

Rio Tinto releases fourth quarter production results

16 January 2024

Rio Tinto Chief Executive Jakob Stausholm said: “We were fatality free for the fifth consecutive year at our managed operations but we remain vigilant and continue to learn from safety incidents. The Group’s total copper equivalent production increased by just over 3% from 2022, reflecting the Gudai-Darri mine in the Pilbara reaching its nameplate capacity and deployment of our Safe Production System. We also benefited from our increased ownership in Oyu Tolgoi as the underground ramps up and the Kitimat aluminium smelter returned to full capacity.

“We made real progress in shaping our portfolio for the future, entering the recycled aluminium market in North America and progressing the world class Simandou iron ore project in Guinea. We have one of the most exciting exploration pipelines in years, including our new copper joint venture with Codelco, launched in December. We continue to work hard to transform our culture and to invest in deep engagement and partnerships with Traditional Owners, such as our agreement to explore renewable energy projects with the Yindjibarndi Energy Corporation.

“There is good demand for the materials we produce, and our purpose and long-term strategy make more sense than ever. The work we are doing today is creating a stronger Rio Tinto for years to come, as we invest in profitable growth while continuing to deliver attractive shareholder returns.”

Production*		Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Pilbara iron ore shipments (100% basis)	Mt	86.3	-1%	+3%	331.8	+3%
Pilbara iron ore production (100% basis)	Mt	87.5	-2%	+5%	331.5	+2%
Bauxite	Mt	15.1	+15%	+8%	54.6	0%
Aluminium	kt	846	+8%	+2%	3,272	+9%
Mined copper (consolidated basis)	kt	160	+5%	-6%	620	+2%
Titanium dioxide slag	kt	275	-15%	+11%	1,111	-7%
IOC** iron ore pellets and concentrate	Mt	2.7	+7%	+13%	9.7	-6%

*Rio Tinto share unless otherwise stated

**Iron Ore Company of Canada

Q4 2023 operational highlights and other key announcements

- The safety, health and wellbeing of our workforce and communities where we operate remains our priority. We achieved our fifth consecutive year with no fatalities at our managed operations. But we maintain a state of chronic unease as safety incidents continued to occur at our sites, including two Permanent Disabling Injuries in 2023. We are applying learnings from these to enhance processes across our operations.
- Pilbara operations produced 331.5 million tonnes (100% basis) of iron ore, 2% higher than 2022. Improved productivity, supported by ongoing implementation of the Safe Production System, and the ramp up of Gudai-Darri to its nameplate capacity of 43 million tonnes per annum, within 12 months of commissioning, more than offset mine depletion. Shipments were 331.8 million tonnes (100% basis), 3% higher (+10 million tonnes) than 2022 and the second highest on record, with healthy inventory positions at year-end.
- On 18 October, we [announced](#) plans to increase iron ore production capacity at Gudai-Darri by 7 million tonnes to 50 million tonnes a year through incremental productivity gains, at a cost of around \$70 million. The capacity increase is subject to environmental, heritage and other relevant approvals.
- Bauxite production of 54.6 million tonnes in 2023 was unchanged from 2022. Operations saw a continued improvement in the fourth quarter, with production 8% higher than the prior quarter, following the challenges of higher-than-average rainfall at Weipa in the first quarter and equipment downtime at both Weipa and Gove in the first half.

- Aluminium production of 3.3 million tonnes was 9% higher than 2022 after we returned to full capacity at the Kitimat smelter and completed cell recovery efforts at Boyne during the third quarter. All other smelters continued to demonstrate stable performance.
- On 1 December, we [announced](#) the completion of a transaction to form the Matalco joint venture. Following receipt of all regulatory approvals, we acquired, and settled payment for, a 50% equity stake from Giampaolo Group for \$0.7 billion, subject to usual closing adjustments. Matalco will remain the operator of the joint venture's one Canadian and six US sites which have a combined annual capacity of ~900 thousand tonnes. Production from Matalco in 2023 was 582 thousand tonnes of recycled aluminium with Rio Tinto marketing these products from 1 December 2023.
- Mined copper production of 620 thousand tonnes (consolidated basis) was 2% higher than 2022 reflecting first sustainable production from Oyu Tolgoi underground in the first quarter and a full year of increased ownership of Oyu Tolgoi. This offset challenges at Kennecott following the conveyor failure in March, with the concentrator not returning to full capacity until the third quarter.
- Refined copper production of 175 thousand tonnes was 16% lower than 2022 as we undertook the largest rebuild of the smelter and refinery in Kennecott's history across the second and third quarters. With the smelter rebuild successfully completed and the ramp-up progressing, we expect a return to stable production in the first quarter of 2024.
- On 8 November, we [completed](#) the acquisition of PanAmerican Silver's stake in Agua de la Falda and entered a joint venture (known as Nuevo Cobre) with Corporación Nacional del Cobre de Chile (Codelco) to explore and potentially develop copper assets in Chile's prospective Atacama region.
- Titanium dioxide slag (TiO₂) production of 1,111 thousand tonnes was 7% lower than 2022. Two furnaces at our RTIT Quebec Operations remain offline following process safety incidents in June and July. In the fourth quarter, we decommissioned an additional furnace, which is due for reconstruction in 2024.
- IOC production of 9.7 million tonnes, was 6% lower than 2022 with challenges due to the wildfires in Northern Quebec in the second quarter, as well as extended plant downtime and conveyor belt failures in the third quarter.
- We are now deploying our Safe Production System at ~60% of our sites, with implementation at various stages of maturity. Key performance highlights include a 20% yearly improvement in AIFR globally where the Safe Production System has been deployed, as well as a 5 million tonne uplift in iron ore production. With eight Safe Production System deployment sites having achieved their best ever demonstrated production in recent months, we are well positioned to deliver our 2024 priorities, including a further 5 million tonne uplift at our Pilbara operations.
- On 6 December, we held our [Investor Seminar](#) in Sydney where we provided an update on our long-term strategy of investing with discipline to strengthen operations, delivering growth in a decarbonising world and continuing to generate attractive shareholder returns. We gave an update on the world class Simandou iron ore project in Guinea, as well as our decarbonisation investments, with our commitment to halve Scope 1 and 2 emissions by 2030 remaining unchanged.
- The full year cash outflow from an increase in working capital was comparable to the first half (\$0.9 billion outflow in the first half of 2023). This movement was driven by healthy stocks in the Pilbara, still elevated in-process inventory at Kennecott following the smelter rebuild and weaker market conditions including for titanium dioxide feedstock. Receivables also reflected a higher iron ore price at the end of 2023 that will be monetised in 2024. Operating cash flow was also impacted by lower dividends from Escondida.
- There were four changes to the Board during the fourth quarter:
 - On 25 October, we [announced](#) the appointment of James "Joc" O'Rourke as a non-executive director. Mr O'Rourke has more than 25 years of experience across the mining industry, including as former CEO of The Mosaic Company and a range of executive roles at Barrick Gold Corporation.
 - On 15 December, we [confirmed](#) that Dr Megan Clark has stepped down as a non-executive director, having served for nine years on the Board.

- On 22 December, we [announced](#) the appointment of Martina Merz as a non-executive director. Ms Merz brings extensive leadership and operational experience, most recently as CEO of industrial engineering and steel production conglomerate ThyssenKrupp. Ms Merz has held numerous leadership roles, including at Robert Bosch.
- On 22 December, we also [announced](#) the appointment of Sharon Thorne as a non-executive director. Ms Thorne is a Chartered Accountant and has had a 36-year career with Deloitte, becoming an audit partner in 1998 and holding numerous Executive and Board roles. Ms Thorne was appointed Global Chair in 2019, before retiring in 2023.
- On 22 November, we [announced](#) that we had reached a court approved settlement with the Securities and Exchange Commission (SEC) of a suit brought in 2017 concerning disclosure of the impairment of Rio Tinto Coal Mozambique reflected in our 2012 accounts. Without admitting to or denying the SEC's allegations related to our books, records and reporting requirements, we agreed to pay a \$28 million penalty and retain an independent consultant to advise on our current policies, procedures, and controls related to impairment, disclosures and project risk. With this settlement, all investigations of Rio Tinto regarding this matter have been finalised.
- Subsequent to the end of the period, Dampier Salt Limited entered into a sales agreement for the Lake MacLeod salt and gypsum operation in Carnarvon, Western Australia with privately-owned salt company Leichhardt Industrials Group for \$251 million (A\$375 million). Completion of the sale is subject to certain commercial and regulatory conditions being satisfied.

All figures in this report are unaudited. All currency figures in this report are US dollars, and comments refer to Rio Tinto's share of production, unless otherwise stated.

2024 guidance

Rio Tinto production share, unless otherwise stated	2023 Guidance	2023 Actuals	2024 Guidance
Pilbara iron ore (shipments, 100% basis) (Mt)	320 to 335 ¹	331.8	323 to 338
Bauxite (Mt)	54 to 57 ²	54.6	53 to 56
Alumina (Mt)	7.4 to 7.7	7.5	7.6 to 7.9
Aluminium (Mt)	3.1 to 3.3	3.3	3.2 to 3.4
Mined copper (kt) ³	590 to 640	620	660 to 720
Refined copper (kt)	160 to 190	175	230 to 260
Diamonds (M carats)	3.0 to 3.8	3.3	Not provided
Titanium dioxide slag (Mt)	1.1 to 1.4 ²	1.1	0.9 to 1.1
IOC ⁴ iron ore pellets and concentrate (Mt)	9.3 to 9.8	9.7	9.8 to 11.5
Boric oxide equivalent (Mt)	~0.5	0.5	~0.5

¹In the upper half of the range.

²In the lower end of the range.

³Mined copper for 2023 guidance and actuals includes Oyu Tolgoi on a 100% consolidated basis following Rio Tinto's acquisition of Turquoise Hill Resources Ltd, which completed on 16 December 2022.

⁴Iron Ore Company of Canada continues to be reported at Rio Tinto share.

- 2024 production guidance is unchanged since December 2023.
- Expectations for Pilbara iron ore shipments in 2024 remain at 323 to 338 million tonnes, unchanged since October 2023. SP10 levels are expected to remain elevated until replacement projects are delivered. Levels are dependent on the timing of approvals for planned mining areas, including heritage clearances.
- Iron ore shipments and bauxite production guidance remain subject to weather impacts.

Operating costs

- Guidance for 2024 Pilbara iron ore and Copper C1 unit cash costs will be provided in the 2023 full year results release due on 21 February 2024.
- Guidance for 2023 Pilbara iron ore unit cash costs is unchanged at the lower half of our \$21.0 to \$22.5 per tonne range (based on an average actual A\$:US\$ exchange rate for 2023 of 0.66).
- We expect to be in the upper half of the 2023 Copper C1 unit costs guidance range of 180 to 200 US cents/lb.

Aluminium modelling

As reported in the first half of 2023, to assist with modelling of aluminium operating costs during a volatile price environment for raw materials we provide the following breakdown and sensitivities for the alumina and aluminium metal segments (Primary Metal and Pacific Aluminium). This excludes the effect of intra and inter segment eliminations on group profit.

Alumina refining

Production cash cost (%)	FY 22	H1 23	H2 23	FY 23
Bauxite	31	31	31	31
Conversion	32	32	36	33
Caustic	23	24	20	22
Energy	14	13	13	13
Total	100	100	100	100

Input costs (nominal)	H1 22 Index price	H2 22 Index price	H1 23 Index price	H2 23 Index price	Inventory flow ³	FY 23 Annual cost sensitivity impact on underlying EBITDA
Caustic soda ¹ (\$/t)	675	595	432	369	3 - 4 months	\$11m per \$10/t
Natural gas ² (\$/mmbtu)	6.02	7.01	2.61	2.79	0 - 1 month	\$4m per \$0.10/GJ
Brent oil (\$/bbl)	105.9	93.8	79.2	85.4	N/A	\$2m per \$10/bbl

¹North East Asia FOB | ²Henry Hub | ³Based on quarterly standard costing (moving average)

Aluminium smelting

Production cash cost (%)	FY 22	H1 23	H2 23	FY 23
Alumina	41	37	38	37
Power	19	18	19	18
Conversion	17	20	22	21
Carbon	21	23	19	21
Materials	2	2	2	2
Total	100	100	100	100

Input costs (nominal)	H1 22 Index price	H2 22 Index price	H1 23 Index price	H2 23 Index price	Inventory flow ⁴	FY 23 Annual cost sensitivity impact on underlying EBITDA
Alumina ¹ (\$/t)	395	328	349	335	1 - 2 months	\$60m per \$10/t
Petroleum coke ² (\$/t)	695	719	636	496	2 - 3 months ⁵	\$11m per \$10/t
Coal tar pitch ³ (\$/t)	1103	1476	1,399	1,130	1- 2 months	\$2m per \$10/t

¹Australia FOB | ²US Gulf FOB | ³North America FOB | ⁴Based on quarterly standard costing (moving average) | ⁵Pet coke flows through inventory on a two to three month basis. This does not take into consideration the lag between market index prices and realised cost through to EBITDA. There is an additional lag of 1 - 3 months between price settlement and shipment date.

Investments, growth and development projects

- Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in 2023, excluding Simandou, was \$855 million, compared with \$706 million in 2022 on the same basis. Approximately 30% of the spend was by central exploration, 31% by Minerals (with the majority focusing on lithium), 31% by Copper and 7% by Iron Ore.
- Spend on Simandou in 2023 was \$0.9 billion (on a 100%¹ basis), compared to \$0.2 billion in 2022. The 2023 spend includes around \$0.4 billion to be funded by CIOH after receiving Chinese regulatory approvals.

Pilbara mine projects

- Construction of our Western Range mine is currently on schedule with civil work well advanced, while we continue to progress primary crusher works, bulk earthworks and mine pre-strip.
- We advanced our next tranche of Pilbara mine replacement project studies including Hope Downs 1 Sustaining (Hope Downs 2 and Bedded Hilltop), Brockman 4 sustaining (Brockman Syncline 1), Greater Nammuldi Sustaining and West Angelas Sustaining. We are working closely with Traditional Owners and Government Regulators on Part IV environmental approvals and heritage clearances.
- On 5 December, we announced [approval](#) of a \$77 million pre-feasibility study (PFS) to progress development of the Rhodes Ridge project. The PFS follows completion of an Order of Magnitude study that considered development of an operation with initial capacity of up to 40 million tonnes per year, subject to relevant approvals. Completion of the PFS is expected by the end of 2025 and will be followed by a feasibility study, with first ore expected by the end of the decade.

Oyu Tolgoi underground project

- We continue to see strong performance from the underground mine, with a total of 86 drawbells opened from Panel 0, including 14 during the quarter. The operation is expected to ramp up to deliver average mined copper production of ~500ktpa (100% basis) between 2028 and 2036².
- Sinking of ventilation shafts 3 and 4 continued to progress well during the quarter and at the end of December reached depths of 923 metres and 1,013 metres below ground level, respectively. Final depths required for shafts 3 and 4 are 1,130 and 1,176 metres respectively. Both shafts are expected to be commissioned in the second half of 2024.
- Construction of the conveyor to surface works continued to plan and was 88% complete at the end of the quarter. Commissioning remains on track for the second half of 2024.
- Construction works for the concentrator conversion remains on schedule. Commissioning is expected to be progressively completed from the fourth quarter of 2024 through to the second quarter of 2025.
- During the quarter, Rio Tinto, Oyu Tolgoi and the Government of Mongolia continued to work together towards the implementation of Mongolian Parliamentary Resolution 103.

Simandou iron ore project

- During our [Investor Seminar](#), we gave an [update](#) on Rio Tinto's Simandou iron ore project in Guinea, which is being progressed through the Simfer joint venture in partnership with CIOH, a Chinalco-led consortium³ and the Republic of Guinea. Simandou is the world's largest untapped high-grade iron ore [deposit](#). We estimate our initial⁴ share of capital expenditure is approximately \$6.2 billion⁵ including development of the Simfer mine, to be owned and operated by our existing Simfer joint venture, and the co-developed rail and port infrastructure project, to be constructed through a joint venture between our Simfer joint venture, Winning Consortium Simandou (WCS)⁶, Baowu and the Republic of Guinea. We expect full year expenditure for 2023 of around \$0.9 billion to progress critical path works, including around \$0.4 billion to be funded by CIOH after receiving Chinese regulatory approvals. First production from the Simfer mine is expected in 2025, ramping up over 30 months to an annualised capacity of 60 million tonnes per year⁷ (27 million tonnes per year Rio Tinto share).

- We continued to make progress through the fourth quarter towards finalising the infrastructure joint venture arrangements between Simfer Jersey, WCS, Baowu and the Republic of Guinea, with a number of additional agreements signed in December. We continue to work with our partners to finalise⁸ regulatory approvals. Chinese outbound investment approval processes are advancing and expected in the first quarter. In the meantime, antitrust clearances, including from China, were received in December. Full sanction of the project by the Rio Tinto Board is subject to the remaining conditions being met, including joint venture partner approvals and regulatory approvals from China and Guinea. Simfer mobilisation continued with a workforce of nearly 6,000 on site to support critical path works to ensure progress on mine, port and rail construction.

Other key projects and exploration and evaluation

- At Complexe Jonquière in Quebec, Canada, we continued early works for the expansion of our low-carbon AP60 aluminium smelter during the quarter. Once completed, the project will add 96 new AP60 pots, increasing capacity by approximately 160,000 metric tonnes of primary aluminium per year. This new capacity, in addition to 30,000 tonnes of new recycling capacity at Arvida expected to open in the first quarter of 2025, will offset the 170,000 tonnes of capacity lost through the gradual closure of potrooms at the Arvida smelter from 2024.
- At Kennecott, progress on the North Rim Skarn (NRS) underground development and infrastructure was impacted by a ground fall event. Full underground activities have resumed, however, production from the NRS is now forecast to commence in the first quarter of 2025 (previously 2024).
- At the Resolution Copper project in Arizona, the United States Forest Service (USFS) continued work to progress the Final Environmental Impact Statement (FEIS) and complete actions necessary for the land exchange. We continued to advance partnership discussions with federally-recognised Native American Tribes who are part of the formal consultation process. We are also monitoring the Apache Stronghold versus USFS case held in the US Ninth Circuit Court of Appeals. While there is significant local support for the project, we respect the views of groups who oppose it and will continue our efforts to address and mitigate concerns.
- At the Winu copper-gold project in Western Australia, Project Planning Agreements were executed with the Nyangumarta and Martu groups, the Traditional Owners of the land on which the proposed Winu mine and airstrip will be located. Study activities, drilling and fieldwork progressed sufficiently to commence Winu's formal Western Australian Environmental Protection Authority (EPA) approval process. Work in 2024 to complete the environmental approval deliverables and the Project Agreement negotiations with both Traditional Owner groups remains the priority.
- Nuton, our proprietary copper heap leaching technology venture, announced non-dilutive financing of \$33 million for an option to enter into a joint venture agreement with Arizona Sonoran Copper Company Inc. (ASCU). The strategic alliance aims to deploy Nuton at ASCU's Cactus Mine and the Parks/Salyer Project in Arizona. In addition, Nuton invested \$10 million in the Yerington project, owned by Lion Copper & Gold (LionCG) and located in Nevada. As at the end of 2023, Nuton's portfolio comprised of six partnerships (Cactus with ASCU, Yerington with LionCG, Johnson Camp with Excelsior, AntaKori with Regulus, Escondida with BHP and Los Azules with McEwen) across four countries.
- We continue to believe that the Jadar lithium-borate project in Serbia has the potential to be a world-class asset, that will support the development of other future industries in Serbia, acting as a catalyst for tens of thousands of jobs for current and future generations, and sustainably producing materials critical to the energy transition. We are focused on consultation with all stakeholders to explore options related to the project's future.
- At the Rincon lithium project in Argentina, development of the three thousand tonne per annum lithium carbonate starter plant is ongoing with the installation of the adsorption columns, evaporator, main tanks and construction camp. We progressed studies for the full-scale operation during the quarter, and the exploration campaign to further understand Rincon's basin, brine and water reservoirs. We continue to engage with communities, the province of Salta and the Government of Argentina to ensure an open and transparent dialogue with stakeholders about the works underway. We continue to expect first production from the three thousand tonne per annum lithium carbonate starter plant by the end of 2024.

¹Costs relating to the Simfer joint venture where the Government of Guinea holds 15% and Simfer Jersey holds 85%. Simfer Jersey is owned by Rio Tinto (53%) and Chalco Iron Ore Holdings (CIOH) (47%).

² The 500ktpa copper production target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 was previously reported in a release to the Australian Securities Exchange (ASX) dated 11 July 2023 "Investor site visit to Oyu Tolgoi copper mine, Mongolia". All material assumptions underpinning that production target and those production profiles continue to apply and have not materially changed.

³Simfer Jersey Limited is a joint venture between the Rio Tinto Group (53%) and Chalco Iron Ore Holdings Ltd (CIOH) (47%), a Chinalco-led joint venture of leading Chinese SOEs (Chinalco (75%), Baowu (20%), China Rail Construction Corporation (2.5%) and China Harbour Engineering Company (2.5%)). Simfer S.A. is the holder of the mining concession covering Simandou Blocks 3 & 4, and is owned by the Guinean State (15%) and Simfer Jersey Limited (85%). Simfer Infracore Guinée S.A.U. will deliver Simfer's scope of the co-developed rail and port infrastructure, and is, on the date of this notice, a wholly-owned subsidiary of Simfer Jersey Limited, but will be co-owned by the Guinean State (15%) after closing of the co-development arrangements. Simfer Jersey will ultimately own 42.5% of Compagnie du Transguinée, which will own and operate the co-developed infrastructure during operations.

⁴A true-up mechanism will apply between Simfer and WCS to equalise their out of pocket costs of constructing the co-developed rail and port infrastructure.

⁵Estimated numbers, subject to approval by all joint venture partners and government authorities.

⁶WCS is currently a consortium of Singaporean company, Winning International Group (50%), Weiqiao Aluminium (part of the China Hongqiao Group) (50%) and United Mining Supply Group (nominal shareholding). WCS is the holder of Simandou Blocks 1 & 2 (with the Government of Guinea holding a 15% interest in the mining vehicle and WCS holding 85%) and associated infrastructure. Baowu Resources has entered into an agreement to acquire a 49% share of WCS mine and infrastructure projects through a Baowu-led consortium, subject to conditions including regulatory approvals. In the case of the mine, Baowu has an option to increase to 51% during operations.

⁷The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the Australian Securities Exchange (ASX) dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target and those production profiles continue to apply and have not materially changed.

⁸Co-development of the rail and port infrastructure remains subject to a number of conditions, including regulatory approvals in Guinea and China, the entry into a number of legal agreements, ratification of the investment framework for co-development by the Republic of Guinea, and agreement between Simfer, WCS and the Republic of Guinea regarding the budget for the rail and port infrastructure.

Sustainability highlights

During 2023, we continued to implement the 26 recommendations of the [Everyday Respect report](#). As part of this, we have invested in developing the mindsets, behaviours and skills of all employees to create a safe, respectful and inclusive workplace. This included all our leaders and ~81% of employees completing training on building psychological safety and being an upstander. Twenty new village councils are now in place and Care Hub has been launched to help people impacted by harmful behaviours, reaching ~30,000 employees, across Australia, New Zealand and Mongolia. We will be conducting an independent progress review with Elizabeth Broderick during 2024 which we plan to share externally.

Through 2023, we continued our work on our 2019 water targets, which consisted of one Group and six-site based targets, and, at year-end, remained on-track to substantially meet these. In 2023, on World Water Day, we became the first major mining company to release our site-by-site water usage. The [interactive online map](#) shows surface water usage across our global network of managed sites in 35 countries. In December 2023, we released our [2021 – 2023 Water Report for QMM](#) which provides further detail on the water strategy, and water quality data and performance at our operations in Madagascar. In 2024, we will be launching our next 5-year water targets.

Other sustainability highlights for the fourth quarter include:

[12 October 2023 | Rio Tinto becomes official aluminium partner of the Montreal Canadiens](#)

[30 October 2023 | Rio Tinto and Prysmian partner on sustainable supply of materials](#)

[21 November 2023 | Rio Tinto starts recycling steel from Australia's largest ever demolition project](#)

Communities & Social Performance (CSP)

Key highlights from the quarter are provided below, with further information available on our [website](#).

[10 October 2023 | Rio Tinto to provide additional funding to the Australia-Japan Innovation Fund](#)

[10 November 2023 | Rio Tinto Kennecott donates \\$10 million to Museum of Utah](#)

[29 November 2023 | Rio Tinto amplifies support for domestic and family violence prevention in Canada](#)

[4 December 2023 | UNESCO and Rio Tinto sign partnership to support sustainable development in Mongolia](#)

Climate change, product stewardship and our value chain

At our [Investor Seminar](#), on 6 December, we re-iterated our commitment to halve Scope 1 and 2 emissions by 2030 and achieve net zero by 2050. Our decarbonisation capital spend to 2030 was revised to \$5-6bn (previously ~\$7.5bn) including around \$1.5bn from 2024 to 2026. This reflects factors including the use of commercial partnerships outside of capital expenditure, such as renewable power purchase agreements and biofuel contracts, to accelerate decarbonisation, and aligning the timing of investment in the second phase of Pilbara renewable infrastructure to beyond 2030 when it will be needed to support fleet electrification. We also gave an update on our continued work on Scope 3, with partnerships and technology development fundamental to helping our customers decarbonise. As part of the update, we set out near-term Scope 3 ambitions such as a 50% reduction in Scope 3 from IOC by 2035 and our aim to commission a Biolron™ Continuous Pilot Plant by 2026 (both subject to funding approval and technical feasibility). A brief guide on Biolron™ from our Chief Scientist, Nigel Steward, can be found [here](#).

In the fourth quarter, we progressed initiatives to decarbonise our assets and continued to develop partnerships and technologies to decarbonise our value chains. Key developments are provided below:

[10 October 2023 | Rio Tinto Kennecott completes construction of solar power plant](#)

[20 October 2023 | Rio Tinto and Yindjibarndi Energy sign Pilbara renewables MOU](#)

[21 November 2023 | Rio Tinto partners with Aymium to trial renewable biocarbon product](#)

[4 December 2023 | Rio Tinto approves new solar farm and battery storage to power its Amrun bauxite operations on Cape York](#)

[5 December 2023 | Rio Tinto Kennecott to fully transition to renewable diesel](#)

Our markets

Commodity prices found some support during the quarter, amid increased Chinese policy measures, lower global recession fears and a broad slowdown in inflation. Monetary policy in advanced economies remains tight. However, interest rates may now have peaked. Global supply chain challenges have improved, although risks remain on certain routes such as the Panama and Suez Canals, while labour costs are still rising amidst tight markets in Australia, Canada and the USA.

- China's economy stabilised earlier in the fourth quarter. Resilient infrastructure and manufacturing investment, and an increase in the automotive sector and consumer goods, helped offset the prolonged weakness in the property market. Market confidence increased following strong fiscal easing and improvement in manufacturing and consumption levels. Stimulus measures are expected to drive a gradual recovery in 2024, albeit weighted towards the second half, with the real estate sector remaining weak.
- The US economy is slowing down with labour markets cooling. Consumers remain pressured by higher interest rates, tighter lending standards and depleted savings. Inflation has eased to its lowest level in two years, but the Federal Reserve's top priority is still to reduce it further to the 2% target, even as the prospect of rate cuts increases in 2024. The services sector has held up relatively well, although industrial production growth is subdued, while the manufacturing PMI continues to remain contractionary.
- The eurozone has been stagnant during the past year, driven by the contractionary monetary policy, impact of inflation on consumers' real income and weak external demand. A gradual recovery later in 2024 from a low base is expected to gather momentum as consumption improves while financial conditions ease.
- Iron ore prices rose by 17% over the quarter, while the average monthly price in the fourth quarter of \$129/dmt (Platts CFR 62% Fe index) was 13% higher than the third quarter. Seaborne supply increased by ~1% quarter-on-quarter, which was absorbed by the ~3% quarter-on-quarter growth in China's iron ore imports and the stabilisation of steel demand in other developed and emerging regions. China's steel and pig iron production run-rates decelerated in late-December, while iron ore arrivals remained elevated in line with typical fourth quarter seasonality. China's port inventories increased by ~6 million tonnes during the quarter, reaching 120 million tonnes by the end of the year.
- The LME aluminium price increased by 1% over the quarter, while the average price rose 2%, from the third quarter, to \$2,190/t. Aluminium demand in North America and Europe remained weak, except in the transport sector. Chinese primary production growth slowed during the quarter on renewed winter disruptions in southern China. Low global reported inventories remained supportive of aluminium prices. China bauxite import prices were well supported throughout the fourth quarter. Bauxite mines in Henan and Shanxi suspended production for several months on environmental requirements, resulting in high import demand and robust prices. A major fuel depot explosion in Conakry raised concerns of an interruption to bauxite mining operations in Guinea, leading to increased price volatility in bauxite and alumina. Guinea supplies ~67% of China's total seaborne bauxite requirement.
- The LME copper price increased by 3% over the quarter, although the \$3.70/lb average price was 2% lower than the third quarter. Major mine supply disruptions in Central and South America, and lower expectations for 2024 supply, have tightened the market balance. Energy transition-related copper demand supported growth in 2023 and helped offset weaker demand from the construction sector.
- The decline in the lithium carbonate spot price continued in the fourth quarter, having fallen ~80% since early 2023, driven by increased global mine supply and destocking along the supply chain. Electric vehicle (EV) demand growth slowed, albeit from a higher base. Market fundamentals for lithium remain strong over the longer term. EV penetration rates will continue to increase as countries decarbonise and more investment into mine supply will be required to fill the supply gap.

- Global TiO₂ feedstock demand witnessed a small improvement in the fourth quarter in line with rising operating rates of the TiO₂ pigment industry. Underlying pigment demand remains subdued on weak real-estate activity in the Americas, Europe and China; whereas titanium sponge demand remains robust, driven by a recovery in the aircraft industry.
- Borates demand has been weak in 2023, driven by pronounced weakness in the housing and construction markets. Macro headwinds and latent supply capacity could put further downward pressure on prices. Additionally boric acid inventories are particularly high which is reducing apparent demand.

Average realised prices achieved for our major commodities

	Units	H1 2023	H2 2023	2023	2022
Pilbara iron ore	FOB, \$/wmt	98.6	100.8	99.7	97.6
Pilbara iron ore	FOB, \$/dmt	107.2	109.6	108.4	106.1
Aluminium*	Metal \$/t	2,866	2,612	2,738	3,330
Copper**	US c/lb	396	381	390	403
IOC pellets	FOB \$/wmt	154.7	155.2	155.0	190.3

*LME plus all-in premiums (product and market).

**Average realised price for all units sold. Realised price does not include the impact of the provisional pricing adjustments, which positively impacted revenues in 2023 by \$2 million (2022 negative impact of \$175 million).

Iron Ore

Rio Tinto share of production (Million tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Pilbara Blend and SP10 Lump ¹	22.2	+4%	+4%	84.3	+7%
Pilbara Blend and SP10 Fines ¹	33.5	-5%	+6%	127.8	+3%
Robe Valley Lump	1.6	-3%	-4%	5.9	+12%
Robe Valley Fines	2.7	+8%	+12%	9.6	+16%
Yandicoogina Fines (HIY)	13.8	-9%	+1%	53.0	-7%
Total Pilbara production	73.8	-3%	+4%	280.5	+3%
Total Pilbara production (100% basis)	87.5	-2%	+5%	331.5	+2%

Rio Tinto share of shipments (Million tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Pilbara Blend Lump	14.5	-4%	-2%	59.7	+11%
Pilbara Blend Fines	23.7	-27%	-7%	105.1	-5%
Robe Valley Lump	1.5	+21%	+16%	5.0	+20%
Robe Valley Fines	3.1	+5%	+13%	10.5	+13%
Yandicoogina Fines (HIY)	13.6	-7%	0%	53.5	-6%
SP10 Lump ¹	4.6	+64%	+11%	12.1	-5%
SP10 Fines ¹	12.2	+141%	+26%	35.4	+56%
Total Pilbara shipments ²	73.3	-2%	+2%	281.4	+4%
Total Pilbara shipments (100% basis) ²	86.3	-1%	+3%	331.8	+3%
Total Pilbara Shipments (consolidated basis) ^{2, 3}	75.1	-2%	+2%	288.4	+4%

Production figures are sometimes more precise than the rounded numbers shown, hence small rounding differences may appear.

¹SP10 includes other lower grade products.

²Shipments includes material shipped from the Pilbara to our portside trading facility in China which may not be sold onwards by the group in the same period.

³While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

Pilbara operations

We produced 87.5 million tonnes (Rio Tinto share 73.8 million tonnes) in the fourth quarter, 2% lower than the corresponding period of 2022, and 5% higher than the prior quarter.

Shipments of 86.3 million tonnes (Rio Tinto share 73.3 million tonnes) were 1% lower than the fourth quarter of 2022, and 3% higher than the prior quarter. SP10 was a larger proportion of shipments during the fourth quarter (20%¹).

Shipments for 2023, on a 100% basis, were 3% higher (+10 million tonnes) than in 2022, making 2023 the second highest shipment year on record. Improved system performance supported by a 5 million tonne uplift from implementation of the Safe Production System, and ramp-up of Gudai-Darri to its 43 million tonne nameplate capacity, offset mine depletion.

Yandicoogina Fines shipments were 6% lower than in 2022 due to progressive ore depletion. SP10 volumes accounted for 47.5 million tonnes of 2023 shipments (or 14%¹).

Approximately 10% of sales in 2023 were priced by reference to the prior quarter's average index lagged by one month. The remainder was sold either on current quarter average, current month average, average of two months, forward month or on the spot market. Approximately 26% of sales in 2023 were made on a free on board (FOB) basis, with the remainder sold including freight.

China Portside Trading

Our iron ore portside sales in China were 5.8 million tonnes in the fourth quarter of 2023 (4.8 million tonnes in the fourth quarter of 2022), leading to a total of 23.3 million tonnes in 2023 (24.3 million tonnes in 2022). At the end of December, inventory levels were 6.4 million tonnes, including 3.9 million tonnes of Pilbara product. In 2023, approximately 86% of our portside sales were either screened or blended in Chinese ports (80% in 2022).

¹Based on total Pilbara shipments on a 100% basis.

Aluminium

Rio Tinto share of production ('000 tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Bauxite	15,098	+15%	+8%	54,619	0%
Bauxite third party shipments	10,749	+16%	+13%	37,337	-2%
Alumina	1,919	-1%	+1%	7,537	0%
Aluminium	846	+8%	+2%	3,272	+9%

Bauxite

Bauxite production of 15.1 million tonnes was 15% higher than the fourth quarter of 2022 and 8% higher than the prior quarter as we continued to stabilise both Weipa and Gove with improvements in equipment reliability.

We shipped 10.7 million tonnes of bauxite to third parties in the fourth quarter, 16% higher than the same period of 2022.

Alumina

Alumina production of 1.9 million tonnes was 1% lower than the fourth quarter of 2022 but 1% higher than the third quarter of 2023 with the Yarwun and Queensland Alumina Limited (QAL) refineries showing improved operational stability.

As the result of QAL activation of a step-in process following sanction measures by the Australian Government, Rio Tinto has taken on 100% of capacity for as long as the step-in continues. This results in use of Rusal's 20% share of capacity by Rio Tinto under the tolling arrangement with QAL. This additional output is excluded from the production tables in this report as QAL remains 80% owned by Rio Tinto and 20% owned by Rusal.

Aluminium

Aluminium production of 0.8 million tonnes was 8% higher than the fourth quarter of 2022 after we returned to full capacity at our Kitimat smelter and completed cell recovery efforts at Boyne in the prior period. All our other smelters continued to demonstrate stable performance during the quarter.

Production from Matalco in 2023 was 582 thousand tonnes of recycled aluminium products with Rio Tinto marketing these products from 1 December 2023. With this addition to our aluminium portfolio, we are able to offer customers a full suite of aluminium products including low-carbon primary aluminium made with hydropower and a diverse portfolio of recycled aluminium solutions.

Copper

Rio Tinto share of production ('000 tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Mined copper					
Kennecott	47.8	+1%	-2%	151.6	-15%
Escondida	71.6	-2%	-9%	299.9	0%
Oyu Tolgoi (66% basis) ¹	26.8	+148%	-3%	110.9	+156%
Total mined copper production	146.2	+11%	-6%	562.4	+8%
Total mined copper production (consolidated basis ²)	160.0	+5%	-6%	619.6	+2%
Refined copper					
Kennecott	32.0	-11%	+73%	108.6	-27%
Escondida	14.1	-5%	-10%	66.7	+9%

¹Oyu Tolgoi production for 2022 reported on a 33.52% equity share basis. Following the acquisition of Turquoise Hill Resources Ltd on 16 December 2022, Oyu Tolgoi production for 2023 reported on a 66% equity share basis.

²Includes Oyu Tolgoi and Kennecott on a 100% consolidated basis, and Escondida on an equity share basis.

Kennecott

Mined copper production was 1% higher than the fourth quarter of 2022 with the concentrator continuing to run at full capacity, following the recovery from a conveyor failure in March 2023.

Refined copper production was 11% lower than the fourth quarter of 2022 as the smelter continues to ramp up following the completion of the largest rebuild of the smelter and refinery in Kennecott's history. The ramp up during the fourth quarter of 2023 meant that the smelter was not at full production rates leading to reduced cathode production when compared to the fourth quarter of 2022. With the smelter rebuild successfully completed and the ramp-up progressing, we expect a return to stable production in the first quarter of 2024.

Escondida

Mined copper production was 2% lower than the fourth quarter of 2022 due to a 3% lower recovery in the concentrator and lower grade on the oxide leach pad, offset by 2% higher throughput partially due to softer ore and 3% higher head grade in the concentrator due to mine sequencing. Refined production was 5% lower than the fourth quarter of 2022 due to lower stacking and a lower copper grade fed into the process.

Oyu Tolgoi

Mined copper production on a 100% basis increased 26% from the fourth quarter of 2022 as the ramp-up in underground production continued to plan, delivering average copper head grades of 0.53%. During the quarter, we delivered 0.9 million tonnes of ore milled from the underground mine at an average copper head grade of 1.59% and 8.7 million tonnes from the open pit with an average grade of 0.42%.

Oyu Tolgoi LLC received a tax assessment on 20 December 2023 from the Mongolian Tax Authority of approximately US\$80 million. This relates to a tax audit covering the 2019 and 2020 income years. Oyu Tolgoi has paid more than MNT9.9 trillion (US\$4.2 billion) in taxes, royalties and fees in Mongolia since 2010 and will continue to make all payments required under the relevant Mongolian legislation and Investment Agreement.

Provisional pricing

At 31 December 2023, the Group had approximately 243 million pounds of copper sales that were provisionally priced at 381 cents per pound. The final price of these sales will be determined during the first half of 2024. This compares with 221 million pounds of open shipments at 31 December 2022, provisionally priced at 368 cents per pound. Provisional pricing adjustments positively impacted revenues in 2023 by \$2 million (2022 negative impact of \$175 million).

Minerals

Rio Tinto share of production (million tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Iron ore pellets and concentrate					
IOC	2.7	+7%	+13%	9.7	-6%

Rio Tinto share of production ('000 tonnes)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Minerals					
Borates - B ₂ O ₃ content	111	-21%	-12%	495	-7%
Titanium dioxide slag	275	-15%	+11%	1,111	-7%

Rio Tinto share of production ('000 carats)	Q4 2023	vs Q4 2022	vs Q3 2023	2023	vs 2022
Diavik	659	-50%	-13%	3,340	-28%

Iron Ore Company of Canada (IOC)

Iron ore production was 7% higher than the fourth quarter of 2022 and 13% higher than the prior quarter, due to improved equipment reliability at the concentrator, pellet plant and ore delivery system.

Shipments were 16% higher than the fourth quarter of 2022, driven by improved production.

Borates

Borates production in the fourth quarter was 21% lower than the corresponding period of 2022 due to a scheduled shut in December.

Iron and Titanium

Titanium dioxide slag production was 15% lower than the fourth quarter of 2022. Two furnaces at our RTIT Quebec Operations remain offline following process safety incidents in June and July. In the fourth quarter, we decommissioned an additional furnace that reached the end of its useful life and is due for reconstruction in 2024. As a result, we enter 2024 with six out of nine furnaces operating at our RTIT Quebec Operations and three out of four online at Richards Bay Minerals (RBM).

Diamonds

At Diavik, our share of carats was 50% lower than the fourth quarter of 2022 due to lower ore mined as a result of the closure of the A418 underground and A21 open pit kimberlite pipes earlier in 2023, partially offset by improvements in A154N underground ore deliveries.

Exploration and evaluation

Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in 2023, excluding Simandou, was \$855 million, compared with \$706 million in 2022 on the same basis. Approximately 30% of the spend was by Central Exploration, 31% by Minerals (with the majority focusing on lithium), 31% by Copper and 7% by Iron Ore.

Exploration highlights

Rio Tinto has a strong portfolio of projects with activity in 18 countries across eight commodities in early exploration and studies stages. The bulk of the exploration expenditure in the fourth quarter focused on copper in Australia, Colombia, Chile, and Namibia, nickel in Peru and Brazil, heavy mineral sands in South Africa, and potash in Canada. Rio Tinto recently partnered with Codelco on the Nuevo Cobre copper project in the prospective Atacama region in Chile and with Charger Metals on the Lake Johnston lithium project in the Yilgarn, Western Australia. Rio Tinto divested its interest in the Amargosa bauxite project in Brazil. Greenfield exploration for copper continues in Zambia, US, Angola, Kazakhstan, Peru, Australia, Laos and Papua New Guinea. Greenfield exploration for lithium continues in Australia, Canada, Chile, Finland, Rwanda and US and for nickel in Australia, Brazil, Canada, Finland and Peru. Mine lease exploration continued on Rio Tinto managed businesses including Bingham Canyon in the US and Pilbara Iron Ore in Australia.

A summary of activity for the quarter is as follows:

Commodities	Studies Stage	Advanced projects	Greenfield/ Brownfield programmes
Bauxite			Melville Island, Australia Cape York, Australia
	Rincon Lithium, Argentina Lithium borates: Jadar, Serbia Nickel: Tamarack, US (3rd party operated)		Nickel Greenfield: Australia, Brazil, Canada, Finland, Peru Lithium Greenfield: Australia, Brazil, Canada, Chile, China, Finland, Rwanda, US Lithium borates Brownfield: US
Battery Materials			Copper Greenfield: Angola, Australia, Brazil, Canada, Chile, China, Colombia, Finland, Kazakhstan, Namibia, Laos, Peru, Papua New Guinea, Serbia, US, Zambia Copper Brownfield: US
Copper	Copper/molybdenum: Resolution, US Copper/Gold: Winu, Australia	Copper: La Granja, Peru Pribrezhniy, Kazakhstan Calibre-Magnum, Australia	
Diamonds	Falcon, Canada ¹		Diamonds Greenfield: Angola
Iron Ore	Pilbara, Australia Simandou, Guinea	Pilbara, Australia	Greenfield and Brownfield: Pilbara, Australia
Minerals	Potash: KL262 ² , Canada Heavy mineral sands: Mutamba, Mozambique		Heavy mineral sands Greenfield: Australia, South Africa Rutile-graphite: Malawi Potash Greenfield: Canada

¹The Falcon Project in Saskatchewan, Canada, is currently in care and maintenance whilst Rio Tinto considers alternative commercial options, including potential exit.

²Limited activity during the quarter.

Forward-looking statement

This announcement 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 announcement, 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 and any statements related to the ongoing impact of the COVID-19 pandemic), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "would", "should", "could", "will", "target", "set to", "seek", "risk" 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. 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 are levels of actual production during any period, levels of demand and market prices, the ability to produce and transport products profitably, the impact of foreign currency exchange rates on market prices and operating costs, operational problems, political uncertainty and economic conditions in relevant areas of the world, the actions of competitors, activities by governmental authorities such as changes in taxation or regulation, the risks and uncertainties associated with the ongoing impacts of COVID-19 or other pandemic and such other risk factors 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. The above list is not exhaustive. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption caused by the outbreak of COVID-19. These forward-looking statements speak only as of the date of this announcement. 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 announcement 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.

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

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Classification: 3.1 Additional regulated information required to be disclosed under the laws of a Member State

Rio Tinto production summary

Rio Tinto share of production

		Quarter			Full Year		% change		
		2022 Q4	2023 Q3	2023 Q4	2022	2023	Q4 23 vs Q4 22	Q4 23 vs Q3 23	2023 vs 2022
Principal commodities									
Alumina	('000 t)	1,941	1,897	1,919	7,544	7,537	-1%	+1%	0%
Aluminium	('000 t)	783	828	846	3,009	3,272	+8%	+2%	+9%
Bauxite	('000 t)	13,181	13,940	15,098	54,618	54,619	+15%	+8%	0%
Borates	('000 t)	141	127	111	532	495	-21%	-12%	-7%
Copper - mined	('000 t)	131.3	155.1	146.2	521.1	562.4	+11%	-6%	+8%
Copper - refined	('000 t)	51.0	34.1	46.1	209.2	175.2	-10%	+35%	-16%
Iron Ore	('000 t)	78,415	73,241	76,514	283,247	290,171	-2%	+4%	+2%
Titanium dioxide slag	('000 t)	323	247	275	1,200	1,111	-15%	+11%	-7%
Other Metals & Minerals									
Diamonds	('000 cts)	1,319	757	659	4,651	3,340	-50%	-13%	-28%
Gold - mined	('000 oz)	55.7	80.2	75.6	235.0	281.5	+36%	-6%	+20%
Gold - refined	('000 oz)	30.3	12.4	20.6	113.9	74.2	-32%	+67%	-35%
Molybdenum	('000 t)	1.1	0.6	0.8	3.3	1.8	-30%	+21%	-46%
Salt	('000 t)	1,458	1,434	1,438	5,757	5,973	-1%	0%	+4%
Silver - mined	('000 oz)	1,042	1,001	1,100	3,940	3,811	+6%	+10%	-3%
Silver - refined	('000 oz)	512	240	406	1,950	1,407	-21%	+69%	-28%

Throughout this report, figures in italics indicate adjustments made since the figure was previously quoted on the equivalent page or reported for the first time. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

Rio Tinto share of production

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
ALUMINA								
Production ('000 tonnes)								
Jonquière (Vaudreuil)	100 %	368	371	346	325	349	1,364	1,392
Jonquière (Vaudreuil) specialty Alumina plant	100 %	29	25	27	28	29	114	109
Queensland Alumina	80 %	678	632	677	720	664	2,740	2,693
São Luis (Alumar)	10 %	97	94	66	88	90	377	338
Yarwun	100 %	769	739	745	736	786	2,949	3,006
Rio Tinto total alumina production		1,941	1,860	1,861	1,897	1,919	7,544	7,537
ALUMINIUM								
Production ('000 tonnes)								
Australia - Bell Bay	100 %	48	45	46	47	47	185	186
Australia - Boyne Island	59 %	68	70	73	76	76	267	295
Australia - Tomago	52 %	76	75	75	77	77	302	304
Canada - six wholly owned	100 %	360	367	389	398	410	1,341	1,565
Canada - Alouette (Sept-Îles)	40 %	63	62	63	64	64	251	253
Canada - Bécancour	25 %	29	29	29	28	30	115	117
Iceland - ISAL (Reykjavik)	100 %	52	51	52	52	54	202	209
New Zealand - Tiwai Point	79 %	68	66	66	66	67	267	265
Oman - Sohar	20 %	20	20	20	20	20	79	80
Rio Tinto total aluminium production		783	785	814	828	846	3,009	3,272
BAUXITE								
Production ('000 tonnes) (a)								
Gove	100 %	2,874	2,579	2,739	3,015	3,234	11,510	11,566
Porto Trombetas (b)	22 %	391	275	327	391	509	1,332	1,502
Sangaredi	(c)	1,588	1,744	1,614	1,524	1,544	7,252	6,425
Weipa	100 %	8,328	7,492	8,813	9,010	9,811	34,525	35,126
Rio Tinto total bauxite production		13,181	12,089	13,492	13,940	15,098	54,618	54,619

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) On 30 November 2023, Rio Tinto's ownership interest in Porto Trombetas increased from 12% to 22%. Production is reported including this change from 1 December 2023.

(c) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

Rio Tinto share of production

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
BORATES								
Production ('000 tonnes B₂O₃ content)								
Rio Tinto Borates - borates	100 %	141	124	133	127	111	532	495
COPPER								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	47.5	30.3	24.8	48.8	47.8	179.2	151.6
Escondida	30 %	73.0	72.3	77.4	78.6	71.6	298.6	299.9
Oyu Tolgoi (b)	66 %	10.8	28.1	28.3	27.7	26.8	43.4	110.9
Rio Tinto total mine production		131.3	130.7	130.5	155.1	146.2	521.1	562.4
Rio Tinto total mine production - consolidated basis		152.8	145.2	145.0	169.4	160.0	607.2	619.6
Refined production ('000 tonnes)								
Escondida	30 %	14.9	15.2	21.7	15.6	14.1	60.9	66.7
Kennecott (c)	100 %	36.1	43.6	14.4	18.5	32.0	148.3	108.6
Rio Tinto total refined production		51.0	58.9	36.2	34.1	46.1	209.2	175.3

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership in Oyu Tolgoi from 33.52% to 66%. From 1 January 2023, our share of production has been updated to reflect this change.

(c) We continue to process third party concentrate to optimise smelter utilisation. There was no cathode produced from purchased concentrate in 2023 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

DIAMONDS

Production ('000 carats)

Diavik	100 %	1,319	954	970	757	659	4,651	3,340
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GOLD

Mine production ('000 ounces) (a)

Bingham Canyon	100 %	29.7	20.6	18.7	32.0	33.5	122.7	104.8
Escondida	30 %	14.5	14.7	16.1	14.4	14.6	50.6	59.7
Oyu Tolgoi (b)	66 %	11.5	29.1	26.6	33.8	27.5	61.6	117.0
Rio Tinto total mine production		55.7	64.4	61.4	80.2	75.6	235.0	281.5
Refined production ('000 ounces)								
Kennecott	100 %	30.3	22.0	19.2	12.4	20.6	113.9	74.2

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership in Oyu Tolgoi from 33.52% to 66%. From 1 January 2023, our share of production has been updated to reflect this change.

Rio Tinto share of production

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
IRON ORE								
Production ('000 tonnes) (a)								
Hamersley mines	(b)	61,339	54,433	55,004	57,322	59,138	218,304	225,898
Hope Downs	50 %	5,945	5,885	5,763	5,519	6,074	24,425	23,241
Iron Ore Company of Canada	59 %	2,530	2,526	2,063	2,384	2,703	10,312	9,676
Robe River - Pannawonica (Mesas J and A)	53 %	4,178	3,123	3,897	4,106	4,330	13,546	15,456
Robe River - West Angelas	53 %	4,424	3,816	3,905	3,910	4,269	16,660	15,899
Rio Tinto iron ore production ('000 tonnes)		78,415	69,784	70,632	73,241	76,514	283,247	290,171
Breakdown of Production:								
Pilbara Blend and SP10 Lump (c)		21,443	19,612	21,042	21,418	22,228	79,152	84,301
Pilbara Blend and SP10 Fines (c)		35,097	30,851	31,750	31,700	33,485	123,587	127,786
Robe Valley Lump		1,645	1,136	1,488	1,665	1,592	5,264	5,882
Robe Valley Fines		2,533	1,987	2,409	2,441	2,739	8,281	9,574
Yandicoogina Fines (HIY)		15,168	13,672	11,880	13,633	13,768	56,650	52,952
Pilbara iron ore production ('000 tonnes)		75,886	67,258	68,569	70,857	73,811	272,934	280,495
IOC Concentrate		1,186	1,241	1,120	1,137	1,298	4,667	4,796
IOC Pellets		1,343	1,285	943	1,247	1,405	5,646	4,880
IOC iron ore production ('000 tonnes)		2,530	2,526	2,063	2,384	2,703	10,312	9,676
Breakdown of Shipments:								
Pilbara Blend Lump		15,089	15,689	14,691	14,812	14,533	53,883	59,725
Pilbara Blend Fines		32,659	28,528	27,474	25,375	23,706	111,110	105,083
Robe Valley Lump		1,244	1,051	1,152	1,297	1,506	4,171	5,005
Robe Valley Fines		2,896	2,262	2,489	2,706	3,054	9,329	10,511
Yandicoogina Fines (HIY)		14,661	13,689	12,558	13,669	13,628	56,880	53,544
SP10 Lump (c)		2,824	1,686	1,652	4,180	4,620	12,753	12,137
SP10 Fines (c)		5,062	6,832	6,613	9,699	12,208	22,672	35,353
Pilbara iron ore shipments ('000 tonnes) (d)		74,435	69,738	66,629	71,736	73,255	270,798	281,358
Pilbara iron ore shipments - consolidated basis ('000 tonnes) (d) (f)		76,303	71,505	68,322	73,553	75,058	277,613	288,438
IOC Concentrate		1,174	984	1,247	1,232	1,196	4,174	4,659
IOC Pellets		1,036	1,143	1,352	1,066	1,369	5,375	4,929
IOC Iron ore shipments ('000 tonnes) (d)		2,210	2,127	2,599	2,298	2,565	9,548	9,588
Rio Tinto iron ore shipments ('000 tonnes) (d)		76,645	71,864	69,228	74,034	75,820	280,346	290,947
Rio Tinto iron ore sales ('000 tonnes) (e)		75,337	74,273	71,678	74,488	76,269	287,871	296,707

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri and the Eastern Range mines. Whilst Rio Tinto owns 54% of the Eastern Range mine, under the terms of the joint venture agreement, Hamersley Iron manages the operation and is obliged to purchase all mine production from the joint venture and therefore all of the production is included in Rio Tinto's share of production.

(c) SP10 includes other lower grade products.

(d) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(e) Represents the difference between amounts shipped to portside trading and onward sales from portside trading, and third party volumes sold.

(f) While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

Rio Tinto share of production

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
MOLYBDENUM								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	1.1	0.1	0.3	0.6	0.8	3.3	1.8

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

SALT								
Production ('000 tonnes)								
Dampier Salt	68 %	1,458	1,450	1,652	1,434	1,438	5,757	5,973

SILVER								
Mine production ('000 ounces) (a)								
Bingham Canyon	100 %	521	356	296	462	504	2,057	1,618
Escondida	30 %	453	404	302	350	420	1,590	1,476
Oyu Tolgoi (b)	66 %	68	176	177	189	176	292	717
Rio Tinto total mine production		1,042	935	775	1,001	1,100	3,940	3,811
Refined production ('000 ounces)								
Kennecott	100 %	512	432	329	240	406	1,950	1,407

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership in Oyu Tolgoi from 33.52% to 66%. From 1 January 2023, our share of production has been updated to reflect this change.

TITANIUM DIOXIDE SLAG								
Production ('000 tonnes)								
Rio Tinto Iron & Titanium (a)	100 %	323	285	303	247	275	1,200	1,111

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals (RBM).

Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

Rio Tinto percentage interest shown above is at 31 December 2023.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
ALUMINA								
Smelter Grade Alumina - Aluminium Group								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80 %	847	790	846	900	830	3,425	3,366
Yarwun refinery - Queensland	100 %	769	739	745	736	786	2,949	3,006
<i>Brazil</i>								
São Luis (Alumar) refinery	10 %	975	936	657	883	899	3,771	3,375
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100 %	368	371	346	325	349	1,364	1,392
<i>(a) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.</i>								
Speciality Alumina - Aluminium Group								
Speciality alumina production ('000 tonnes)								
<i>Canada</i>								
Jonquière (Vaudreuil) plant – Quebec	100 %	29	25	27	28	29	114	109

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
ALUMINIUM								
Primary Aluminium								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100 %	48	45	46	47	47	185	186
Boyne Island smelter - Queensland	59 %	114	117	123	127	128	450	496
Tomago smelter - New South Wales	52 %	147	145	146	149	149	586	589
<i>Canada</i>								
Alma smelter - Quebec	100 %	122	120	121	121	123	482	484
Alouette (Sept-Îles) smelter - Quebec	40 %	158	156	159	159	160	628	634
Arvida smelter - Quebec	100 %	44	43	43	43	43	171	172
Arvida AP60 smelter - Quebec	100 %	15	14	14	15	15	58	59
Bécancour smelter - Quebec	25 %	116	115	118	114	119	459	465
Grande-Baie smelter - Quebec	100 %	58	57	57	58	58	232	229
Kitimat smelter - British Columbia	100 %	57	72	92	103	109	145	377
Laterrière smelter - Quebec	100 %	64	61	62	59	62	253	244
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100 %	52	51	52	52	54	202	209
<i>New Zealand</i>								
Tiwai Point smelter	79 %	85	83	83	83	85	336	334
<i>Oman</i>								
Sohar smelter	20 %	100	98	99	100	100	395	398

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
BAUXITE								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100 %	2,874	2,579	2,739	3,015	3,234	11,510	11,566
Weipa mine - Queensland	100 %	8,328	7,492	8,813	9,010	9,811	34,525	35,126
<i>Brazil</i>								
Porto Trombetas (MRN) mine (a)	22 %	3,256	2,288	2,724	3,258	3,202	11,100	11,472
<i>Guinea</i>								
Sangaredi mine (b)	23 %	3,530	3,876	3,586	3,387	3,430	16,115	14,278

Rio Tinto share of bauxite shipments

Share of total bauxite shipments ('000 tonnes)	13,561	12,264	13,603	13,954	15,513	54,784	55,335
Share of third party bauxite shipments ('000 tonnes)	9,233	7,880	9,159	9,550	10,749	38,016	37,337

(a) On 30 November 2023, Rio Tinto's ownership interest in Porto Trombetas increased from 12% to 22%. Production is reported including this change from 1 December 2023.

(b) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
BORATES								
Rio Tinto Borates - borates	100 %							
<i>US</i>								
Borates ('000 tonnes) (a)		141	124	133	127	111	532	495

(a) Production is expressed as B₂O₃ content.

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
COPPER & GOLD								
Escondida	30 %							
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)		33,911	33,309	30,749	33,332	34,752	131,358	132,143
Average copper grade (%)		0.76	0.78	0.93	0.85	0.77	0.82	0.83
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		212.8	210.0	228.9	225.7	217.6	858.4	882.1
Contained gold ('000 ounces)		48.4	49.0	53.5	48.1	48.6	168.7	199.2
Contained silver ('000 ounces)		1,510	1,346	1,008	1,168	1,401	5,301	4,921
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		30.4	31.0	29.1	36.4	21.0	136.9	117.5
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		49.7	50.8	72.4	52.0	46.9	203.1	222.2

(a) The calculation of copper in material mined for leaching is based on ore stacked at the leach pad.

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
COPPER & GOLD (continued)								
Kennecott								
Bingham Canyon mine	100 %							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		10,449	7,405	5,339	9,804	10,579	37,565	33,126
Average ore grade:								
Copper (%)		0.52	0.47	0.52	0.56	0.50	0.53	0.51
Gold (g/t)		0.14	0.12	0.16	0.16	0.14	0.16	0.15
Silver (g/t)		2.20	2.16	2.36	2.10	2.10	2.36	2.16
Molybdenum (%)		0.020	0.012	0.018	0.018	0.019	0.020	0.017
Copper concentrates produced ('000 tonnes)		184	116	92	180	191	688	579
Average concentrate grade (% Cu)		25.6	26.1	26.8	26.8	25.0	26.0	26.1
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		47.5	30.3	24.8	48.8	47.8	179.2	151.6
Gold ('000 ounces)		29.7	20.6	18.7	32.0	33.5	122.7	104.8
Silver ('000 ounces)		521	356	296	462	504	2,057	1,618
Molybdenum concentrates produced ('000 tonnes):								
Molybdenum in concentrates ('000 tonnes)		1.1	0.1	0.3	0.6	0.8	3.3	1.8
Kennecott smelter & refinery								
	100 %							
Copper concentrates smelted ('000 tonnes)		194	200	41	59	187	725	486
Copper anodes produced ('000 tonnes) (b)		24.5	55.1	18.2	1.4	44.1	144.5	118.9
Production of refined metal:								
Copper ('000 tonnes) (c)		36.1	43.6	14.4	18.5	32.0	148.3	108.6
Gold ('000 ounces) (d)		30.3	22.0	19.2	12.4	20.6	113.9	74.2
Silver ('000 ounces) (d)		512	432	329	240	406	1,950	1,407

(a) Includes a small amount of copper in precipitates.

(b) New metal excluding recycled material.

(c) We continue to process third party concentrate to optimise smelter utilisation. There was no cathode produced from purchased concentrate in 2023 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

(d) Includes gold and silver in intermediate products.

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
COPPER & GOLD (continued)								
Oyu Tolgoi mine (a)	66 %							
<i>Mongolia</i>								
Ore Treated ('000 tonnes) - Open Pit		8,900	9,613	8,809	8,789	8,714	37,586	35,924
Ore Treated ('000 tonnes) - Underground		510	675	900	900	888	1,776	3,363
Ore Treated ('000 tonnes) - Total		9,411	10,288	9,709	9,689	9,602	39,361	39,288
Average mill head grades:								
Open Pit								
Copper (%)		0.41	0.43	0.41	0.39	0.42	0.40	0.41
Gold (g/t)		0.20	0.21	0.19	0.25	0.22	0.25	0.22
Silver (g/t)		1.14	1.16	1.10	1.19	1.24	1.20	1.17
Underground								
Copper (%)		1.03	1.36	1.56	1.73	1.59	0.75	1.57
Gold (g/t)		0.29	0.35	0.38	0.37	0.37	0.24	0.37
Silver (g/t)		2.54	3.26	3.67	3.94	3.42	2.00	3.59
Total								
Copper (%)		0.45	0.49	0.52	0.52	0.53	0.42	0.51
Gold (g/t)		0.21	0.22	0.21	0.26	0.23	0.25	0.23
Silver (g/t)		1.21	1.30	1.34	1.44	1.44	1.24	1.38
Copper concentrates produced ('000 tonnes)		151.9	201.8	200.3	197.6	196.0	615.8	795.7
Average concentrate grade (% Cu)		21.3	21.1	21.4	21.3	20.8	21.0	21.1
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		32.3	42.6	42.8	42.0	40.7	129.5	168.1
Gold in concentrates ('000 ounces)		34.2	44.1	40.3	51.2	41.7	183.8	177.3
Silver in concentrates ('000 ounces)		204	266	268	287	266	871	1,086
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		25.3	41.4	43.2	42.7	38.4	132.3	165.7
Gold in concentrates ('000 ounces)		26.2	44.0	40.4	48.7	41.5	207.5	174.6
Silver in concentrates ('000 ounces)		152	242	257	269	240	836	1,008

(a) On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership in Oyu Tolgoi from 33.52% to 66%. From 1 January 2023, our share of production has been updated to reflect this change.

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
DIAMONDS								
Diavik Diamonds	100 %							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		535	427	446	427	388	2,158	1,688
Diamonds recovered ('000 carats)		1,319	954	970	757	659	4,651	3,340

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
IRON ORE								
Rio Tinto Iron Ore								
<i>Western Australia</i>								
Pilbara Operations								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	61,339	54,433	55,004	57,322	59,138	218,304	225,898
Hope Downs	50 %	11,891	11,771	11,527	11,037	12,148	48,850	46,482
Robe River - Pannawonica (Mesas J and A)	53 %	7,882	5,892	7,353	7,747	8,171	25,558	29,162
Robe River - West Angelas	53 %	8,347	7,200	7,368	7,377	8,054	31,435	29,999
Total production ('000 tonnes)		89,458	79,296	81,251	83,484	87,511	324,146	331,542
Breakdown of total production:								
Pilbara Blend and SP10 Lump (b)		25,251	23,196	24,910	25,268	26,308	94,758	99,682
Pilbara Blend and SP10 Fines (b)		41,158	36,537	37,108	36,836	39,264	147,180	149,745
Robe Valley Lump		3,103	2,143	2,808	3,142	3,004	9,932	11,097
Robe Valley Fines		4,779	3,748	4,544	4,605	5,167	15,625	18,065
Yandicoogina Fines (HIY)		15,168	13,672	11,880	13,633	13,768	56,650	52,952
Breakdown of total shipments:								
Pilbara Blend Lump		18,153	18,733	17,757	17,785	17,355	66,682	71,629
Pilbara Blend Fines		38,835	35,349	33,668	31,008	29,840	137,179	129,866
Robe Valley Lump		2,348	1,983	2,173	2,447	2,842	7,870	9,444
Robe Valley Fines		5,464	4,268	4,696	5,105	5,762	17,602	19,832
Yandicoogina Fines (HIY)		14,661	13,689	12,558	13,669	13,628	56,880	53,544
SP10 Lump (b)		2,824	1,686	1,652	4,180	4,620	12,753	12,137
SP10 Fines (b)		5,062	6,832	6,613	9,699	12,208	22,672	35,353
Total shipments ('000 tonnes) (c)		87,347	82,540	79,118	83,892	86,255	321,636	331,805
	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
Iron Ore Company of Canada								
	59 %							
<i>Newfoundland & Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		2,020	2,113	1,908	1,936	2,210	7,947	8,167
Pellets ('000 tonnes)		2,288	2,189	1,605	2,124	2,393	9,615	8,311
IOC Total production ('000 tonnes)		4,308	4,302	3,513	4,060	4,603	17,562	16,478
Shipments:								
Concentrates ('000 tonnes)		1,999	1,676	2,124	2,098	2,037	7,108	7,934
Pellets ('000 tonnes)		1,764	1,947	2,302	1,815	2,331	9,153	8,394
IOC Total Shipments ('000 tonnes) (c)		3,763	3,622	4,426	3,913	4,368	16,261	16,329
Global Iron Ore Totals								
Iron Ore Production ('000 tonnes)		93,766	83,599	84,764	87,543	92,114	341,708	348,020
Iron Ore Shipments ('000 tonnes)		91,110	86,162	83,543	87,805	90,623	337,897	348,134
Iron Ore Sales ('000 tonnes) (d)		89,650	88,490	85,601	88,030	91,072	344,641	353,193

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri and the Eastern Range mines. Whilst Rio Tinto owns 54% of the Eastern Range mine, under the terms of the joint venture agreement, Hamersley Iron manages the operation and is obliged to purchase all mine production from the joint venture and therefore all of the production is included in Rio Tinto's share of production.

(b) SP10 includes other lower grade products.

(c) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(d) Include Pilbara and IOC sales adjusted for portside trading movements and third party volumes sold.

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	2022	2023
SALT								
Dampier Salt	68 %							
<i>Western Australia</i>								
Salt production ('000 tonnes)		2,133	2,121	2,416	2,097	2,103	8,422	8,737
TITANIUM DIOXIDE SLAG								
Rio Tinto Iron & Titanium	100 %							
<i>Canada and South Africa</i>								
(Rio Tinto share) (a)								
Titanium dioxide slag ('000 tonnes)		323	285	303	247	275	1,200	1,111

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals' production. Ilmenite mined in Madagascar is being processed in Canada.

Rio Tinto percentage interest shown above is at 31 December 2023. The data represents production and sales on a 100% basis unless otherwise stated.