Investor Seminar
30 November 2022
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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.
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<thead>
<tr>
<th>GMT</th>
<th>AEDT</th>
<th>Topic</th>
<th>Presenter</th>
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<td>08:00</td>
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<td>Culture share</td>
<td>Angela Bigg, President, Diavik Diamond Mine</td>
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<td>08:10</td>
<td>08:20</td>
<td>Progressing with purpose</td>
<td>Jakob Stausholm, Chief Executive</td>
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<td>08:20</td>
<td>08:35</td>
<td>Panel 1: Our culture journey</td>
<td>Isabelle Deschamps, Chief Legal Officer, Bold Baatar, Chief Executive, Copper, Kellie Parker, Chief Executive, Australia</td>
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<td>08:35</td>
<td>08:45</td>
<td>Market fundamentals</td>
<td>Vivek Tulpule, Head of Economics &amp; Markets</td>
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<td>08:45</td>
<td>09:00</td>
<td>Technology solutions</td>
<td>Nigel Steward, Chief Scientist</td>
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<td>09:00</td>
<td>09:15</td>
<td>Decarbonisation - our pathway</td>
<td>Mark Davies, Chief Technical Officer, Alf Barrios, Chief Commercial Officer</td>
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<td>09:15</td>
<td>09:30</td>
<td>Iron Ore</td>
<td>Simon Trott, Chief Executive, Iron Ore</td>
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<td>09:30</td>
<td>09:50</td>
<td>Q&amp;A session 1</td>
<td>All</td>
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<td>09:50</td>
<td>10:10</td>
<td>BREAK</td>
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<td>10:10</td>
<td>10:25</td>
<td>Panel 2: Best operator</td>
<td>Arnaud Soirat, Chief Operating Officer, Simon Trott, Chief Executive, Iron Ore, Kellie Parker, Chief Executive, Australia</td>
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<td>10:25</td>
<td>10:40</td>
<td>Aluminium</td>
<td>Ivan Vella, Chief Executive, Aluminium</td>
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<td>10:40</td>
<td>10:55</td>
<td>Panel 3: Excel in Development</td>
<td>Mark Davies, Chief Technical Officer, Bold Baatar, Chief Executive, Copper, Simon Trott, Chief Executive, Iron Ore</td>
</tr>
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<td>10:55</td>
<td>11:10</td>
<td>Capital allocation and financials</td>
<td>Peter Cunningham, Chief Financial Officer</td>
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<td>11:10</td>
<td>11:30</td>
<td>Q&amp;A session 2</td>
<td>All</td>
</tr>
</tbody>
</table>
Culture share

Angela Bigg, President, Diavik Diamond Mine
Jakob Stausholm

Progressing with purpose
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
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

Relationship reset
A new agreement with the Government of Mongolia for Oyu Tolgoi

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

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
CS$737 million partnership with the Government of Canada

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Increasing Indigenous leadership
7x number of Australian Indigenous leaders since 2020
Finding better ways to provide the materials the world needs
Panel session 1
Our culture journey
Isabelle Deschamps, Bold Baatar, Kellie Parker
Moderated by James Martin
Engagement scores improving

Avg. prior 2 years | Oct'21 | Apr'22 | Sept'22
--- | --- | --- | ---
72 | 71 | 71 | 73

1Percentage score for employee survey question regarding employee happiness in the workplace
Vivek Tulpule
Market fundamentals
Global trends driving commodity demand

Key drivers of global economy

1. Growth and carbon projections from Rio Tinto Group scenarios (11% per annum decline in CO2 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.

Total commodity demand by 2035

- <2°C scenario
- Copper equivalent basis

Recycling share of total demand

1.8-3.2% pa over 2021-50

0.8-11% pa decline to 2050

Trade interventions up ~9x from 2009

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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 €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

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 CO₂ emissions are well positioned.
Hydro-based aluminium even more attractive

Chinese aluminium smelter cost sensitivities
(Real US$/t 2021)

<table>
<thead>
<tr>
<th>Cost Sensitivity</th>
<th>China</th>
<th>Over half of current Chinese smelting produces &gt;14t CO₂ per tonne aluminium vs. global average of 12t CO₂ per tonne of aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional unabated carbon cost¹</td>
<td>720</td>
<td>Decarbonising electricity grid can abate about 65% of Chinese CO₂ from the current captive power model</td>
</tr>
<tr>
<td>Less ~65% carbon abatement</td>
<td></td>
<td>Switching to grid-based power will incur network costs that initially rise with increased intermittent generation</td>
</tr>
<tr>
<td>Additional grid charges from energy transition</td>
<td>~550</td>
<td></td>
</tr>
<tr>
<td>Increase in operating cost</td>
<td></td>
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</tr>
</tbody>
</table>

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
A strong global R&D footprint...
…complemented by partnerships
## Disciplined technology roadmap

<table>
<thead>
<tr>
<th>Health &amp; Safety</th>
<th>ESG</th>
<th>Growth</th>
<th>Carbon</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 projects</td>
<td>19 projects</td>
<td>32 projects</td>
<td>21 projects</td>
<td>54 projects</td>
</tr>
<tr>
<td>Reducing frontline</td>
<td>Reducing water consumption</td>
<td>Discovering new orebodies</td>
<td>Green steel and low carbon products</td>
<td>Maximise value from each ore body</td>
</tr>
<tr>
<td>exposure to hazards</td>
<td>Improving water treatment</td>
<td>Reducing capital intensity</td>
<td>Storage options</td>
<td>Equipment utilisation</td>
</tr>
<tr>
<td>Managing health and</td>
<td>Dry tailings</td>
<td>Creating new revenue streams</td>
<td>Green processing</td>
<td>Automation</td>
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<tr>
<td>wellbeing of our people</td>
<td>Dry processing</td>
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<td>Green energy</td>
<td>Energy efficiency</td>
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<tr>
<td></td>
<td>Closure</td>
<td></td>
<td>Green fleet</td>
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- **Impeccable ESG credentials**
- **Excel in Development**
- **Best Operator**

**Social Licence**

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Transition and the global energy mix

- **Next ~10 yrs**: Wind and solar
- **2030-2035**: Thermal and mechanical energy storage for renewables firming
- **2035-2045**: Breakthrough batteries and small modular reactors
- **2045+**: Fusion
### Firming and storage options

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

**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.

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.

**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 CO₂ driving the production of hydrogen close to its point of use
Fleet electrification will require time and technology breakthroughs

<table>
<thead>
<tr>
<th>Current state</th>
<th>Drill</th>
<th>Charge</th>
<th>Dozer</th>
<th>Loader</th>
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<td>Diesel fuel</td>
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<td>2022-2035</td>
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<tr>
<td>Biodiesel and biofuels</td>
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<td>At scale</td>
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Diane, Cable power, Battery Electric

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Breakthrough technologies create new revenue streams

**Green 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.

**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.

**Processing waste**

**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

<table>
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<tr>
<th>Technology</th>
<th>Estimated Time to Commercial Scale</th>
<th>CO₂e (tLS) (using renewable power)</th>
<th>Ore Suitability</th>
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<td>BF-BOF Optimisation</td>
<td>1-20 years</td>
<td><img src="#" alt="Current Optimised" /></td>
<td><img src="#" alt="Chemical" /></td>
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<tr>
<td>Nat Gas DRI/HBI Shaft</td>
<td>Today</td>
<td><img src="#" alt="Current Optimised" /></td>
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<td>H₂ DRI/HBI Shaft</td>
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<td>H₂ DRI/HBI Fluidised Bed</td>
<td>5-20 years</td>
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<td>H₂ DRI + Melter</td>
<td>10-20 years</td>
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<td>Biomass (BioIron™)</td>
<td>10-20 years</td>
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<td>BF + CCUS</td>
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<tr>
<td>Scrap-EAF</td>
<td>Today</td>
<td><img src="#" alt="Current Optimised" /></td>
<td><img src="#" alt="Chemical" /></td>
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Estimated time to Commercial Scale:
- **Today**
- **1-20 years**
- **5-10 years**
- **5-20 years**
- **10-20 years**
- **20-40 years**

CO₂e (tLS) (using renewable power):
- 0
- 0.4
- 0.8
- 1.2
- 1.6
- 2.0
- 2.4

Ore Suitability:
- Chemical

- Likely requires ultra-premium quality
- Not applicable – uses recycled steel
Our technology journey

- 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 ELYSISTM and first scandium producer in North America
- 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
- Ramp-up of solar and wind deployment to meet an increasing proportion of our electricity needs
- Battery electric haul trucks
- Accelerating ELYSISTM, NutonTM, and production of Lithium and critical materials
- Storing CO2 in rock through carbon mineralisation
- 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

Achieved

Improving

Developing

Excelling
Mark Davies and Alf Barrios

Decarbonisation – our pathway
Processing accounts for the majority of our carbon footprint
Our scope 1 and 2 emissions

Electricity (purchased and generated)¹

- 8.8 Mt CO₂e

Anodes and reductants

- 5.1 Mt CO₂e

Process heat

- 4.3 Mt CO₂e

Diesel

- 2.1 Mt CO₂e

Other²

- 4.3 Mt CO₂e

2021 equity basis

31.1 Mt CO₂e
~80% processing ~20% mining

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...

- Pacific Operations repower: 8.4
- Renewables: 4.2
- Diesel: 4.2
- Alumina process heat: 4.6
- Minerals processing: 2.6
- Aluminium anodes (ELYSIS™): 5.8
- Not covered: 1.3

...with Nature-based Solutions part of the plan

- Renewables
- Biodiesel
- Electrified fleets
- Process heat
- ELYSIS
- Nature-based Solutions (NbS)

2021 CO₂e emissions equity share¹

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$_2$e emissions by major abatement programmes – equity share

<table>
<thead>
<tr>
<th>Pacific Operations repower</th>
<th>Renewables</th>
<th>Diesel</th>
<th>Alumina process heat</th>
<th>Minerals processing</th>
<th>Aluminium anodes</th>
<th>Nature based Solutions$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4</td>
<td>4.2</td>
<td>4.2</td>
<td>4.6</td>
<td>3.8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>5.8</td>
<td>2.6</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
<td>5.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

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

| 2018 CO$_2$e emissions baseline | 32.5 |
| Emissions reductions to 2021 | (1.4) |
| 2021 CO$_2$e emissions | 31.1 |
| Growth | 1.0 |
| Abatement programmes | (13.4) |
| Other$^3$ required (includes NbS) | (2.4) |

| 2030 CO$_2$e emissions (50% reduction from baseline) | 16.3 |

---

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

<table>
<thead>
<tr>
<th>Project</th>
<th>Coverage</th>
<th>Emissions</th>
<th>Key Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pilbara</strong></td>
<td>Self-delivered</td>
<td>3% of group emissions&lt;sup&gt;1&lt;/sup&gt;</td>
<td>234MW solar and 200MWh storage delivered 2023-2026, Progressing expandable sites for 1GW and beyond</td>
</tr>
<tr>
<td><strong>RBM</strong></td>
<td>Market-based</td>
<td>5% of group emissions</td>
<td>130MW solar PPA signed, 200MW wind PPA in progress, Pursuing regional partnerships to reach 100% renewables</td>
</tr>
<tr>
<td><strong>Boyle Smelter</strong></td>
<td>Market-based</td>
<td>13% of group emissions</td>
<td>Request for proposals for 4GW of green energy, 13% reduction in Group CO₂ emissions by 2030</td>
</tr>
</tbody>
</table>

#### Process heat

<table>
<thead>
<tr>
<th>Project</th>
<th>Emissions</th>
<th>Key Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RTFT</strong></td>
<td>3% of group emissions</td>
<td>BlueSmelting, Increases critical minerals, Partnership with Government of Canada</td>
</tr>
<tr>
<td><strong>QLD</strong></td>
<td>14% of group emissions</td>
<td>Electrification of gas and coal boilers and 140% steam efficiency through digestion projects, Partnership with ARENA and Sumitomo to trial Hydrogen Calcination</td>
</tr>
</tbody>
</table>

---

<sup>1</sup> Percentages shown denote programme coverage of 2021 group emissions (equity basis)

<sup>2</sup> Based on gas and diesel displacement to 2030

<sup>3</sup> 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

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

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 CO₂e

Estimated development cost
$/t CO₂e

Average: $30/t

Projects range in price (~$20-$50/t)¹

¹Range 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
Supply chain emissions: scope 3

- Procurement
  - Partnering to decarbonise: 22 Mt CO₂e
- Marine and Logistics
  - Accelerating the transition to end-state fuels: 9 Mt CO₂e
- Downstream customers
  - Supporting customers on their decarbonisation journey: 523 Mt CO₂e

2021 equity basis
554 Mt CO₂e

- Aluminium
- Minerals
- 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

<table>
<thead>
<tr>
<th></th>
<th>Blast Furnace Optimisation</th>
<th>Pilbara Beneficiation</th>
<th>Biolron™</th>
<th>H₂ DRI + Melter</th>
<th>High-Grade DRI</th>
<th>Iron Ore Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Optimising current technology</td>
<td>Upgrading our Pilbara ores</td>
<td>Ironmaking with Pilbara ores Pathway 1</td>
<td>Ironmaking with Pilbara ores Pathway 2</td>
<td>Entry to high-grade green iron market</td>
<td>Bringing high-grade ore to the market</td>
</tr>
<tr>
<td></td>
<td>Multiple collaborations with customers</td>
<td>Finding optimal stage(s) along the steelmaking value chain to remove impurities</td>
<td>Developing an alternative steelmaking route to H₂ DRI</td>
<td>Developing H₂ DRI with melter for Pilbara ores</td>
<td>Entering H₂ HBI market and demonstrate new tech using RT ores</td>
<td>e.g. Simandou</td>
</tr>
</tbody>
</table>

**Key Partnerships**

- SALZGITTER AG Research, Steel and Technology
- Metso Outotec
- NIPPON STEEL
- KOBELCO
- MACQUARIE University Sydney Australia
- Imperial College London
- BlueScope
- University of Nottingham
- Australian National University
- TISCO
- POSCO
- BAOWU
- CENTIGRADE
Iron ore

Simon Trott
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

Billions of dry tonnes, published grades

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

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1 See supporting references for categorisation of Rio Tinto’s Mineral Resources and Ore Reserves on slide 3
# Delivering in 2022

## 2022 Outcomes

### Best operator
- Record material movement. Strong H2 production
- Strong performance at IOC
- Safe Production System delivering

### Excel in development
- 120Mt of Pilbara mines commissioning
- Unlocked Western Range Project and Rhodes Ridge JV
- Simandou JV incorporation

### 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

### Social license
- Three fold increase\(^1\) in spend with indigenous businesses
- Agreements with Yinhawangka and Yindjibarndi
- PKKP remedy and co-management agreements

### 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

## Looking forward

- We approach 2023 with momentum
- Mine developments provide replacement or growth options
- Rhodes JV underpins our competitive position for decades
- Progress towards a lower cost renewables powered business
- Developing green steel pathways at the next level of scale
- Positioning for a future defined by access to country
- 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 quarter¹
(2019 to 2022, Mt/a)

2023 focus areas
- Ramp-up new mines
- Drive productivity with SPS
- Asset reliability and pit health

Next 5 years
- Next tranche of mine developments
- Low-cost volume creep

Rail & Port
- Mitigate system interface losses
- Track health and cycle time

Next tranche of mine developments
- 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

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

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

**Unit cost history (US$/t FOB)**

- **Pilbara Iron Ore**
- **Peers**

**Sector input prices**

- **Uncontrollable**
  - **2x** Diesel
  - **5 – 10%** Materials & Labour

- **Controllable**
  - **12%** Mine Work Index
  - **4%** Total Maintenance hours

**Economic**

- **12%** Exchange Rate
- **>7%** Inflation

**Work Index**

- **2022 H2 production rate**
  - **+340Mt**
  - **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.
We are delivering an improved mine portfolio that maximises Pilbara Blend.

**Mine Capital Intensity**

(US$ / tpa)

Completed projects

Projects in development

Projects in study stage

**Shipment by Product**

(%)  

<table>
<thead>
<tr>
<th>Year</th>
<th>Pilbara Blend</th>
<th>SP10</th>
<th>Robe Valley + Yandi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>69</td>
<td>5</td>
<td>6-12</td>
</tr>
<tr>
<td>2022</td>
<td>65</td>
<td>9</td>
<td>68-74</td>
</tr>
<tr>
<td>Medium Term Target</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Hope Downs 1 sustaining includes Bedded Hilltop and Hope Downs 2  
2Brockman 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 Reserves¹
(Billions of tonnes)

<table>
<thead>
<tr>
<th>Location</th>
<th>Resources</th>
<th>Area (km²)</th>
<th>Impurities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhodes Ridge</td>
<td>6.7Bt @ 61.6% Fe</td>
<td>6.7</td>
<td>1,800 km²</td>
</tr>
<tr>
<td>Simandou Blocks 3 &amp; 4²</td>
<td>2.8Bt @ 65.5% Fe</td>
<td>2.8</td>
<td>1,250 km²</td>
</tr>
<tr>
<td>Carajas³</td>
<td>2.9Bt @ 62.8% Fe</td>
<td>2.9</td>
<td>3,750 km²</td>
</tr>
</tbody>
</table>

Resources exclusive of Reserves:
- Rhodes Ridge: 5.7Bt @ 62.3% Fe
- Rhodes Ridge: 0.5Bt @ 64.0% Fe
- Simandou Blocks 3 & 4²: Blocks 1 & 2: 5.7Bt @ 62.3% Fe and 0.5Bt @ 64.0% Fe

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.

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System outlook and guidance

2023 Guidance

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

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

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

Operational Performance:
Wider and deeper SPS rollout
Next tranche of replacement mines

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
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

Great people

Strong, stable assets

Front line customer-focused support

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

Iron Ore sites deployed
- Tom Price
- Brockman 4
- Yandi
- West Angelas
- Rail
- Marandoo
- Hope Downs

Aluminium sites deployed
- Amrun
- Grand Baie
- Arvida
- Laterriere
- Kitimat
- Bell Bay
- Yarwun

Copper/Minerals sites deployed
- Kennecott
- Iron Ore Company Canada

Major process deployment:
- Planning
- Launched
- Maturing
- Embedded
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**

### Safety
Practices and training have improved safety* performance
*AIFR measured at the asset

### People
Our measure of engagement over bi-annual surveys show significant improvements in empowerment across lighthouse sites

### Productivity
SPS supports operating time by addressing asset stability and availability

#### Kennecott concentrator
**AIFR**
42% improvement YTD compared to 2021

#### IOC concentrator
**AIFR**
44% improvement YTD compared to 2021

#### Amrun fixed plant
**AIFR**
29% improvement YTD compared to 2021

#### 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

**Operating Rate**
(monthly)

- **2021**
- **2022**

+2% / +2%

**Operating Time**
(quarterly without shipping constraint)

- **2021**
- **2022**

+13% / +18%

---

* 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

<table>
<thead>
<tr>
<th>Tom Price</th>
<th>Brockman 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>↗ 19% AHS equipment utilisation</td>
<td>↑ 33% Weekly Total Material Movement</td>
</tr>
<tr>
<td>↑ 14% HG production daily rate</td>
<td>↑ 9% Monthly production</td>
</tr>
</tbody>
</table>

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

¹ All metrics relate to Pilbara Iron Ore
Global priorities in 2023

<table>
<thead>
<tr>
<th>Deployment sites</th>
<th>New sites</th>
<th>Total Sites*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2021</td>
<td>2022</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Aluminium</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Copper</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Minerals</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>11</td>
</tr>
</tbody>
</table>

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

* 43 eligible sites across Rio Tinto
Positioned to meet customers' needs in energy transition

Energy transition demand
Aluminium consumption from green applications Mt

- 2019: 2.7 Mt
- 2020: 3.2 Mt
- 2021: 4.7 Mt
- 2022: 7.0 Mt
- 2023F: 8.4 Mt

+37% CAGR

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

- 5-Series Al-Mg
- 3-Series Al-Mn
- 1-Series Al

With Scandium
Without Scandium

- Strength increase +150%
- Strength increase +93%
- Strength increase +1,500%

Source: scale-project.eu

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

Commercial value proposition

Energy transition demand Material innovation – Scandium Commercial value proposition

Zero emission
Traceable
Proximity to customers
Leading technical support & Alloy development

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

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Privileged low-carbon hydro resources in North America

### Global aluminum production by energy source

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Other</th>
<th>China</th>
<th>Russia</th>
<th>Rio Tinto</th>
<th>Average carbon intensity (^1 \text{(t CO}_2/\text{t Al)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self gen Hydro</td>
<td>1.0</td>
<td>1.7</td>
<td>3.9</td>
<td>1.6</td>
<td>2</td>
</tr>
<tr>
<td>Grid Hydro</td>
<td>6.0</td>
<td></td>
<td>3.2</td>
<td>1.0</td>
<td>2</td>
</tr>
<tr>
<td>Grid Mixed</td>
<td>4.3</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Gas</td>
<td>6.1</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Coal</td>
<td>5.4</td>
<td></td>
<td>31.1</td>
<td>0.6</td>
<td>16</td>
</tr>
</tbody>
</table>

World average carbon intensity \(^1 \text{(t CO}_2/\text{t Al)}\): 12

RTA average carbon intensity \(^1 \text{(t CO}_2/\text{t Al)}\): 5

---

### 2023 global aluminium smelters energy cost curve

- Without $75/t CO\(_2\)e
- With $75/t CO\(_2\)e

**Notes:**
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

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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

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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

3. **Maintain options for third-party bauxite sales**

4. **Optimise integrated alumina supply chain**

**Four Lenses**
To think strategically and tactically about our aluminium business

**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

<table>
<thead>
<tr>
<th>Alma</th>
<th>Alma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Production System</td>
<td>Safe Production System</td>
</tr>
<tr>
<td>Implementation of best practice rituals focused on operations and asset management</td>
<td>Implementation of best practice rituals focused on operations and asset management</td>
</tr>
<tr>
<td>Reduction of aborted casting events</td>
<td>Reduction of aborted casting events</td>
</tr>
<tr>
<td>Optimisation of casting furnace filling time reducing delays in casting process</td>
<td>Optimisation of casting furnace filling time reducing delays in casting process</td>
</tr>
<tr>
<td>Rolling out end-to-end implementation across Quebec</td>
<td>Rolling out end-to-end implementation across Quebec</td>
</tr>
</tbody>
</table>
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*

<table>
<thead>
<tr>
<th>Company</th>
<th>Copper Equivalent Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rio Tinto</td>
<td>1.5M</td>
</tr>
<tr>
<td>Freeport</td>
<td>0.8M</td>
</tr>
<tr>
<td>Nutrien</td>
<td>0.5M</td>
</tr>
<tr>
<td>Agnico Eagle</td>
<td>0.5M</td>
</tr>
<tr>
<td>Newmont</td>
<td>0.5M</td>
</tr>
<tr>
<td>Barrick</td>
<td>0.5M</td>
</tr>
<tr>
<td>Alcoa</td>
<td>0.2M</td>
</tr>
<tr>
<td>The Mosaic Company</td>
<td>0.2M</td>
</tr>
<tr>
<td>Teck</td>
<td>0.2M</td>
</tr>
<tr>
<td>Glencore</td>
<td>0.1M</td>
</tr>
<tr>
<td>Vale</td>
<td>0.1M</td>
</tr>
<tr>
<td>Cleveland-Cliffs</td>
<td>0.1M</td>
</tr>
<tr>
<td>Kinross</td>
<td>0.1M</td>
</tr>
<tr>
<td>Newcrest</td>
<td>0.1M</td>
</tr>
<tr>
<td>Century Aluminum</td>
<td>0.1M</td>
</tr>
<tr>
<td>US Steel</td>
<td>0.0M</td>
</tr>
<tr>
<td>Grupo Mexico</td>
<td>0.0M</td>
</tr>
<tr>
<td>Sibanye-Stillwater</td>
<td>0.0M</td>
</tr>
<tr>
<td>K+S Group</td>
<td>0.0M</td>
</tr>
<tr>
<td>Champion Iron</td>
<td>0.0M</td>
</tr>
</tbody>
</table>

* 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

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

**Social licence:**
Partnerships with governments and First Nations

**Development:**
Capital intensity

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

**Decarbonisation:**
Boyne repowering
Alumina new technology pilots

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

---

Achieved
Improving
Developing
Excelling
Panel session 3

Excel in Development

Mark Davies, Bold Baatar, Simon Trott

Moderated by Kellie Parker
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
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**

- **Rio Tinto**

- **Nuton**

- **Resolution**

- **Montana exploration**

- **Arizona and New Mexico exploration**

- **RT Cu Operation**

- **Exploration Project**
Disciplined allocation of capital remains at our core

1. Essential capex
   *Integrity, Replacement, Decarbonisation*

2. Ordinary dividends

3. Iterative cycle of
5.4  6.2  ~7.0  2.4  2.7  3.3  ~8.0-9.0  ~9.0-10.0  ~9.0-10.0

- Sustaining
- Decarbonise our assets
- Pilbara replacement
- Other replacement
- Growth
- H1 actuals
- Depreciation

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
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 (~45%)
- Simandou

Advanced projects
- Rincon and other lithium (~15%)
- Resolution Copper (~40%)
- Kennecott underground (~40%)
- AP60 expansion
Building a portfolio of options

**Exploration & Evaluation (E&E) spend**

- **2021A:** $0.7 billion
- **2022F:** $0.9 billion
- **2023F:** $1.0 billion

Expending 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*

Key drivers of future scenarios

Growth options (up to $3bn / annum)

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

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* 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

1. Value under the Group scenarios
   - 2 Materiality of CO₂ emissions abated vs targets
   - 3 Maturity based on technology and delivery risk

2. Competitiveness
   - Internal and external benchmarking

3. Pathway
   - To net zero emissions

Decarbonisation components

<table>
<thead>
<tr>
<th>1. Commercial solutions</th>
<th>2030 CO₂e emission abatement %¹</th>
<th>$7.5bn Capex %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repowering Pacific smelters</td>
<td>~40%</td>
<td>0%</td>
</tr>
<tr>
<td>Grid connected renewables (RBM, Kennecott)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 2. Capital solutions: with a carbon price of -$50/t to +$50/t | |
| Pilbara renewables: 1GW Phase 1 (234MW + storage) | 5-10% |
| Alumina process heat (QAL double digestion) | ~15% |

| 3. Capital solutions: with a carbon price of >$50/t to <$100/t | |
| Alumina process heat (Full electric conversion²) | ~20% |
| Minerals processing (Electric boilers) | ~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) | 15-20% |
| Alumina process heat | TBD³ |
| Minerals processing | |

| 6. Nature-based Solutions⁴ | |
| 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 to 10% 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 CO₂ removals and avoided emissions.

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Value accretive decarbonisation at a modest carbon price

**Renewables**

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

- 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 CO₂e emissions, upside based on tracking rather than fixed assembly for some assets

**Value accretive at ~$40/t carbon price**

**Alumina process heat**

QAL double digestion*

- 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 CO₂e emissions
- 2023 pilot plant; replication opportunity at Yarwun

**Value accretive at zero carbon price**

* All QAL double digestion metrics on 100% basis.
Attractive EBITDA margin and ROCE throughout the cycle
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)

<table>
<thead>
<tr>
<th></th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net cash generated from operating activities¹</td>
<td>22.2</td>
<td>25.3</td>
</tr>
<tr>
<td>Capital expenditure¹</td>
<td>7.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Dividends paid¹</td>
<td>16.5</td>
<td>15.4</td>
</tr>
<tr>
<td>Net cash (debt)</td>
<td>0.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Cash and liquid resources</td>
<td>13.7</td>
<td>15.2</td>
</tr>
<tr>
<td>Revolving credit facility (5 year maturity)</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Net (cash) debt/Underlying EBITDA¹</td>
<td>-0.01x</td>
<td>-0.04x</td>
</tr>
<tr>
<td>Gearing</td>
<td>-1%</td>
<td>-3%</td>
</tr>
<tr>
<td>Weighted average debt maturity</td>
<td>10 yrs</td>
<td>11 yrs</td>
</tr>
</tbody>
</table>

¹ Rolling 12 months
Attractive dividends remain paramount

Shareholder returns\(^1\) of 40-60% of underlying earnings on average through the cycle

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

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

Achieved

- 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

Improving

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

Developing

- 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

Excelling

Attractive shareholder returns, underpinned by a strong balance sheet
Rio Tinto
Appendix
# Product group level guidance

<table>
<thead>
<tr>
<th></th>
<th>2023 Production Guidance</th>
<th>2023 Unit cost guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iron ore shipments</strong></td>
<td>320 – 335Mt(^1) (100% basis)</td>
<td><strong>Pilbara Iron ore ($/tonne)</strong>: $21.0 – $22.5</td>
</tr>
<tr>
<td><strong>Copper</strong></td>
<td></td>
<td><strong>Copper C1 (US cents/lb)</strong>: 160 – 180</td>
</tr>
<tr>
<td>Mined Copper</td>
<td>550 – 600kt</td>
<td></td>
</tr>
<tr>
<td>Refined Copper</td>
<td>180 – 210kt</td>
<td></td>
</tr>
<tr>
<td><strong>Aluminium</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bauxite</td>
<td>54 – 57Mt</td>
<td></td>
</tr>
<tr>
<td>Alumina</td>
<td>7.7 – 8.0Mt</td>
<td></td>
</tr>
<tr>
<td>Aluminium</td>
<td>3.1 – 3.3Mt</td>
<td></td>
</tr>
<tr>
<td><strong>Minerals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TiO(_2)</td>
<td>1.1 – 1.4Mt</td>
<td></td>
</tr>
<tr>
<td>IOC pellets and concentrate(^2)</td>
<td>10.5 – 11.5Mt</td>
<td></td>
</tr>
<tr>
<td>B(_2)O(_3)</td>
<td>~0.5Mt</td>
<td></td>
</tr>
<tr>
<td>Diamonds</td>
<td>3.0 – 3.8m carats</td>
<td></td>
</tr>
</tbody>
</table>

---

\(^1\) 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

<table>
<thead>
<tr>
<th>Programme</th>
<th>Description &amp; Key Sites</th>
<th>Funding mechanism</th>
<th>Example project - Economics</th>
</tr>
</thead>
</table>
| 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 | Kennelecott | 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 H₂ 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        | ELYSISTM 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 CO₂e, 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)

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2024F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Effective flat haul (km)

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2024F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>11</td>
<td>14</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Work index (Bt.km)

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2024F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>12</td>
<td>17</td>
<td>19</td>
<td>20</td>
</tr>
</tbody>
</table>

Productivity initiatives are delivering consistent improvements

Truck Effective Utilisation
Index 2018 = 100

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2023F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>100</td>
<td>105</td>
<td>109</td>
<td>118</td>
</tr>
</tbody>
</table>

Fixed Plant Unscheduled Loss
Index 2018 = 100

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2023F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>100</td>
<td>91</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>

Train Temporary Speed Restriction
Index 2018 = 100

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2021</th>
<th>2022F</th>
<th>2023F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>100</td>
<td>56</td>
<td>55</td>
<td>47</td>
</tr>
</tbody>
</table>
Sustaining investments are improving asset health

**Sustaining capital by year**

(US$bn)

- **Average 2018 - 2021**: 1.2
- **2022**: 1.7
- **2023**: 1.8

**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

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

First producer of high-quality scandium oxide in North America
<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Upstream</th>
<th>Total material moved</th>
<th>Mining</th>
<th>Shipping</th>
<th>Ore-based steel</th>
<th>Scrap-based steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Ore / Steel</td>
<td>Includes Pilbara iron ore and IOC operations</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>10,000Mt</td>
<td>2,400Mt</td>
<td>277Mt</td>
<td>55Mt CO₂e</td>
<td>1,250Mt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@63% Fe</td>
<td>@61% Fe</td>
<td></td>
<td>@63% Fe</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>@63% Fe</td>
<td>700Mt</td>
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<td></td>
<td></td>
<td>8t / t steel</td>
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<td></td>
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<td>5.4Mt CO₂e</td>
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<td></td>
<td>Seaborne iron ore</td>
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<td></td>
<td></td>
<td>2,400Mt</td>
<td></td>
<td></td>
<td></td>
<td>2,700Mt CO₂e</td>
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<td></td>
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<td></td>
<td></td>
<td>0.5t CO₂e/t steel</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>2,400Mt</td>
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<td></td>
<td></td>
<td>350Mt CO₂e</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5t CO₂e/t steel</td>
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### Copper

**Global production & emissions**

#### 2021 Rio Tinto production & emissions

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Upstream</th>
<th>Total material moved</th>
<th>Mining</th>
<th>Shipping</th>
<th>Primary refined copper</th>
<th>Secondary copper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRODUCT</strong></td>
<td>Upstream</td>
<td>Total material moved</td>
<td>Mining</td>
<td>Shipping</td>
<td>Primary refined copper</td>
<td>Secondary copper</td>
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<td>PRODUCT</td>
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<th><strong>PRODUCT</strong></th>
<th><strong>Upstream</strong></th>
<th><strong>Total material moved</strong></th>
<th><strong>Mining</strong></th>
<th><strong>Shipping</strong></th>
<th><strong>Primary refined copper</strong></th>
<th><strong>Secondary copper</strong></th>
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<td><strong>EMISSIONS</strong></td>
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</table>

#### Upstream emissions from production of fuel and explosives

- ~70% - Diesel
- ~30% - Power

#### Power (emissions depend on source / location)

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**

<table>
<thead>
<tr>
<th>Upstream</th>
<th>Total material moved</th>
<th>Mining</th>
<th>Shipping</th>
<th>Alumina</th>
<th>Primary Aluminium</th>
<th>Secondary Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000Mt</td>
<td>360Mt @47% Al₂O₃</td>
<td>54Mt @49% Al₂O₃</td>
<td>15Mt CO₂e</td>
<td>1.9Mt CO₂e</td>
<td>130Mt</td>
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<tr>
<td></td>
<td>16t / t Al</td>
<td>0.8Mt CO₂e</td>
<td>0.2t CO₂e /t ore</td>
<td>0.04t CO₂e /t ore</td>
<td>160Mt CO₂e</td>
<td>7.9Mt</td>
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<tr>
<td></td>
<td>300Mt</td>
<td>0.02t CO₂e /t ore</td>
<td>0.01t CO₂e /t ore</td>
<td>1.2t CO₂e /t Al₂O₃</td>
<td>780Mt CO₂e</td>
<td>67Mt</td>
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<td></td>
<td></td>
<td>2.2Mt CO₂e /t Al₂O₃</td>
<td>5.7Mt CO₂e</td>
<td>0.7t CO₂e /t Al₂O₃</td>
<td>15.4Mt CO₂e</td>
<td>3.2Mt</td>
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<td></td>
<td>0.2t CO₂e /t Al₂O₃</td>
<td>11.6t CO₂e /t Al</td>
<td>13Mt CO₂e</td>
<td>26Mt</td>
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</table>

| EMISSIONS      | 6.8Mt CO₂e          | 4.7Mt CO₂e       | 0.8Mt CO₂e /t ore | 0.2t CO₂e /t ore | 160Mt CO₂e | 780Mt CO₂e |
|                | 0.02t CO₂e /t ore   | 0.01t CO₂e /t ore | 0.04t CO₂e /t ore | 1.2t CO₂e /t Al₂O₃ | 15.4Mt CO₂e | 13Mt CO₂e |
|                | 6.8Mt CO₂e          | 4.7Mt CO₂e       | 0.8Mt CO₂e /t ore | 0.2t CO₂e /t ore | 160Mt CO₂e | 780Mt CO₂e |
|                | 0.02t CO₂e /t ore   | 0.01t CO₂e /t ore | 0.04t CO₂e /t ore | 1.2t CO₂e /t Al₂O₃ | 15.4Mt CO₂e | 13Mt CO₂e |

**Total**

- Total tonnes of product (including secondary): 92Mt
- Total tonnes of emissions\(^1\): 958Mt CO₂e
- CO₂ / tonne Al\(^1\): 10.4 CO₂e / t Al

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\(^1\) Note that these totals do include upstream and shipping so will not reconcile to our 2021 Climate Report.
Common acronyms

AHS: Autonomous Haulage System
AIFR: All Injury Frequency Rate
Al: Aluminium
Al2O3: Aluminium oxide
ARDC: Arvida Research and Development Centre
ASX: Australian Stock Exchange
ATS: Aluminium Technology Solutions
B2O3: Boric oxide
Bn: Billion
BF: Blast furnace
BOF: Blast Oxygen Furnace
BSL: Boyne Smelter Limited
CAGR: Compound annual growth rate
CCGT: Combined Cycle Gas Turbine
CCUS: Carbon capture, utilisation and storage
CCS: Carbon Capture and Storage
CO2: Carbon dioxide
CO2e: Carbon dioxide equivalent
Cu: Copper
DRI: Direct Reduction Iron
EAF: Electric Arc Furnace
EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortisation
EC: European Commission
EMEA: Europe, Middle East and Africa
ESG: Environmental, Social, and Governance
EU: European Union
Fe: Iron
GHG: Greenhouse gas
GFC: Global Financial Crisis
GW: Gigawatt
H2: Hydrogen
HBI: Hot briquetted iron
HG: High grade ore
HME: Heavy Mining Equipment
IEA: International Energy Agency
IOC: Iron Ore Company of Canada
IRR: Internal rate of return
JV: Joint Venture
LCE: Lithium Carbonate Equivalent
LCOE: Levelised Cost of Energy
Mt: Million tonnes
Mtpa: Million tonnes per annum
MACC: Marginal Abatement Cost Curve
MWh: Megawatt hour
NBs: Nature-based Solutions
O&M: Operation & Maintenance
Pa: Per annum
PPA: Power Purchasing Agreement
QAL: Queensland Alumina Limited
QMM: QIT Madagascar Minerals
R&d: Research and development
RB: Richards Bay Minerals
RBM: Richards Bay Minerals
RE: Renewable Energy
RFF: Recovery and Resilience Facility
ROCE: Return on capital employed
RM: Richards Bay Minerals
RT: Rio Tinto
RTIO: Rio Tinto Iron Ore
RTX: Rio Tinto Exploration
SPS: Safe Production System
S&P: Standard & Poor’s
T: Tonne
T/a: Tonnes per annum
tCO2e: Tonne of carbon dioxide equivalent
tCO2e: Tonne of carbon dioxide equivalent
TiO2: Titanium dioxide
UB: Ulaanbaatar
USD: United States dollar
VAP: Value-added product
YoY: Year on Year
YTD: Year to date

Definitions

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