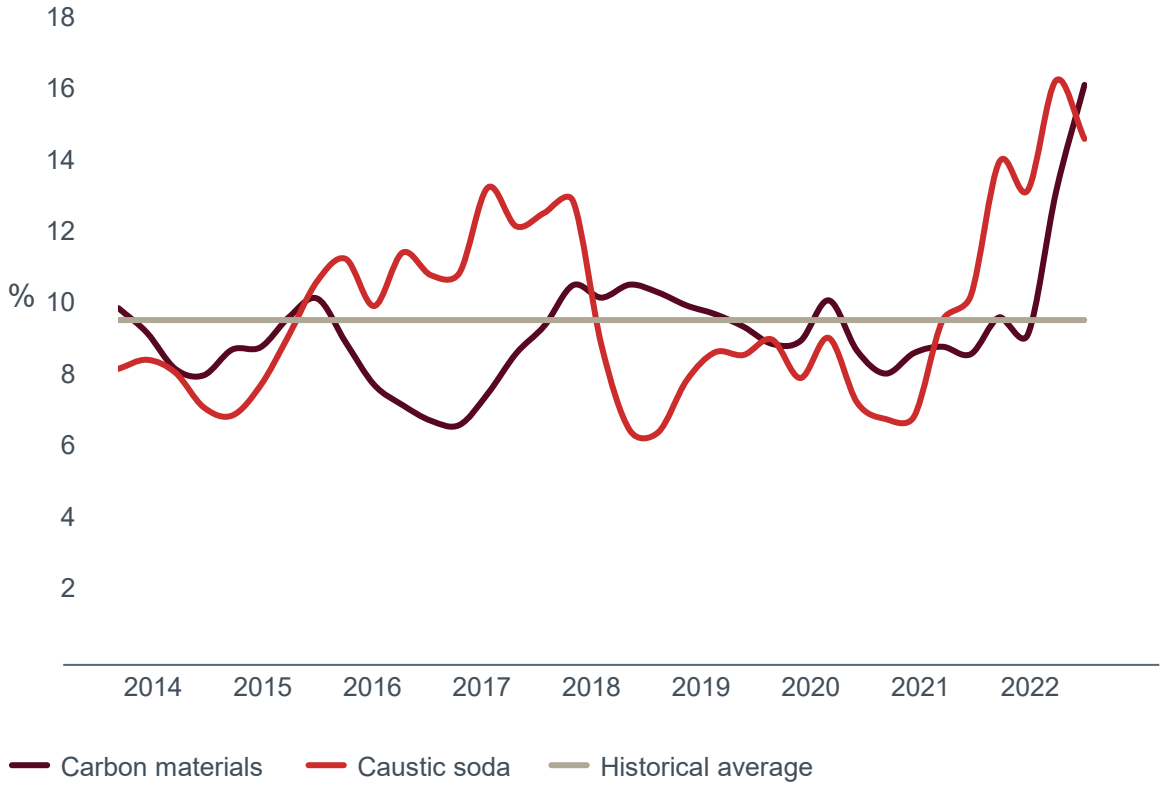
Smelter operating margin and global inventories as weeks of consumption

75th percentile smelter margin, 2022 $/t, 2000-2022 monthly data



Raw materials are high this cycle in relation to LME

Carbon materials and caustic soda costs as percentage of aluminium and alumina prices respectively at typical usage rates



Sources: Rio Tinto Market Analysis, CRU, LME, Rio Tinto Market Analysis, CRU. Grey dots denote Global Financial Crisis

Sustainable competitive advantage through the cycle

Short-term and cyclical market conditions

1
Grow North America low-carbon aluminium

2
Repower Pacific Aluminium smelters

Four Lenses

To think strategically and tactically about our aluminium business

3
Maintain options for third-party bauxite sales

4
Optimise integrated alumina supply chain

Best Operator

Recovery plans | SPS & Productivity | People & Leadership

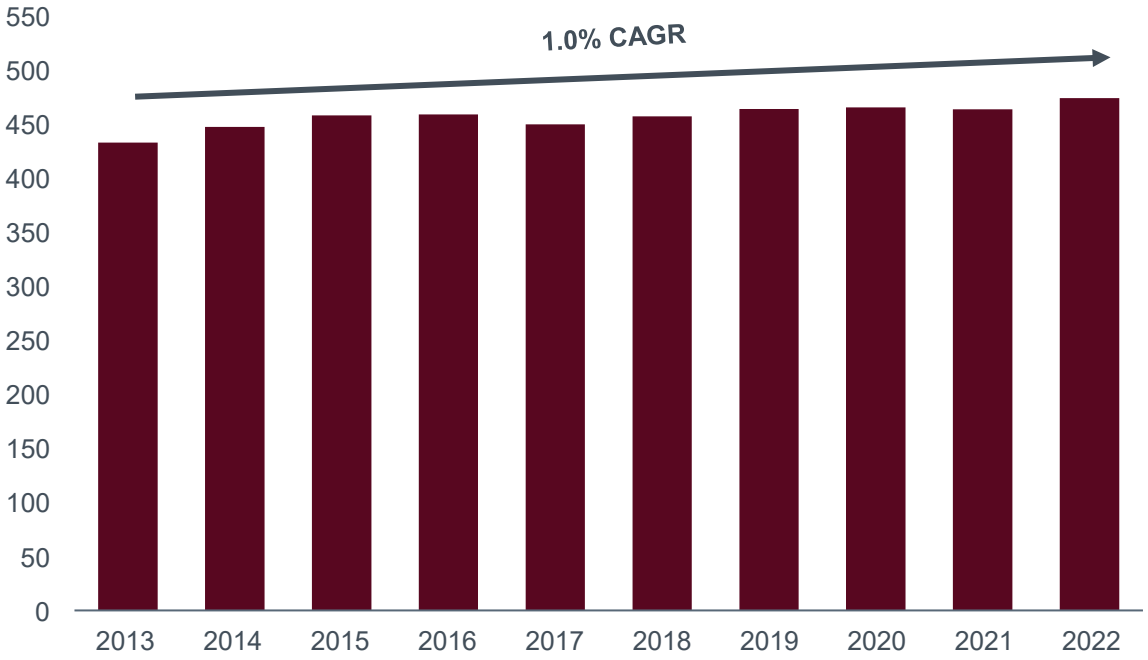
Best Operator focus to protect margins and unlock growth

Alma

Stable performance and continuous production creep

Production

Kt, Rio Tinto equity share



Safe Production System

Grande Baie, Saguenay Lac Saint Jean

Implementation of best practice rituals focused on operations and asset management

Reduction of aborted casting events

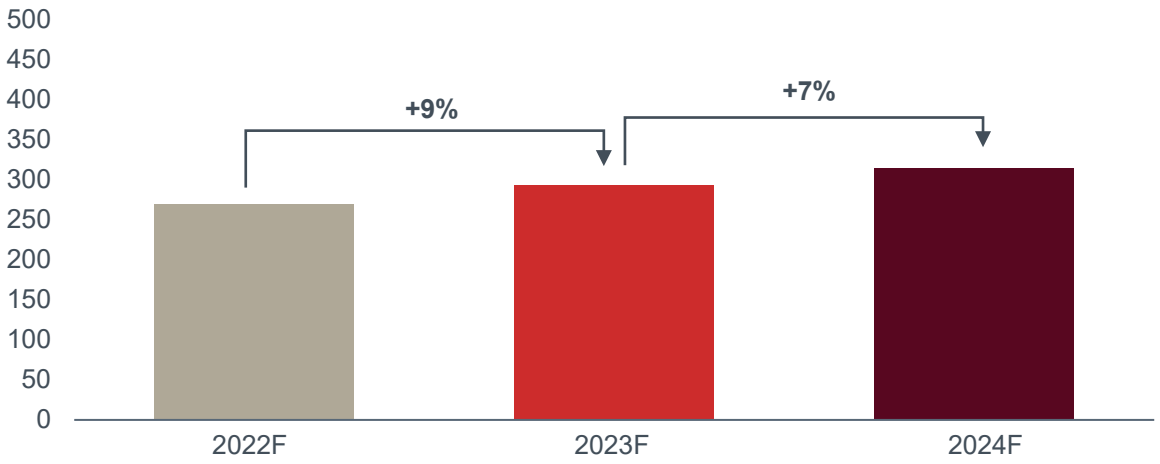
Optimisation of casting furnace filling time reducing delays in casting process

Rolling out end-to-end implementation across Quebec

Returning Boyne and Kitimat to Best Operator

Boyne smelter

Production
Kt, Rio Tinto equity share



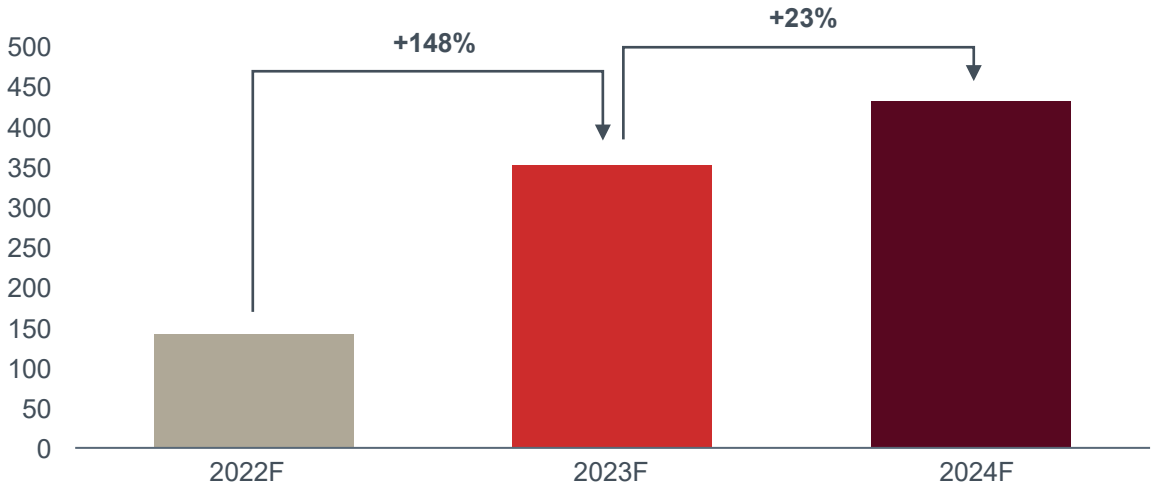
Complete line 3 recovery

Restore overall asset health

Re-establish technical capability

Kitimat

Production
Kt, Rio Tinto equity share



Complete pots restart in 2023

Stabilise and return to best performance in 2024

Complete workforce transformation

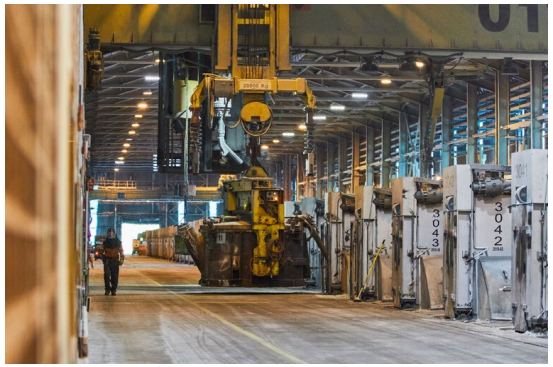
Strengthening our green aluminum leadership

Innovation and Partnerships

Green energy

Repowering coal-based assets in partnership with governments and communities, starting with Boyne smelter

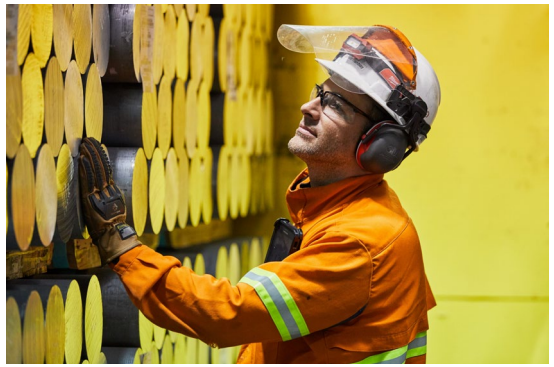
Leveraging hydropower resource in Canada



AP60

Lowest carbon intensity technology available at scale

Supports transition from Arvida smelter closure



VAP and recycling

Arvida and Laterriere recycling projects

Alma billet centre

ELYSIS™

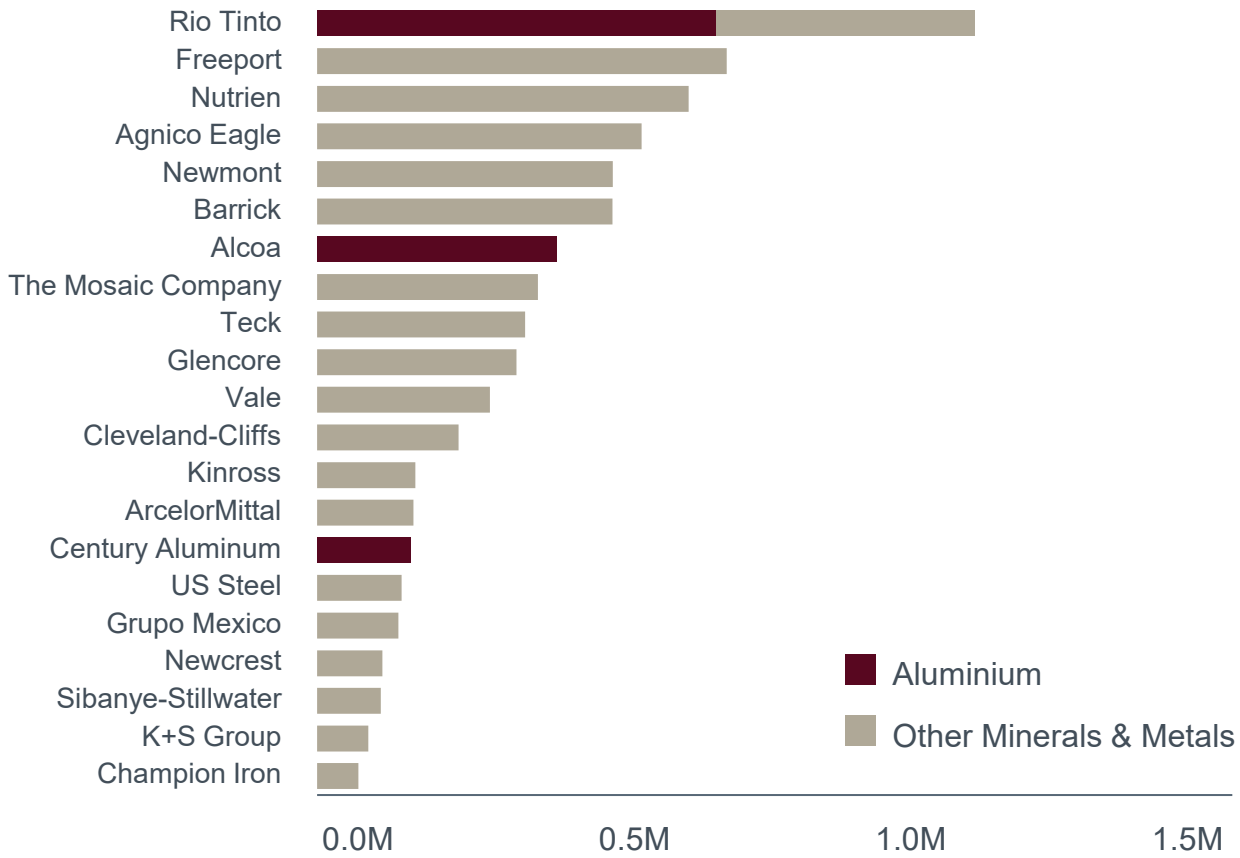
Assessing pathways to accelerate deployment

Shift from carbon to oxygen emissions

Playing a bigger role in North America's energy transition

Largest mining and metal producer in North America

Copper equivalent basis, 2021 actual production*



Rio Tinto has the foundation to grow in North America

Well-positioned industrial sites forming an integrated value chain

Unparalleled hydropower and port infrastructures

Deep customer relationships across aluminium, copper, high grade iron ore, titanium, battery materials and critical minerals

Strong government partnerships

Deep technological and R&D capability (Sorel, Saguenay, Salt Lake City)

* 2021 production in the USA and Canada, aggregated by producing company in copper equivalent terms using long-run consensus prices, for the following minerals and metals: alumina, aluminium, cobalt, copper, gold, iron ore, lead, molybdenum, nickel, palladium, platinum, potash, silver and zinc.
Sources: Rio Tinto Market Analysis

Our aluminium journey

Commissioned:
Laterrière recycling furnace

Under-construction:
ELYSIS 450kA cells

Committed investments:
Arvida recycling centre
Alma billet expansion

New low-carbon partnerships:
Ford and Volvo MoU
AB InBev – Corona / ELYSIS

Achieved

Operational performance:
Kitimat and Boyne recoveries
Alumina refineries stabilisation
SPS deployment

Social licence:
Partnerships with governments and First Nations

Development:
Capital intensity

Improving

Low-carbon growth:
AP60 expansion
Unlocking green energy
ELYSIS deployment model

Decarbonisation:
Boyne repowering
Alumina new technology pilots

Developing

Industry leadership:
Industry leader in providing the green aluminium our customers need, with favourable position in the North American market

Excelling

Panel session 3

Excel in Development

Mark Davies, Bold Baatar, Simon Trott

Moderated by Kellie Parker

Oyu Tolgoi underground, Mongolia

Strengthening our partnership in an attractive investment destination

- Mongolia remains highly prospective for resources, with a young, resilient and skilled population
- January agreement delivered opportunity to reset relationship and commitment to continued dialogue and partnership
- Reforming, Pro-FDI Government focused on long-term development principles, including New Economic Revival Policy
- Both sides committed to avoiding future misalignment and delivering OT ramp up
- 20,000 employees, 97% Mongolian workforce – average age of 28 and over 500 national suppliers
- Made in Mongolia campaign of local suppliers; and continued growth of MBSSC delivering innovative group-wide shared services
- Investment in long term Mongolian development – investing $50m on South Gobi Town Development

Strengthening policy environment, growing FDI

Political stability and government Reform Agenda

Talented local workforce

Supplying US-made copper and critical minerals

World-class producing assets with significant growth pipeline

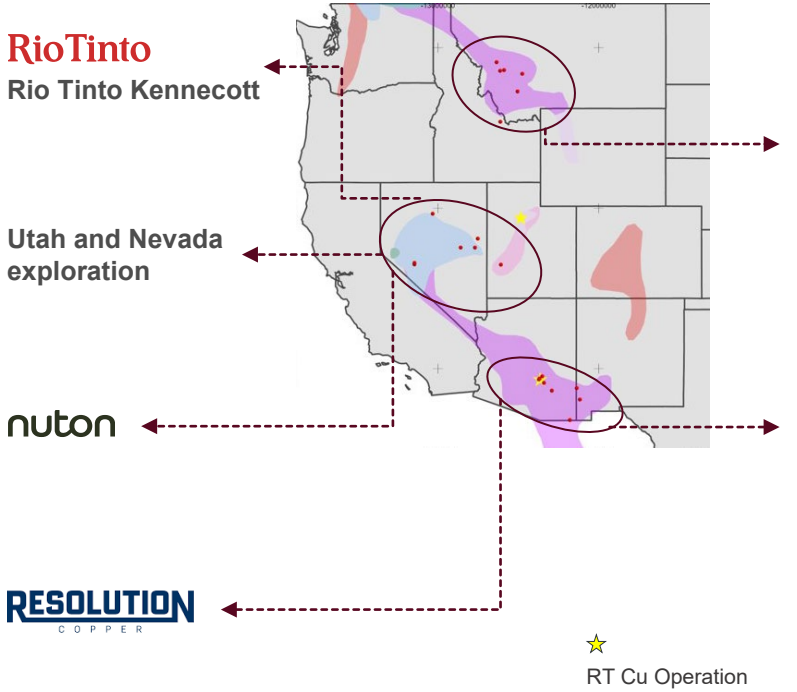
Market leading low carbon, low water leaching technology

Advantaged exploration portfolio leveraging +100 years of fieldwork

Focused on domestic US production

- Rio Tinto operates one of only two operating smelters in the US – **Kennecott,** a key asset in the drive for the increasing US domestic supply of copper and critical minerals (including Tellurium)
- Our **Nuton** technology, the product of 30 years of in house R&D, provides the potential to produce refined copper from legacy, existing and new mines using nature-based leaching technology with low water, carbon and energy intensity
- **Resolution**, one of the largest undeveloped copper deposits globally will provide 25% of America's copper once built. Permitting progress continues to be made and remains a priority focus for 2023

An exciting future for Rio Tinto and American Copper



Montana exploration

Arizona and New Mexico exploration

Peter Cunningham

Capital allocation and financials

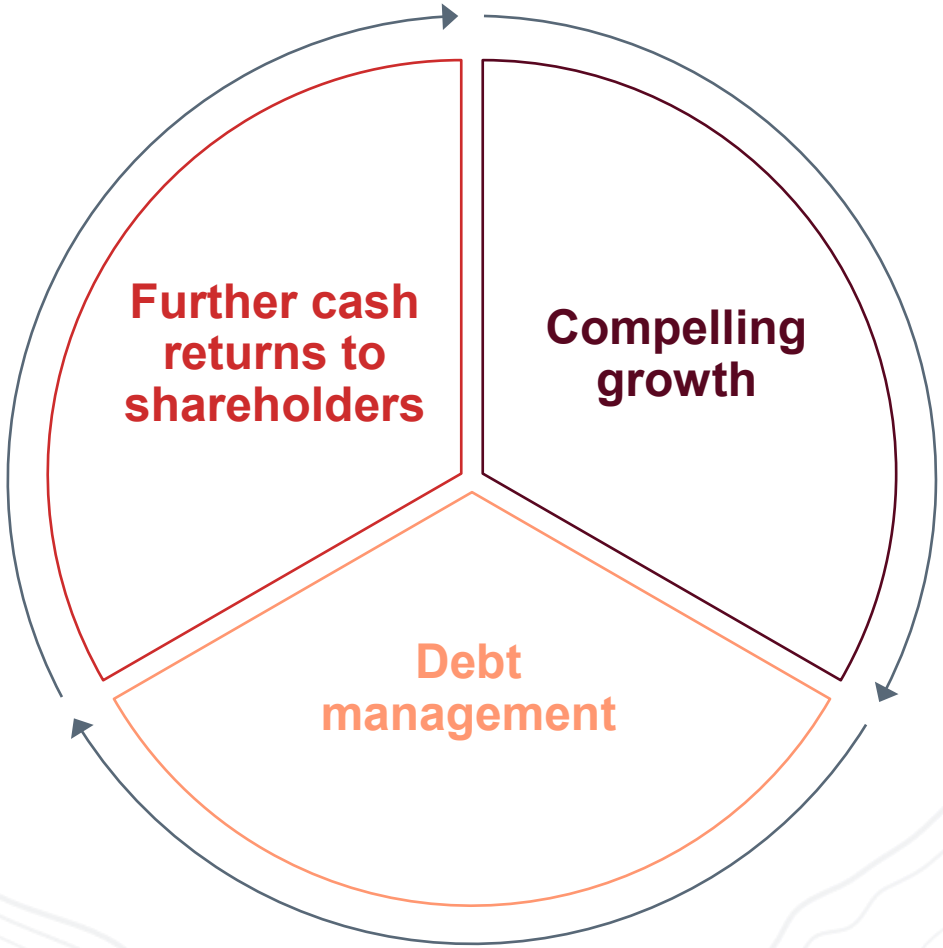
Brisbane Integrated Operations Centre

Disciplined allocation of capital remains at our core

1 **Essential capex**
Integrity, Replacement, Decarbonisation

2 **Ordinary dividends**

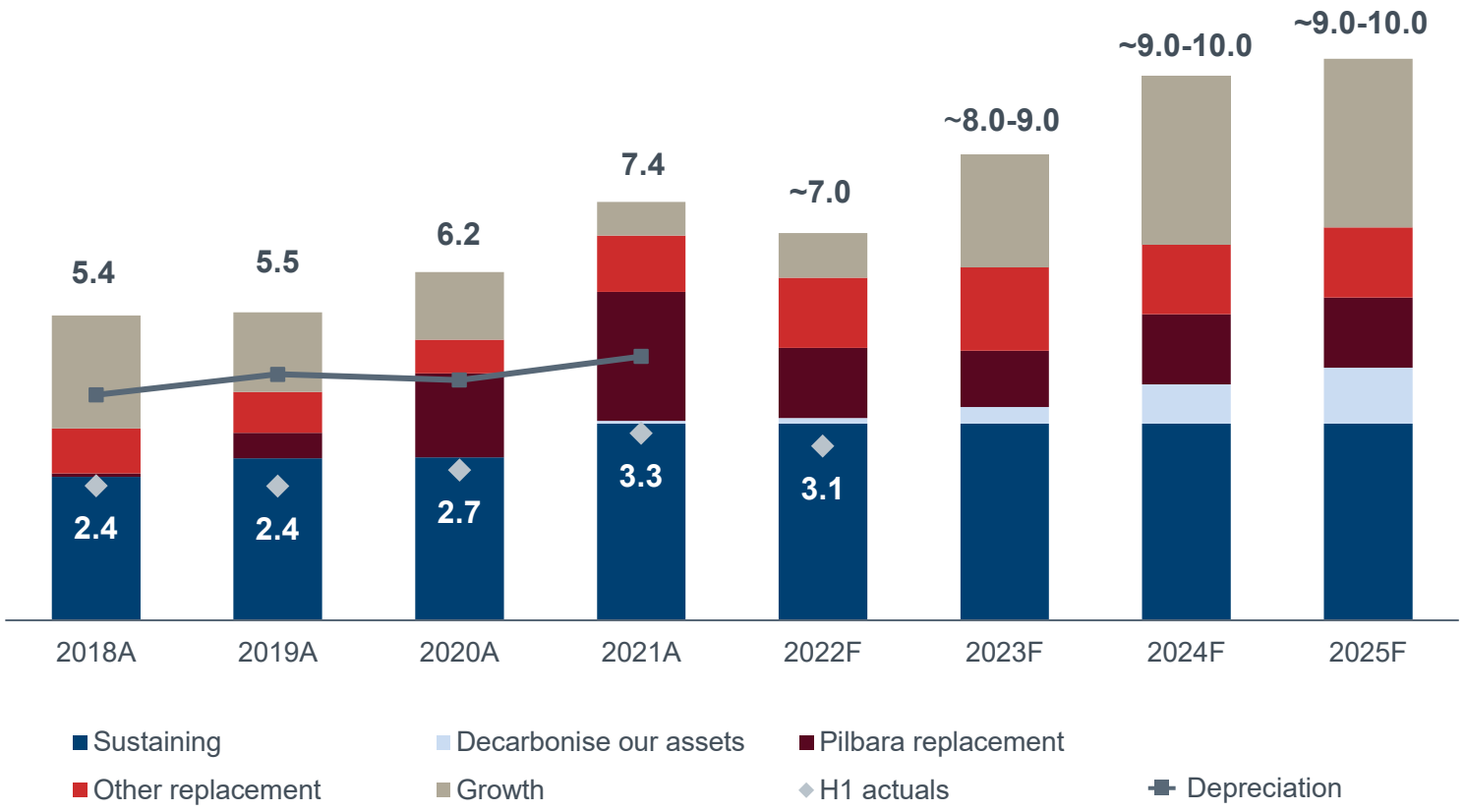
3 **Iterative cycle of**



Disciplined investing for growth and decarbonisation

Capital expenditure profile (Rio Tinto share)

$billion



Lowered original 2022 guidance due to stronger US dollar and rephasing of decarbonisation and development projects

Ambition to grow and decarbonise reflected in 2024-25 capex of ~$9-10 billion including up to $3 billion in growth investment, depending on opportunities

Direct decarbonisation investment of ~$7.5 billion* to 2030, predominantly in second half of decade. Long term contracts and opex in addition

Average annual sustaining capital of ~$3.5 billion

Replacement capital remains $2-3 billion per year

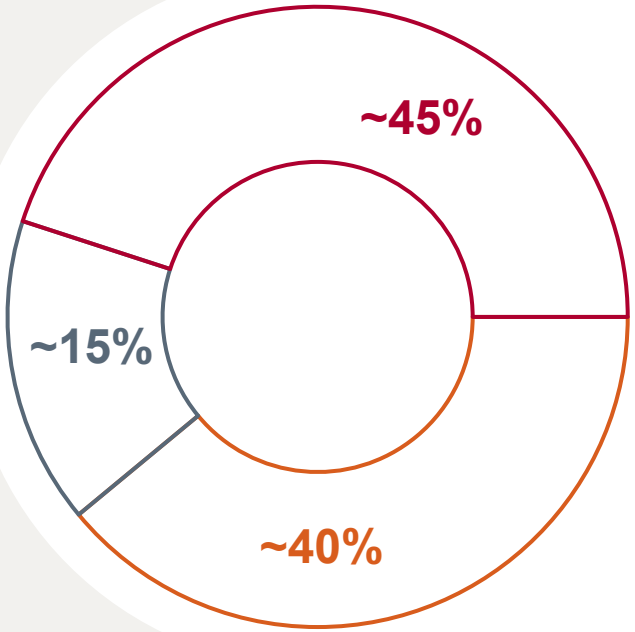
* Estimated investment as of 30 June 2022 (Rio Tinto share of capital investment)

Ambition to invest up to $3 billion in growth per year

Rio Tinto share of growth capital

Represents the Group's economic investment in key growth projects through 2023-2025

Introduced to better represent our share of investment for capital projects which are jointly funded with other shareholders (e.g. Simandou) – better reflecting our approach to capital allocation



Committed capex

Oyu Tolgoi

Advanced projects

Simandou

Studies progressing towards approval in period

Rincon and other lithium

Resolution Copper

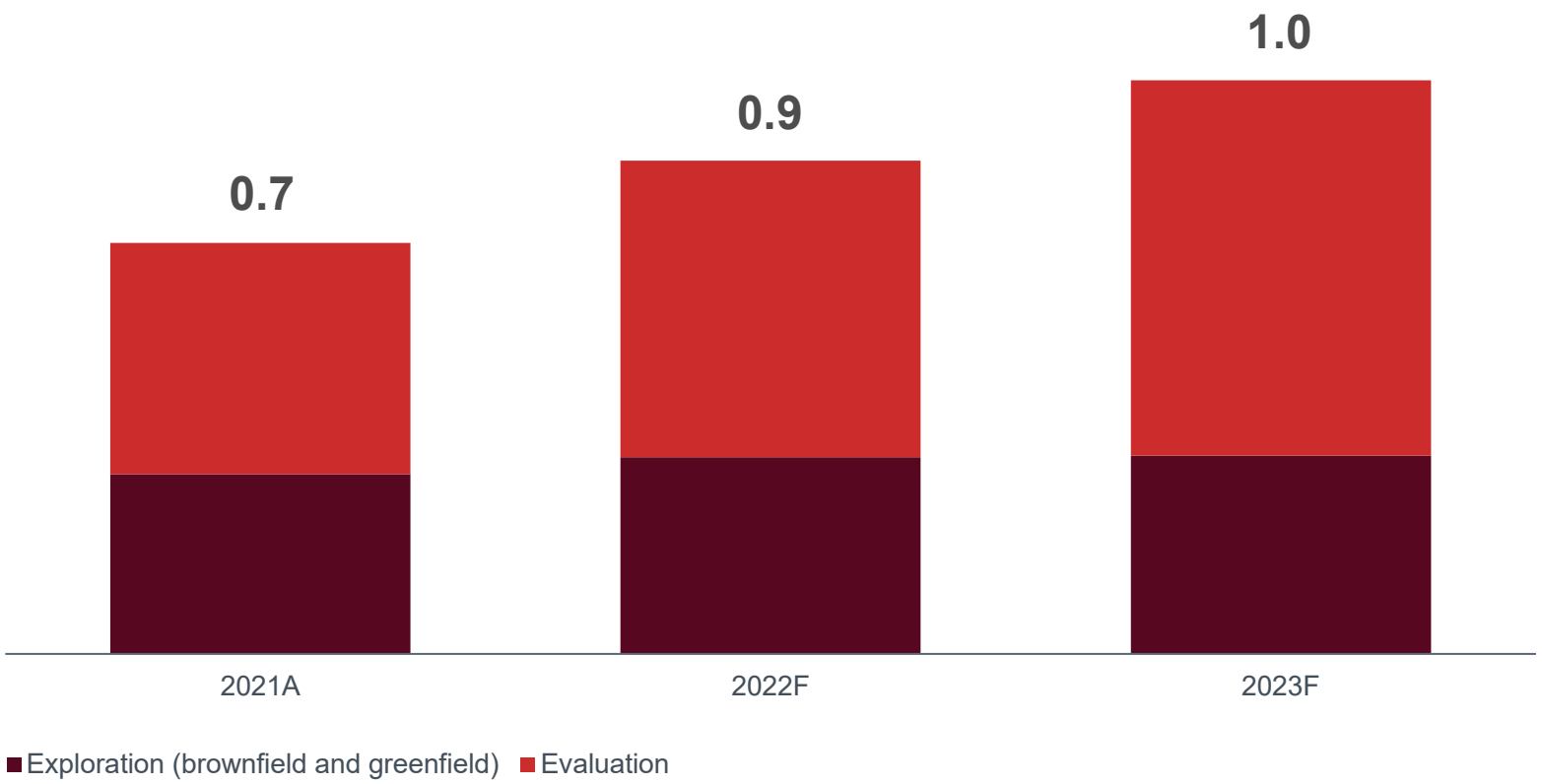
Kennecott underground

AP60 expansion

Building a portfolio of options

Exploration & Evaluation (E&E) spend

$billion

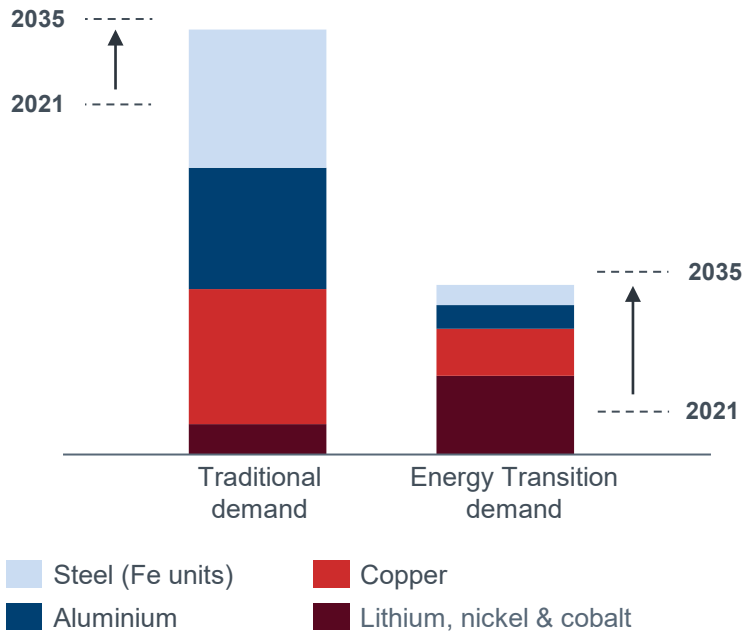


- Expenditure rising in line with development of project portfolio
- Includes $250 million per year of central greenfield exploration
- Fully expensed via the P&L
- Progressing studies on Rincon, Resolution, Kennecott underground, Pilbara replacement and Rhodes Ridge in 2023
- Spend in addition to E&E in 2023 includes $400 million in R&D and $170 million in decarbonisation studies expenditure

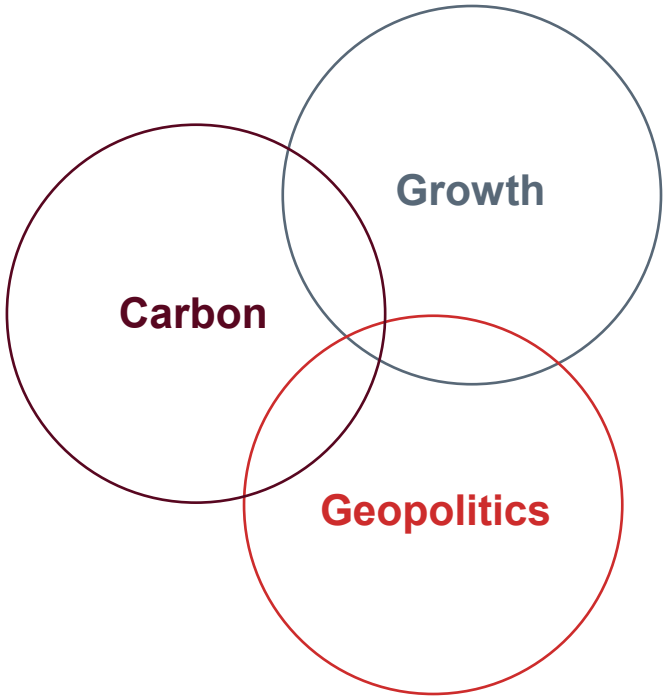
Energy transition drives additional long-term value

Total commodity demand by 2035*

<2°C scenario
Copper equivalent basis



Key drivers of future scenarios



Growth options

(up to $3bn / annum)

Li
- Rincon
- Other Lithium

Cu
- Oyu Tolgoi
- Kennecott
- Resolution
- Winu
- Nuton™

Al
- ELYSIS™
- AP60

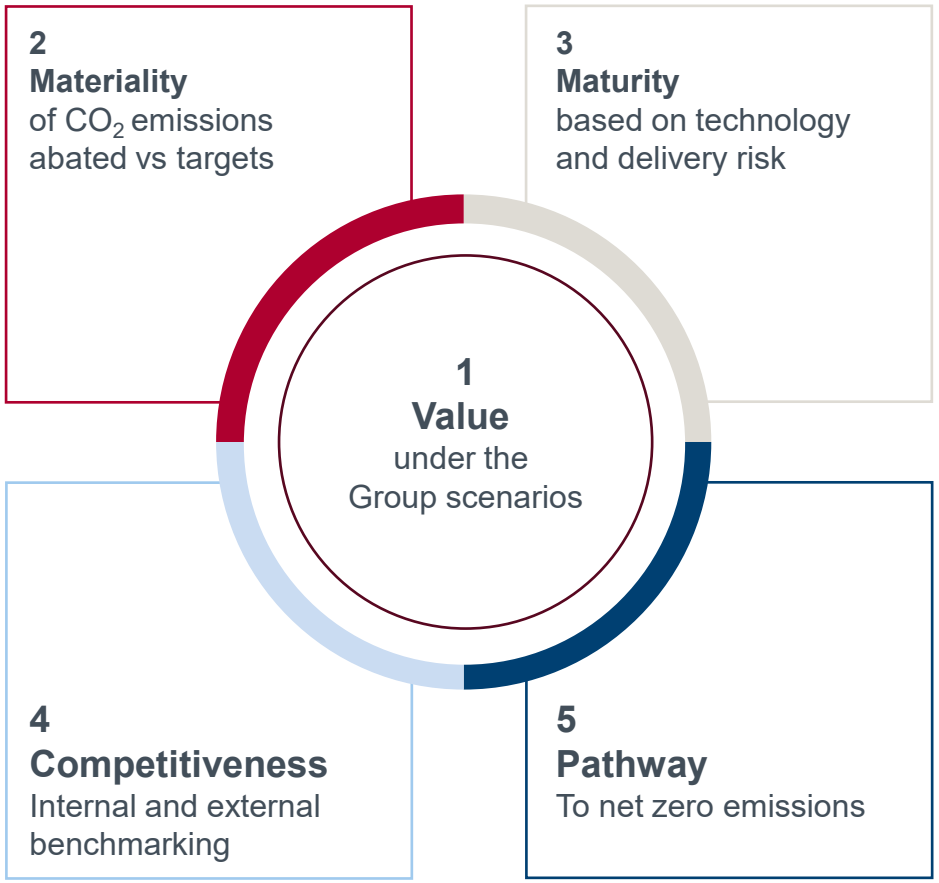
Fe
- Simandou
- Rhodes Ridge

Growth options resilient to future scenarios, whilst maximising exposure to upside from the energy transition

* Copper equivalent demand uses average annual prices from 2017-21 with finished steel demand in iron ore equivalent units

Robust and broad-based approach to decarbonisation

Our approach to decarbonisation evaluation



Decarbonisation components

	2030 CO_2e emission abatement %[1]	$7.5bn Capex %
1. Commercial solutions - Repowering Pacific smelters - Grid connected renewables (RBM, Kennecott)	~40%	0%
2. Capital solutions: with a carbon price of -$50/t to +$50/t - Pilbara renewables: 1GW Phase 1 (234MW + storage) - Alumina process heat (QAL double digestion)	5-10%	~15%
3. Capital solutions: with a carbon price of >$50/t to <$100/t - Alumina process heat (Full electric conversion[2]) - Minerals processing (Electric boilers)	~20%	~15%
4. Capital solutions: Pilbara renewables 1GW Phase 2 system build out (with a carbon price <$50/t) - Renewables expansion & investment in transmission infrastructure to support fleet electrification / full decarbonisation	~5%	30-40%
5. Solutions under review - Diesel (fuel alternatives) - Alumina process heat - Minerals processing	15-20%	TBD[3]
6. Nature-based Solutions[4] - High-quality projects on or near our assets	~5-10%	5-10%

[1] Reduction from closure of operations and replacement with lower carbon emission is expected to contribute up to10% of abatement reduction to 2030, new projects will need to be carbon neutral or emissions mitigated elsewhere in the portfolio. [2] The electrification of the boilers will require new commercial renewable energy contracts as well as capital. [3] Additional capital spend required to meet abatement target is under continual review, current analysis indicates total spend unlikely to exceed $7.5 billion. Uncertainty remains to the timing of availability of scale technology solutions for HME and logistics, and limited savings have been built into the plan for diesel solutions before 2030. [4] Nature-based Solutions projects are expected to result in CO_2 removals and avoided emissions.

Value accretive decarbonisation at a modest carbon price

Renewables

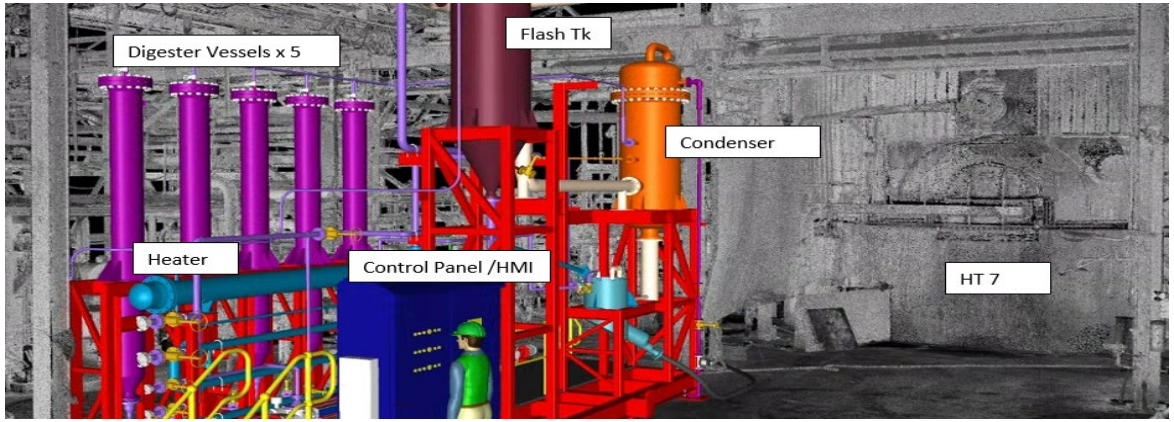
Pilbara: Phase 1 – solar plus on-grid battery storage

Value accretive at ~$40/t carbon price

- 200MW solar plus 200MWh of on-grid battery storage solutions delivered 2023-26
- Capex $0.6 billion
- Builds on 34MW already installed at Gudai-Darri. Long lead investment approved for 100MW - Pilbara Coastal Solar
- 6PJ of annual gas displacement by end 2026, delivering gas savings of ~$55 million pa at current prices
- Abatement reduction of ~300kt pa CO_2e emissions, upside based on tracking rather than fixed assembly for some assets

Alumina process heat

QAL double digestion*

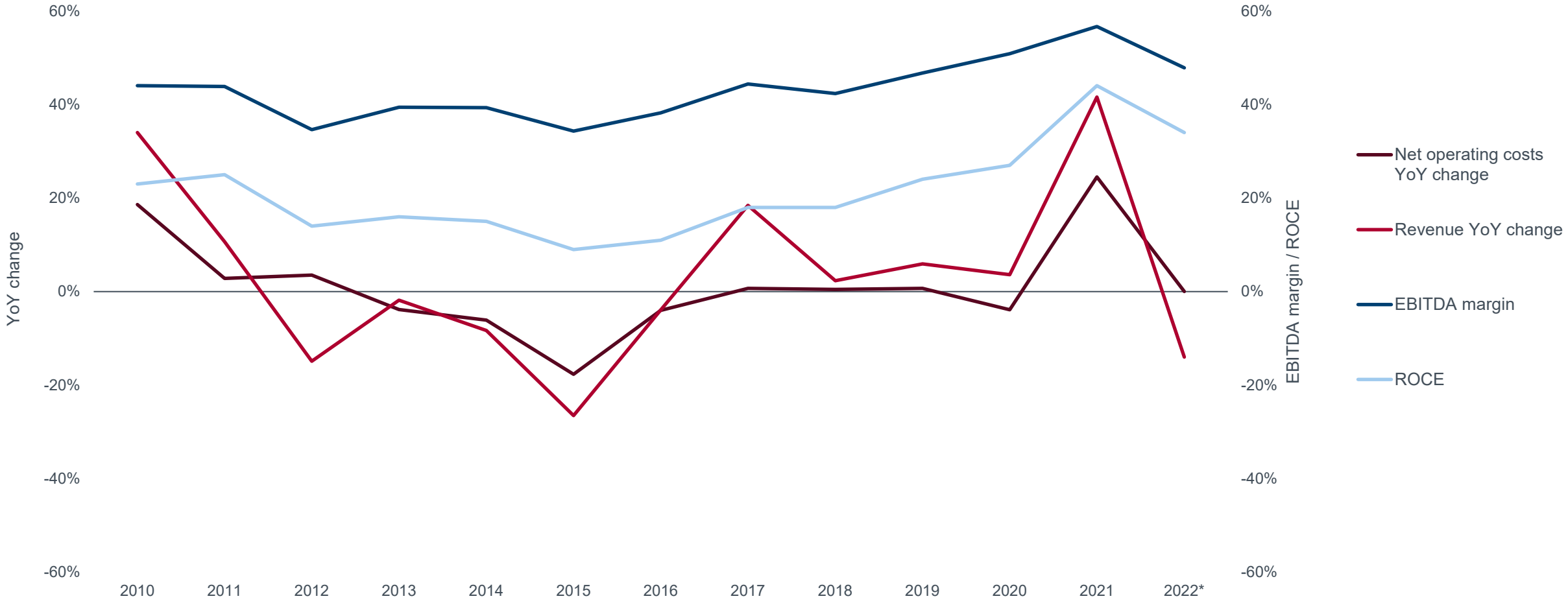


Value accretive at zero carbon price

- Energy efficient digestion process
- Capex $0.3 billion
- ~$80 million pa opex cost saving by reducing bauxite, raw material and energy costs
- Abatement reduction of ~350kt CO_2e emissions
- 2023 pilot plant; replication opportunity at Yarwun

* All QAL double digestion metrics on 100% basis.

Attractive EBITDA margin and ROCE throughout the cycle



* 2022 based on consensus

Balance sheet is strong

Disciplined approach is unchanged, we intend to maintain it throughout the cycle

Balance sheet strength is an asset. Offers resilience and creates optionality

Commitment to minimum A Investment Grade rating through cycle

Moody's: A2 (stable), S&P: A (stable)

Our financial strength allows us to simultaneously:

Reinvest for growth (up to $9-10 billion per year in total capex depending on opportunities)

Accelerate our own decarbonisation ($7.5 billion to 2030, long term contracts + other indirect investment)

Continue to pay attractive dividends in line with our policy (consistent six-year track record)

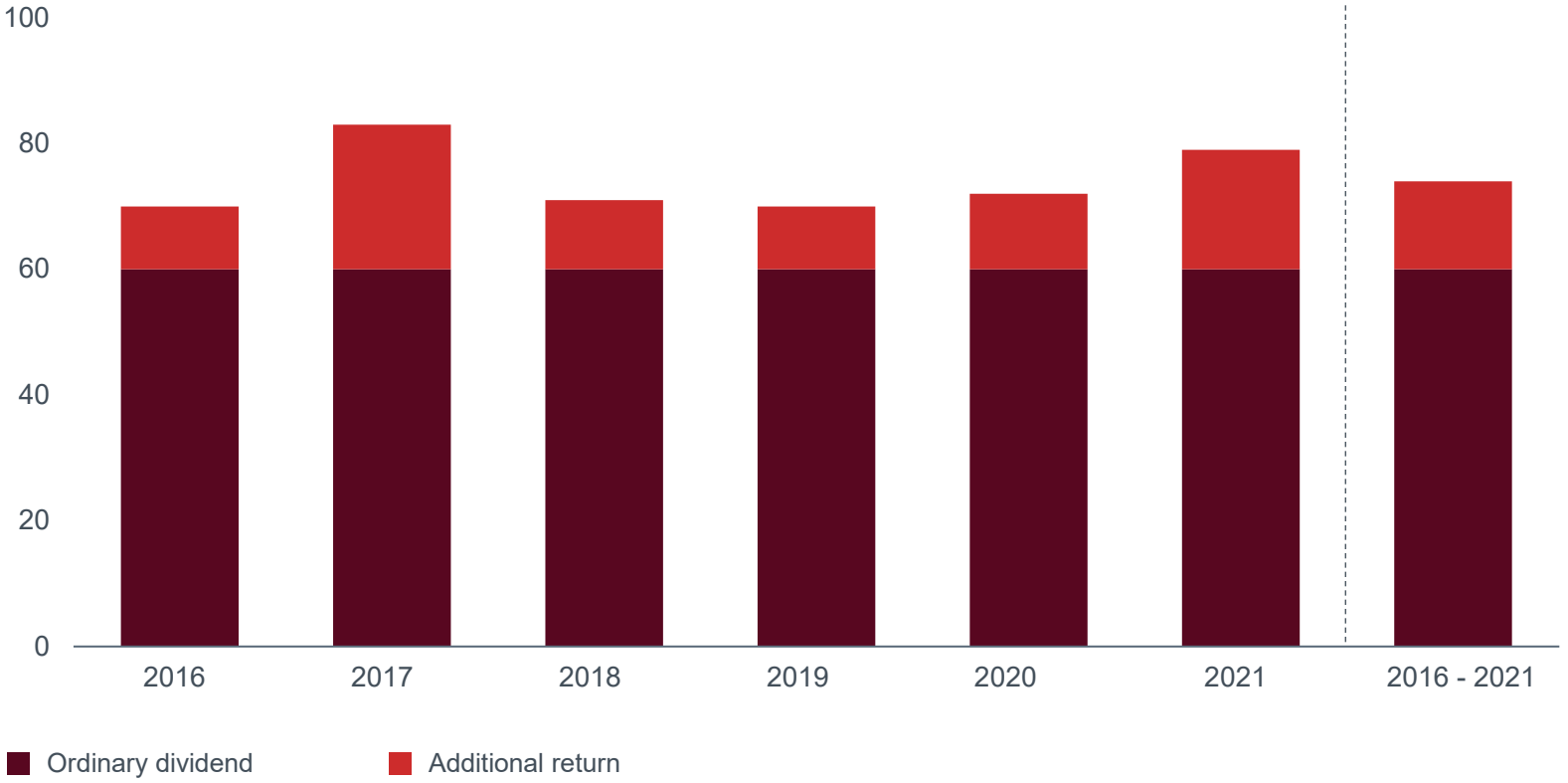
$billion	2022 H1	2021 FY
Net cash generated from operating activities[1]	**22.2**	25.3
Capital expenditure[1]	**7.2**	7.4
Dividends paid[1]	**16.5**	15.4
Net cash (debt)	**0.3**	1.6
Cash and liquid resources	**13.7**	15.2
Revolving credit facility (5 year maturity)	**7.5**	7.5
Net (cash) debt/Underlying EBITDA[1]	**-0.01x**	-0.04x
Gearing	**-1%**	-3%
Weighted average debt maturity	**10 yrs**	11 yrs

[1] Rolling 12 months

Attractive dividends remain paramount

Shareholder returns[1] of 40-60% of underlying earnings on average through the cycle

Pay-out ratio (%)



Consistent six-year track record of shareholder returns

Our second highest interim dividend ever in 2022 ($4.3 billion)

60% average pay-out on ordinary dividend over the past six years

74% average pay-out in total over the past six years

[1] Excluding divestment proceeds returned to shareholders

We will maintain our capital discipline

Achieved

- Attractive return on capital
- Resilient cash flows through the cycle
- Capital discipline

Improving

- Replicate best demonstrated operating performance
- Generate returns on R&D and Exploration & Evaluation spending
- Generate options for growth in materials enabling the global energy transition
- Decarbonise our assets

Developing

- Exceed best demonstrated operating performance
- Delivering value-adding growth
- Help our customers decarbonise their operations

Excelling

- Best in class operating performance
- De-risked our cashflows by accelerating our own low-carbon transition
- Broad suite of growth options
- Portfolio leveraged toward the energy transition

Attractive shareholder returns, underpinned by a strong balance sheet

Rio Tinto

Appendix

Product group level guidance

	2023 Production Guidance
Iron ore shipments	320 – 335Mt[1] (100% basis)
Copper	
Mined Copper	550 – 600kt
Refined Copper	180 – 210kt
Aluminium	
Bauxite	54 – 57Mt
Alumina	7.7 – 8.0Mt
Aluminium	3.1 – 3.3Mt
Minerals	
TiO_2	1.1 – 1.4Mt
IOC pellets and concentrate[2]	10.5 – 11.5Mt
B_2O_3	~0.5Mt
Diamonds	3.0 – 3.8m carats

	2023 Unit cost guidance[3]
Pilbara Iron ore ($/tonne)	$21.0 – $22.5
Copper C1 (US cents/lb)	160 – 180

RioTinto

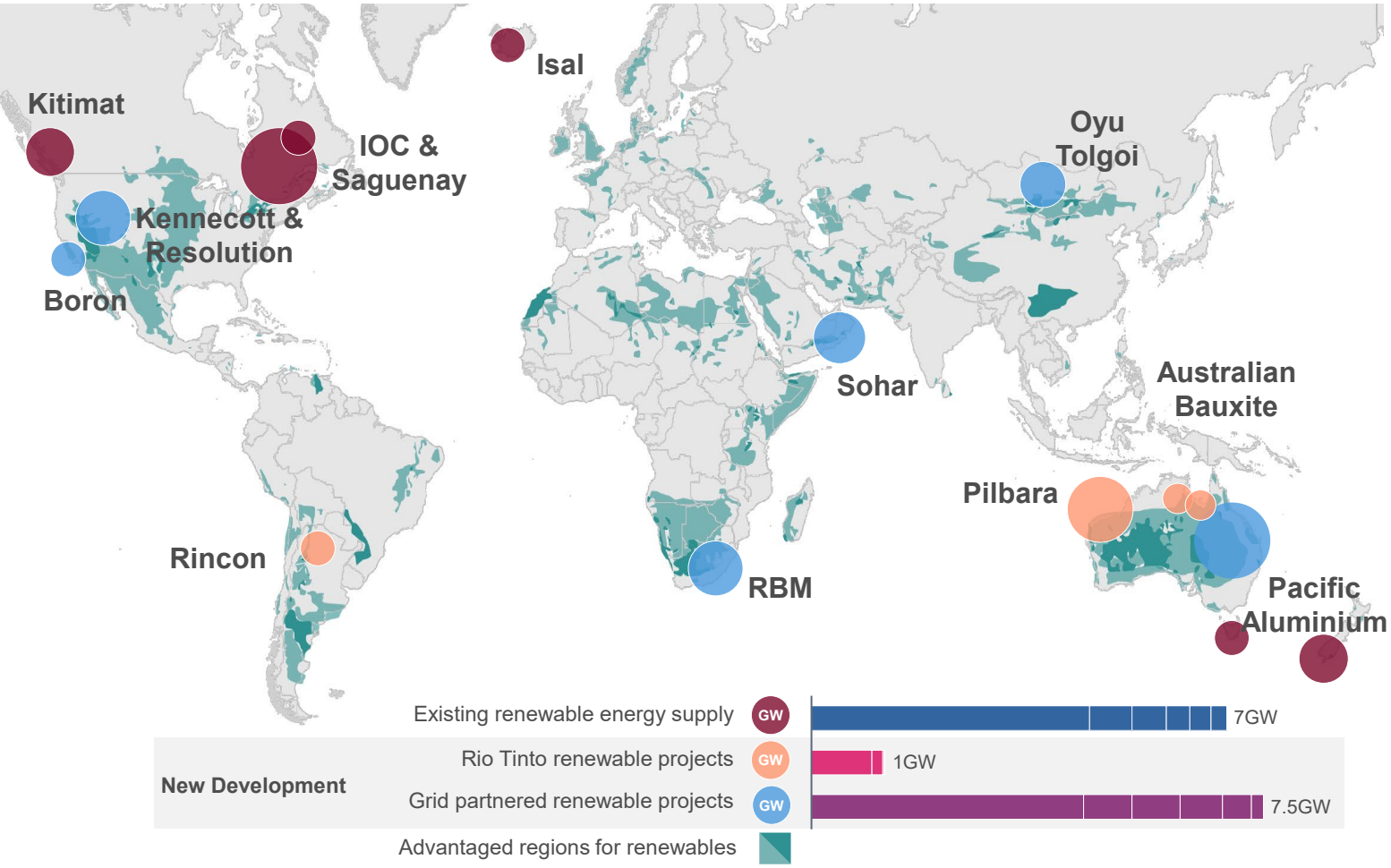
[1] Pilbara shipments guidance remains subject to risks around commissioning and ramp-up of new mines and management of cultural heritage
[2] Iron Ore Company of Canada [3] FY23 guidance is based on A$:US$ exchange rate of 0.70 and excludes COVID-19 response costs

Decarbonisation abatement programmes

Programme	Description & Key Sites	Funding mechanism	Example project - Economics
Pacific Operations Repower	**Renewables: smelters** Boyne | Tomago	- Long-term market contracts - Government partnerships	- Commercial solutions achieved through government partnerships and long-term contracts - Assets will need to remain competitive
Renewables	**Solar & wind renewables** Pilbara | Weipa QMM | Kennecott | RBM	- Capital - Build own operate - Long-term market contracts	- Phase 1 – 200MW solar + 200MWh of on-grid battery storage is value accretive at a carbon price of <$40/t driven by $55 million reduction in gas displacement costs at current prices
Diesel	**HME & Diesel switching** Ph I: Bio-fuels Ph II: Fleet electrification Pilbara | IOC	Capital: - Land acquisitions (non-edible feedstock) - HME	- Bio-fuels: comparable cost to diesel* & de-risking of technical risk in fleet electrification - Diesel cost savings post fleet electrification
Alumina process heat	**Electrification of boilers** **Process & energy efficiency** **H_2 calcination – replacement** Vaudreuil | QAL | Yarwun	- R&D - Capital	- QAL double digestion is value accretive at zero carbon price driven by reducing bauxite, raw material and energy costs - A subset of projects are value accretive at a carbon price of $50/t to 100/t
Mineral processing	**New technologies** **Electrification of boilers** IOC | RTIT | Borates	- R&D - Capital - Government / industry partnerships	- IOC steam plant fuel reduction - 40MW electric boiler conversion is value accretive at a zero carbon price - Technology and economics remain progressing on a number projects - The electrification of the boilers will require new commercial renewable energy contracts as well as capital
Aluminium anodes	**ELYSIS™ technology** All smelters	- R&D - Capital	- Commercial scale technology from 2024 - Value generation through scale-up later
Nature-based Solutions	**High quality offsets** 8 large scale sites	- Capital land acquisitions - Operating costs	- Development costs of high-quality projects on or near our assets are currently estimated at $20-50/t CO_2e, the range reflects varying project types and landscapes

* At our Boron site due to Californian subsidies.

Rio Tinto Energy Development is dedicated to developing and partnering for renewables



45 energy industry professionals recruited to focus solely on delivering new renewable supply to Rio Tinto's operations

Globally resourced team ensures industry best practice is delivered across all our sites

No one size fits all approach – optimise for security, LCOE, capex, ROCE, NPV

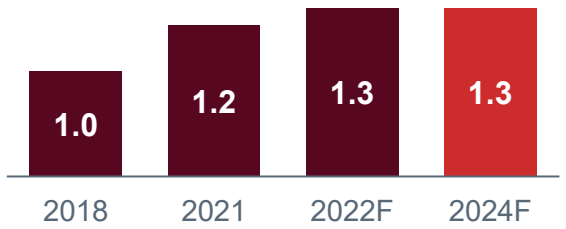
Partnerships and PPAs common in our major grids (e.g. Pacific Australia), direct investment preferred for our integrated production systems (e.g. Pilbara, Saguenay)

Note: Majority existing renewables are hydro powered, new development is wind and solar with lower capacity factors

Industry cost headwinds are being offset by elements within our control

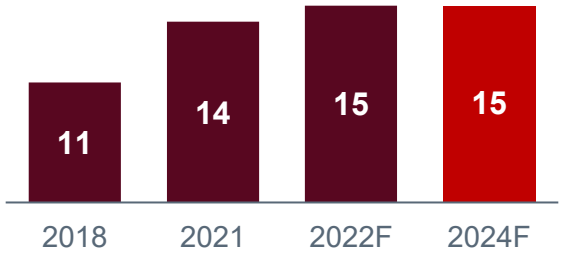
Increases in work effort is reducing as new mine capacity is introduced

Material movement (Bt)



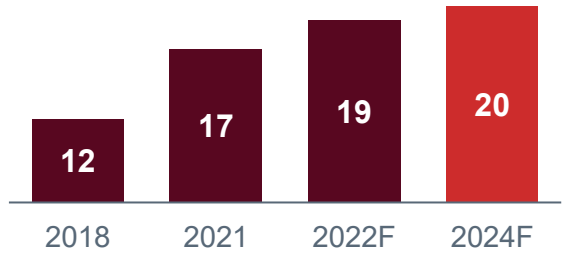
x

Effective flat haul (km)



=

Work index (Bt.km)



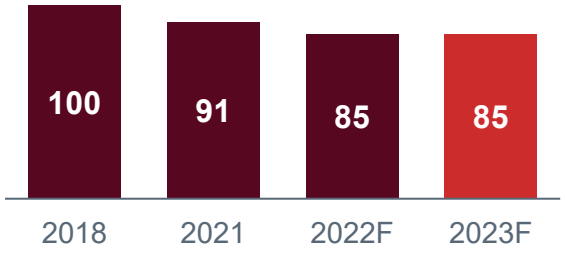
Productivity initiatives are delivering consistent improvements

Truck Effective Utilisation

Index 2018 = 100

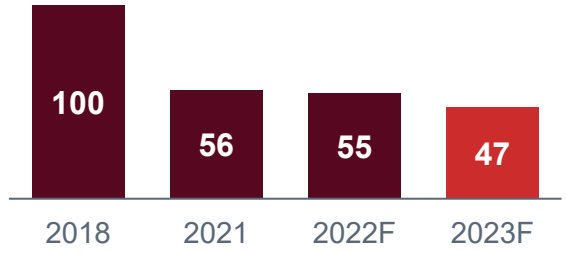
Fixed Plant Unscheduled Loss

Index 2018 = 100



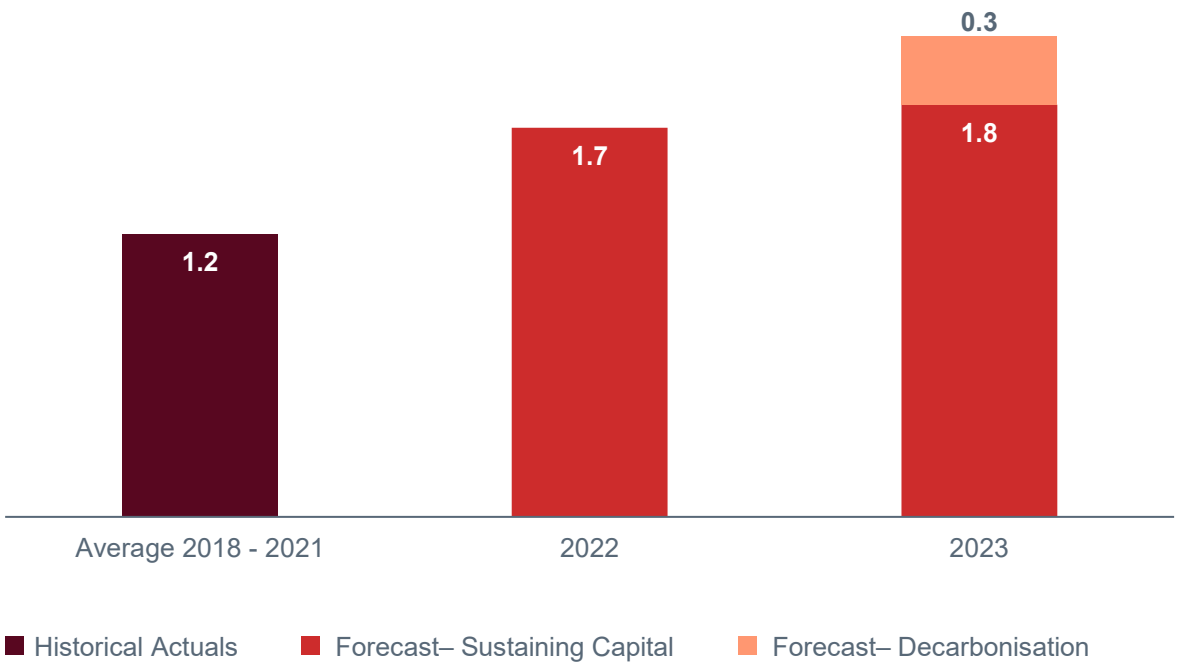
Train Temporary Speed Restriction

Index 2018 = 100



Sustaining investments are improving asset health

Sustaining capital by year
(US$bn)



Investment in our assets continues
(US$bn)

- Uplift in decarbonisation investment
- Improved asset health lifts production
- Facilities upgrades with improved safety and cost performance
- Increased drilling (capitalised) to support future developments
- Increased installed asset base, including Gudai-Darri

We are decarbonising through partnerships and innovation in Canada

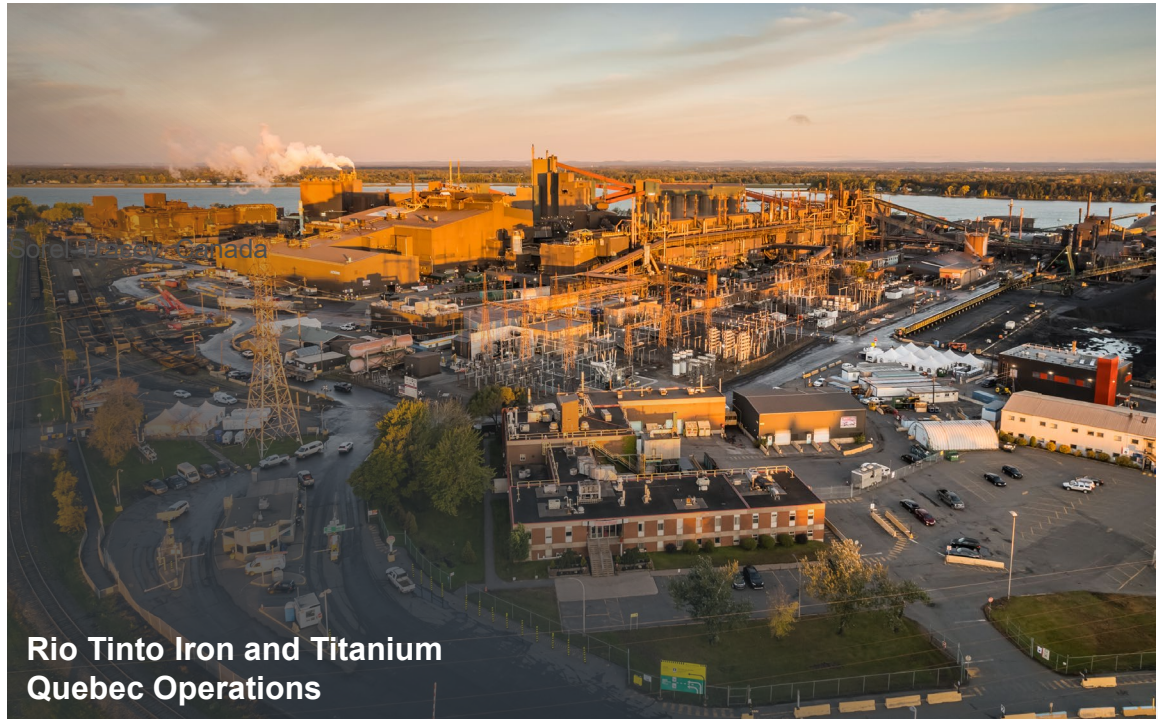
Partnering with the Government of Canada to decarbonise RTFT and boost critical minerals processing

C$737 million investment over eight years

Chief Executive Jakob Stausholm, Prime Minister of Canada Trudeau, Sophie Bergeron (MD RTIT & Diamonds) and Minister Champagne at the Blue Smelting construction site

Innovating to find new ways to deliver the emerging materials the world needs

First producer of high-quality scandium oxide in North America



Rio Tinto Iron and Titanium Quebec Operations

Iron Ore / Steel

Includes Pilbara iron ore and IOC operations

Global production & emissions
2021 Rio Tinto production & emissions (equity basis)

	Upstream	Total material moved	Mining		Shipping		Ore-based steel	Scrap-based steel
PRODUCT		10,000Mt 8t / t steel	2,400Mt @63% Fe	277Mt @61% Fe	55Mt CO_2e Seaborne iron ore	5.4Mt CO_2e	1,250Mt	700Mt
EMISSIONS	6.5Mt CO_2e		70Mt CO_2e 0.03t CO_2e/t ore	3.6Mt CO_2e 0.01t CO_2e/t ore	0.03t CO_2e/t ore	0.02t CO_2e/t ore	2,700Mt CO_2e 0.5t CO_2e/t steel	350Mt CO_2e 0.5t CO_2e/t steel

Upstream emissions from production of diesel, natural gas & explosives

70% - Diesel
30% - Power

Emissions by process step:
7% - Coke oven
20% - Sinter plant
64% - Blast furnace
9% - Steel converter
(Mostly metallurgical coal with a small fraction of natural gas DRI)

~80% power-related emissions
~20% coal or natural gas injection depending on source / location

Total

Total tonnes finished steel (including secondary)

1,780Mt

Total tonnes of emissions[1]

3,120Mt CO_2e

CO_2 / tonne steel[1]

1.8 CO_2e/t steel

[1] Note that these totals do include upstream and shipping so will not reconcile to our 2021 Climate Report

Copper

Global production & emissions
2021 Rio Tinto production & emissions

	Upstream	Total material moved	Mining		Shipping		Primary refined copper		Secondary copper
PRODUCT		12,000Mt 600t / t Cu	4,300Mt @0.6% Cu	100Mt @0.6% Cu	5Mt CO_2e	<0.1Mt CO_2e	20.5Mt	0.2Mt	9.5Mt
EMISSIONS	1.5MtCO_2e		70Mt CO_2e 2.7t CO_2e/t Cu	2.0Mt CO_2e 3.3t CO_2e/t Cu	0.3t CO_2e/t Cu	<0.01t CO_2e/t Cu	32Mt CO_2e 1.6t CO_2e/t Cu	0.2Mt CO_2e 1.1t CO_2e/t Cu	4.7Mt CO_2e 0.5t CO_2e/t Cu

Upstream emissions from production of fuel and explosives

~70% - Diesel
~30% - Power

Power (emissions depend on source / location)

Power (emissions depend on source / location)

Total emissions

Total tonnes of product (including secondary)

30Mt

Total tonnes of emissions[1]

107Mt CO_2e

CO_2 / tonne copper[1]

1.6 CO_2e/t Cu

[1] Note that these totals do include upstream and shipping so will not reconcile to our 2021 Climate Report

Aluminium

Global production & emissions
2021 Rio Tinto production & emissions

	Upstream	Total material moved	Mining		Shipping		Alumina		Primary Aluminium		Secondary Aluminium
PRODUCT		1,000Mt 16t / t Al	360Mt @47% Al_2O_3	54Mt @49% Al_2O_3	15Mt CO_2e	1.9Mt CO_2e	130Mt	7.9Mt	67Mt	3.2Mt	26Mt
EMISSIONS	6.8MtCO_2		4.7Mt CO_2e 0.02t CO_2e/t ore	0.8Mt CO_2e 0.01t CO_2e/t ore	0.2t CO_2e/t ore	0.04t CO_2e/t ore	160Mt CO_2e 1.2t CO_2e/t Al_2O_3	5.7Mt CO_2e 0.7t CO_2e/t Al_2O_3	780Mt CO_2e 11.6t CO_2e/t Al	15.4Mt CO_2e 4.9t CO_2e/t Al	13Mt CO_2e 0.5t CO_2e/t Al

Upstream emissions from production of fuel, caustic, lime, anodes, cathodes & explosives

~70% - Diesel
~30% - Power

Process heat:
Natural gas
Coal

Anodes: ~2 tCO2 / tAl
Power: ~0 to 15 tCO2 / tAl
(emissions depend on source / location of power: Hydro ~0, gas ~6, coal ~14 tCO2 / tAl)

Power (emissions depend on source / location)

Total

Total tonnes of product (including secondary)

92Mt

Total tonnes of emissions[1]

958Mt CO_2e

CO_2 / tonne Al[1]

10.4 CO_2e/t Al

[1] Note that these totals do include upstream and shipping so will not reconcile to our 2021 Climate Report

Common acronyms

AHS	Automous Haulage System	**EC**	European Commission	**Mtpa**	Million tonnes per annum	**RTIO**	Rio Tinto Iron Ore
AIFR	All Injury Frequency Rate	**EMEA**	Europe, Middle East and Africa	**MACC**	Marginal Abatement Cost Curve	**RTX**	Rio Tinto Exploration
Al	Aluminium	**ESG**	Environmental, Social, and Governance	**MW**	Megawatt	**SPS**	Safe Production System
AL_2O_3	Aluminium oxide	**EU**	European Union	**MWh**	Megawatt hour	**S&P**	Standard & Poor's
ARDC	Arvida Research and Development Centre	**Fe**	Iron	**NbS**	Nature-based Solutions	**T**	Tonne
ASX	Australian Stock Exchange	**FOB**	Free On Board	**NPV**	Net present value	**t/ha**	Tonnes per hectare
ATS	Aluminium Technology Solutions	**FS**	Feasibility Study	**O&M**	Operation & Maintenance	**tLS**	Tonnes of liquid steel
B_2O_3	Boric oxide	**GHG**	Greenhouse gas	**OT**	Oyu Tolgoi	**tCO_2e**	Tonne of carbon dioxide equivalent
Bn	Billion	**GFC**	Global Financial Crisis	**Pa**	Per annum	**TiO_2**	Titanium dioxide
BF	Blast furnace	**Gt**	Giga tonnes	**PJ**	Petajoule	**tpa**	Tonnes per annum
BOF	Blast Oxygen Furnace	**GW**	Gigawatt	**PPA**	Power Purchasing Agreement	**TWh**	Terawatt hour
BSL	Boyne Smelter Limited	**H_2**	Hydrogen	**QAL**	Queensland Alumina Limited	**UB**	Ulaanbaatar
CAGR	Compound annual growth rate	**HBI**	Hot briquetted iron	**QMM**	QIT Madagascar Minerals	**USD**	United States dollar
CCGT	Combined Cycle Gas Turbine	**HG**	High grade ore	**R&D**	Research and development	**VAP**	Value-added product
CCUS	Carbon capture, utilisation and storage	**HME**	Heavy Mining Equipmet	**RBM**	Richards Bay Minerals	WA	Western Australia
CCS	Carbon Capture and Storage	**IEA**	International Energy Agency	**RE**	Renewable Energy	**WTS**	Western Turner Syncline
CO_2	Carbon dioxide	**IOC**	Iron Ore Company of Canada	**RRF**	Recovery and Resilience Facility	**YoY**	Year on Year
CO_2e	Carbon dioxide equivalent	**IRR**	Internal rate of return	**ROCE**	Return on capital employed	**YTD**	Year to date
Cu	Copper	**JV**	Joint Venture	**RM**	Richards Bay Minerals		
DRI	Direct Reduction Iron	**LCE**	Lithium Carbonate Equivalent	**RT**	Rio Tinto		
EAF	Electric Arc Furnace	**LCOE**	Levelised Cost of Energy	**RTE**	Round trip efficiency		
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation	**Mt**	Million tonnes	**RTFT**	Rio Tinto Fer et Titane		

Definitions

Calculated abatement carbon price	The levelised marginal cost of abatement at a zero carbon price **Calculation:** Discounted sum of all abatement costs over time at a zero carbon price / Discounted sum of all abated emissions over time *Discounted at the hurdle rate RT uses for all investment decisions*

Rio Tinto