

Rio Tinto releases second quarter production results

17 July 2020

Rio Tinto Chief Executive J-S Jacques said “We delivered a strong performance, particularly in iron ore and bauxite, demonstrating the underlying resilience of our business and ability to adapt in difficult conditions. Our iron ore assets are performing well in a strong pricing environment and we are on track to meet our 2020 iron ore guidance. Despite various COVID-19 related challenges, all our assets have continued to operate, with our first priority to protect the health and safety of all our employees and communities.

“Our focus is to maintain a business as usual approach with many safeguards at a very unusual time. Our operational teams are continuing to run our assets safely so we can continue to contribute to local and national economies and serve our customers. We remain even more committed to our relationship with communities, following the Juukan Gorge events in the Pilbara, and we are engaging extensively with Traditional Owners around our operations and across Australia.

“We are executing our value over volume strategy to drive performance, productivity and free cash flow per share. We will remain agile and ready to adapt to the changing operating and macro environment.”

Production*		Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Pilbara iron ore shipments (100% basis)	Mt	86.7	+1 %	+19 %	159.6	+3 %
Pilbara iron ore production (100% basis)	Mt	83.2	+4 %	+7 %	161.1	+3 %
Bauxite	Mt	14.6	+9 %	+5 %	28.4	+8 %
Aluminium	kt	785	-2 %	0 %	1,568	-2 %
Mined Copper	kt	132.8	-3 %	0 %	265.7	-5 %
Titanium dioxide slag	kt	262	-13 %	-10 %	555	-7 %
IOC iron ore pellets and concentrate	Mt	2.8	+9 %	+8 %	5.3	+6 %

*Rio Tinto share unless otherwise stated

Q2 Operational update

- We continue to prioritise the health and safety of our employees and communities during this turbulent period. We achieved an all injury frequency rate of 0.37 for the first half of 2020, trending positively compared with a rate of 0.42 in 2019. We have now fully embedded our rigorous COVID-19 health and hygiene controls as we adapt to the new operating conditions. Our operational sites and offices are moving ahead with the implementation of fit for purpose COVID-19 screening as an additional measure to protect our people and communities.
- We remain even more committed to our relationship with communities, following the Juukan Gorge events in the Pilbara. We are engaging extensively with Traditional Owners, including the Puutu Kunti Kurrama and Pinikura people, and indigenous leaders in the Pilbara and across Australia. On 19 June 2020, we [announced](#) a board-led review of our heritage management processes within Iron Ore to be completed by October 2020. We will also contribute to the Inquiry by the Joint Standing Committee on Northern Australia that will report to the Senate and we will continue to support the West Australian government’s planned reform of the Aboriginal Heritage Act 1972 (WA).
- Overall, we achieved a robust production performance with volumes up 1% compared with the second quarter of 2019 on a copper equivalent basis despite significant global challenges, restrictions related to COVID-19 and the impact of the earthquake at Kennecott, Utah.
- Pilbara iron ore shipments of 86.7 million tonnes (100% basis) were 1% higher than the second quarter of 2019 despite the impact of COVID-19 related operational controls. With 1.7 million tonnes of port sales in the second quarter, we continue to grow our portside business steadily, looking to better serve our existing customers and open opportunities to sell to new customers who do not participate in the seaborne market.
- Bauxite production of 14.6 million tonnes, 9% higher than the second quarter of 2019, continued the first quarter trend following the successful ramp-up of Amrun in 2019, and higher production at the non-managed CBG joint venture in Guinea reflecting good progress on the ramp-up of the expansion.
- Aluminium production of 0.8 million tonnes in the second quarter was 2% lower than the second quarter of 2019 primarily due to pot relining at Kitimat, the decision to operate the ISAL smelter at 85% capacity and the curtailment of the fourth pot line at our New Zealand Aluminium Smelter (NZAS) in April 2020 due to COVID-19 impacts.
- On 9 July 2020, we [announced](#) the wind-down of operations and eventual closure of NZAS following the conclusion of the strategic review.

- Second quarter mined copper was 3% lower than the same period of 2019 due to lower head grade at Kennecott. Second quarter refined copper was 67% lower than the same period of 2019 due to the impact from the 5.7 magnitude earthquake in the first quarter resulting in an unplanned flash converting furnace rebuild at Kennecott, in addition to the planned 45-day smelter shutdown in May/June.
- On 29 June 2020, we [announced](#) an agreement with Turquoise Hill Resources and the Government of Mongolia on the preferred domestic power solution for Oyu Tolgoi that paves the way for the Government to fund and construct a State Owned Power Plant at Tavan Tolgoi. Parties will work towards finalising a Power Purchase Agreement by March 2021.
- The new Oyu Tolgoi mine design [announced](#) on 3 July 2020, confirms that the caving method of mining remains valid. We are targeting first sustainable production between October 2022 to June 2023 and development capital of \$6.6 to \$7.1 billion based on the updated mine design of Panel 0. Material contained in pillars retained on either side of Panel 0 have been reclassified from Ore Reserves to Mineral Resources. Part of the material contained in these pillars is expected to be recoverable at a later stage following additional studies which are currently underway.
- Titanium dioxide slag production of 262 thousand tonnes was 13% lower than the second quarter of 2019 partly due to COVID-19 restrictions in Quebec and South Africa.
- Production of pellets and concentrate at the Iron Ore Company of Canada (IOC) was 9% higher than the same period of 2019 with continued focus on concentrate feed to match market demand.
- Governments are gradually lifting restrictions on the movement of goods and people as part of their COVID-19 recovery plans. However, some restrictions remain in place or are being reintroduced. As a result, there continues to be an impact on projects in general although to a lesser degree than earlier in the year.
- Capital expenditure is expected to be around \$6 billion in 2020 (previously \$5 to \$6 billion) due to an appreciation in our major operating currencies against the US dollar since the first quarter and a reduced impact of COVID-19 on both sustaining and development expenditure. Capital expenditure for 2021 and 2022 is expected to be around \$7 billion per year (previously \$6.5 billion). This includes spend from 2020 that has been re-phased as a result of COVID-19 restrictions. Further details can be found in the Investments, growth and development projects section below.
- We made a final payment of US\$1.0 billion in Australian income tax in June 2020 with respect to 2019 profits.

COVID-19

Our markets

In China, conditions have improved through the second quarter and appear to be stabilising. While employment and trade uncertainties remain, the construction and infrastructure sectors are performing well; house prices and stock markets are also recovering, lending support to consumer confidence. The United States and Europe have started to re-open and recover. A second wave of infections remains a key threat for advanced economies.

- China's demand for iron ore continues while the recovery in Japan and Europe is yet to begin meaningfully and is likely to be subdued when it does.
- The automotive sector is showing initial signs of recovery from a very low base, supporting demand for aluminium value-added products (VAP).
- There has been limited impact on bauxite demand to date.
- China's copper concentrate market remains favourable; however, the US market is weaker. COVID-19 related supply disruptions are between 3 to 4% of annual copper supply currently, in addition to normal industry supply disruptions, and could increase further.

Average realised prices achieved for our major commodities

	Units	H1 19	FY 19	Q1 20	Q2 20	H1 20
Pilbara iron ore	FOB, \$/wmt	78.5	79.0	77.3	79.6	78.5
Pilbara iron ore	FOB, \$/dmt	85.3	85.9	84.0	86.5	85.4
Aluminium	Metal \$/t	2,174	2,132	2,014	1,715	1,849
Copper	US cents per pound	282.0	275.0	260.5	240.1	250.0
IOC pellets	\$/wmt	141.4	137.1	116.6	117.6	117.0

Our assets

During the COVID-19 pandemic, we have implemented strict protocols globally across the business. These measures are in line with government guidance and directives, and advice from leading medical experts and international health organisations on best practice to keep our employees, contractors and partners healthy and safe. These range from physical distancing to travel restrictions, roster changes and team splits, to flexible working arrangements, rapid screening and personal hygiene controls.

While uncertainties continue to exist in our business environment, we are focused on our underlying resilience and ability to adapt in a fast-moving environment. Key updates are outlined below and full details of initiatives taken to date can be found on our [website](#).

Operations and Workforce

- With the de-escalation of health restrictions in Western Australia, we are progressing the return to normal rosters at our Iron Ore operations, construction and exploration projects. We expect this transition to be completed by August 2020.
- Our office-based employees are beginning to return to offices in regions where permitted. In most cases, employees are returning to offices in alternate teams to reduce the risk of widespread transmission and ensure business continuity.
- We have introduced screening programmes across sites as a control to stop the spread of COVID-19. For the Pilbara fly-in-fly-out workforce, we have conducted more than 50,000 checks through facilities we established at Perth and regional airports as an enhanced control for employees boarding flights to site.
- At our copper assets in Mongolia and the US, our teams have used virtual technology to overcome some challenges related to COVID-19 travel restrictions. At our Oyu Tolgoi underground project in Mongolia, the use of virtual reality glasses has helped gain access to global experts to support project progression during construction and commissioning stages.
- At Richards Bay Minerals (RBM), furnaces are gradually ramping up production following easing of restrictions in South Africa. However, we are managing the situation carefully in the challenging South African environment.

Products

- In the second quarter, we continued to focus on the optimisation of IOC product mix to match market demand, moving from pellet to concentrate.
- In aluminium, in response to market conditions we have reduced the proportion of primary metal being produced as VAP, which represented 40% of primary metal sold in the first half of 2020 (first half 2019: 54%).

Production guidance

Rio Tinto share, unless otherwise stated	2019 Actuals	H1 2020 (YTD)	2020
Pilbara iron ore (shipments, 100% basis) (Mt)	327	159.6	324 to 334
Bauxite (Mt)	55	28.4	55 to 58
Alumina (Mt)	7.7	4.0	7.8 to 8.2
Aluminium (Mt)	3.2	1.6	3.1 to 3.3
Mined copper (kt)	577	265.7	475 to 520
Refined copper (kt)	260	74.1	165 to 205
Diamonds (M carats)	17	7.7	12 to 14
Titanium dioxide slag (Mt)	1.2	0.6	Lower end of 1.2 to 1.4
IOC iron ore pellets and concentrate (Mt)	10.5	5.3	10.5 to 12.0
Boric oxide equivalent (Mt)	0.5	0.26	~0.5

- Production guidance remains unchanged across all commodities from the First Quarter Operations Review.
- We will continue to monitor and adjust production levels and product mix to meet customer requirements in 2020, in line with our value over volume strategy, government imposed restrictions related to COVID-19, and any other potential COVID-19 related disruptions.

Operating costs

- Pilbara iron ore 2020 unit cost guidance is expected to be within the previous guidance of \$14 to \$15 per tonne, including unplanned one-off COVID-19 costs of \$0.50 per tonne mostly incurred in the first half of 2020, relating to controls such as cleaning, screening, additional flights, and roster changes. The guidance is based on an Australian dollar exchange rate of \$0.67.
- Copper C1 unit cost guidance in 2020 remains unchanged at 120-135 US cents/lb.

Investments, growth and development projects

- Governments are gradually lifting restrictions on the movement of goods and people as part of their COVID-19 recovery plans. Nevertheless, the pace is controlled and some restrictions remain in place or are being reintroduced. This continues to have an impact on projects in general although to a lesser degree than earlier in the year.
- Capital expenditure is expected to be around \$6 billion in 2020 (previously \$5 to \$6 billion) due to an appreciation in our major operating currencies against the US dollar since the first quarter and a reduced impact of COVID-19 on both sustaining and development expenditure. Our focus is to complete as much of the original planned sustaining expenditure as possible in the second half to enhance the resilience of our asset base. Capital expenditure for 2021 and 2022 is expected to be around \$7 billion per year (previously \$6.5 billion). This includes spend from 2020 that has been re-phased as a result of COVID-19 restrictions.
- Exploration and evaluation spend in the second quarter was \$136 million (\$280 million in the first half of 2020), 16% lower than the second quarter of 2019, and 5% lower than the first quarter of 2020.

Pilbara replacement projects

- Project teams continue to actively manage the impacts of COVID-19 with the implementation of project response plans. Recovery efforts are underway including a transition back to the usual three weeks on, one week off project rosters in the Pilbara.
- Supply chain issues are being managed and construction continues to progress despite necessary roster changes, social distancing and travel restrictions.
- The Koodaideri project is progressing with production ramp-up still expected to occur in early 2022. The primary crusher surge bin was delivered to site in May 2020, representing the first significant structural component for the processing plant.
- First ore from the Robe River Joint Venture sustaining production projects (West Angelas C&D and Mesa B, C and H at Robe Valley) is still expected in 2021. All primary approvals for Mesa H have now been received.

Oyu Tolgoi underground project

- Work continues to progress despite international travel restrictions issued by the Government of Mongolia to manage the risk of COVID-19 transmission.
- Underground lateral development continues to achieve high productivity with average monthly rates above 1,800 equivalent metres (eqm) in April, May and June.
- Shafts 3 and 4 remain on care and maintenance with no effective progress for the quarter and non-critical surface construction work areas have now also been placed on care and maintenance. Limited night shift work has recommenced on critical underground handling infrastructure, with the material handling system currently progressing at approximately 40% of planned rates.
- The new mine design [announced](#) on 3 July 2020, confirms that the caving method of mining remains valid and that the underground schedule and costs currently remain within the ranges previously disclosed. We are targeting first sustainable production between October 2022 to June 2023 and development capital of \$6.6 to \$7.1 billion based on the updated mine design of Panel 0.¹
- Material contained in pillars retained on either side of Panel 0 have been reclassified from Ore Reserves to Mineral Resources. Part of the material contained in these pillars is expected to be recoverable at a later stage following additional studies which are currently underway.
- The definitive estimate of cost and schedule for Panel 0 is still expected in the second half of 2020.

Other key projects and exploration and evaluation

- Phase one of the south wall pushback project at Kennecott remains on track, despite disruptions from the 5.7 magnitude earthquake in the first quarter, with access to higher grades expected from 2021.
- The Zulti South project in South Africa remains on full suspension due to security and community issues.
- The Kemano hydropower tunnel project is targeting a re-start of tunnel excavation works in the third quarter of 2020.
- We are continuing our study programme at the Resolution Copper project in Arizona, USA despite COVID-19 disruptions. The study commenced underground characterisation of the ore body following Board approval in April 2020. Sinking of Shaft 9 continues on schedule and on budget, reaching a depth of 1,906m out of 2,086m total at the end of June.
- At our Winu project in Western Australia, drilling and fieldwork activities continue with strong health protocols in place to prevent the transmission of COVID-19. Restrictions are beginning to ease, allowing people movements and access to sites. We continue to see potential to develop the Paterson into a broader opportunity through both our own exploration and joint ventures in the region.
- The Simandou iron ore project (Blocks 3 and 4) in Guinea is progressing as we collaborate with our partners to optimise the programme. A scope of work has been prepared to enable selected China-based design institutes to update the infrastructure elements of the project including the design of its designated trans-Guinean rail line and to assess shipping methods.

¹ The level of accuracy of these estimates is preliminary in nature and subject to a range of variables, in line with previous guidance. The confidence level of these estimates is at a level associated with a Pre-Feasibility Study, and further work is required between now and the second half of 2020 to refine the mine design options and study them to a level of confidence and accuracy associated with Feasibility Study quality estimates.

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. To allow production numbers to be compared on a like-for-like basis, production from asset divestments completed in 2019 is excluded from Rio Tinto share of production data.

IRON ORE

Rio Tinto share of production (Million tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Pilbara Blend and SP10 Lump ¹	19.0	-4 %	+3 %	37.5	-6 %
Pilbara Blend and SP10 Fines ¹	30.9	+8 %	+11 %	58.6	+2 %
Robe Valley Lump	1.3	+10 %	-10 %	2.8	+52 %
Robe Valley Fines	3.0	+40 %	+24 %	5.4	+60 %
Yandicoogina Fines (HIY)	14.8	+6 %	+5 %	28.9	+5 %
Total Pilbara production	68.9	+5 %	+7 %	133.2	+3 %
Total Pilbara production (100% basis)	83.2	+4 %	+7 %	161.1	+3 %

Rio Tinto share of shipments (Million tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Pilbara Blend Lump	16.7	-7 %	+16 %	31.1	-8 %
Pilbara Blend Fines	33.0	+3 %	+24 %	59.7	+1 %
Robe Valley Lump	1.1	+8 %	-1 %	2.2	+51 %
Robe Valley Fines	3.0	+16 %	+12 %	5.7	+46 %
Yandicoogina Fines (HIY)	15.6	+2 %	+21 %	28.5	+4 %
SP10 Lump ¹	1.0	+60 %	+1 %	2.0	+218 %
SP10 Fines ¹	1.6	-8 %	+47 %	2.7	-18 %
Total Pilbara shipments ²	72.0	+1 %	+20 %	132.0	+2 %
Total Pilbara shipments (100% basis) ²	86.7	+1 %	+19 %	159.6	+3 %
Total Pilbara Shipments (consolidated basis) ^{2, 3}	74.0	+1 %	+20 %	135.7	+2 %

¹ SP10 includes other lower grade products. ² Shipments includes material shipped from the Pilbara to our portside trading facility in China which may not be sold onwards in the same period. ³ 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.

Pilbara operations

Pilbara operations produced 161.1 million tonnes (Rio Tinto share 133.2 million tonnes) in the first half of 2020, 3% higher than the same period of 2019. Total material moved across our operations, including waste, was 8% higher than the corresponding period of 2019.

First half shipments of 159.6 million tonnes (Rio Tinto share 132.0 million tonnes) were 3% higher than the first half of 2019, despite infrastructure damage and significant disruptions experienced at our ports as a result of Tropical Cyclone Damien in February. In the second quarter, our operations performed well, despite the strict measures implemented to manage COVID-19. In early June, our port operations achieved a record week of shipping with rates exceeding 400 million tonnes per annum.

Approximately 14% of shipments in the first half of 2020 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 or on the spot market. Approximately 31% of first half 2020 sales were made on a free on board (FOB) basis, with the remainder sold including freight.

Achieved average pricing in the first half of 2020 was \$78.5 per wet metric tonne on an FOB basis (equivalent to \$85.4 per dry metric tonne, at 8% moisture assumption). This compares to the average first half price for the Platts 62% index of \$85.1 per dry metric tonne.

China Portside Trading

We continue to increase the volumes of our port sales in China, with 2.5 million tonnes of sales during the first half of 2020 (1.7 million tonnes in the second quarter), and included product from our IOC and Pilbara operations, as well as third party volume. Our portside trading sales are now serving 61 new customers.

Heritage

Following the Juukan Gorge heritage events in the Pilbara, we [announced](#) a board-led review of our heritage management processes within Iron Ore to be completed by October 2020. We will also contribute to the Inquiry by the Joint Standing Committee on Northern Australia that will report to the Senate and we will continue to support the West Australian government's planned reform of the Aboriginal Heritage Act 1972 (WA). We have introduced additional controls related to heritage management and we are actively engaging with Traditional Owners and Aboriginal and Torres Strait Islander communities around our operations and across Australia more broadly.

ALUMINIUM

Rio Tinto share of production ('000 tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Bauxite	14,560	+9 %	+5 %	28,373	+8 %
Bauxite third party shipments	10,721	+13 %	+13 %	20,190	+10 %
Alumina	1,990	+6 %	-1 %	4,000	+3 %
Aluminium	785	-2 %	0 %	1,568	-2 %

Bauxite

Second quarter bauxite production of 14.6 million tonnes was 9% higher than the second quarter of 2019. Production at managed operations increased by 9% underpinned by the Amrun mine, whilst production at the non-managed CBG joint venture in Guinea increased by 7% reflecting good progress on the ramp-up of the expansion.

We shipped 10.7 million tonnes of bauxite to third parties in the second quarter, 13% higher than same period of 2019.

Our Bauxite Integrated Operations Centre (BIOC) in Brisbane, Australia provides 24/7 operation and monitoring of all safety, production and quality aspects at our remote bauxite sites in Weipa, Queensland and Gove, Northern Territory. We continue to apply technology solutions for optimising the supply chain, leveraging data analytics and progressing automation initiatives. For instance, we are utilising a fully automated "drone in a box" for remote monitoring of stock piles, removing the need for manual visual inspection.

Alumina

Alumina production in the second quarter of 2020 is 6% higher than the same period of 2019 due to higher production levels in the Pacific refineries with Yarwun delivering a half year production record.

Aluminium

Aluminium production in the second quarter of 0.8 million tonnes was 2% lower than the second quarter of 2019 (flat on the prior quarter), primarily due to pot relining at Kitimat, the decision to operate the ISAL smelter in Iceland at 85% of its capacity, and the curtailment of the fourth pot line at NZAS on 3 April 2020 due to COVID-19 impacts. This has been partly offset by the non-managed Becancour smelter which has reached 93% capacity, following its ramp-up after a lock-out in 2019.

Average realised aluminium prices including premiums for value-added products (VAP) were down by 15% to \$1,849 per tonne in the first half of 2020 (first half 2019: \$2,174 per tonne). The LME price decreased by 13% to \$1,595 per tonne (first half 2019: \$1,826), whilst the mid-west premium duty paid dropped 41% to \$249 per tonne in the first half of 2020 (first half 2019: \$420 per tonne) due to the impact of COVID-19. Our VAP sales also dropped significantly to 40% of primary metal sold in the first half of 2020 (first half 2019: 54%) in line with the market, but this was substituted by sales of standard ingot products (P1020). Product premiums for VAP sales declined by 14% averaging, \$208 per tonne of VAP sold (first half 2019: \$242 per tonne).

The aluminium industry continues to face challenging conditions in global markets and policy uncertainty, exacerbated by the impact of COVID-19. On 9 July 2020, we [announced](#) the wind-down of operations and eventual closure of the Tiwai Point Aluminium Smelter (NZAS) following the conclusion of the strategic review which has shown the business is no longer viable given high energy costs and a challenging outlook for the aluminium industry. As a result, NZAS has given Meridian Energy notice to terminate the power contract, which will end in August 2021 when the smelter's wind-down of operations is expected to be complete.

We continue to actively work on enhancing the competitiveness of our smelters, including discussing energy pricing with stakeholders, to ensure the sustainability of our smelters in Australia and Iceland. Work on the strategic review of the ISAL smelter in Iceland announced in February 2020 is ongoing, to determine the viability and competitive position of the operation considering all options including closure.

COPPER AND DIAMONDS

Rio Tinto share of production ('000 tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Mined copper					
Rio Tinto Kennecott	36.5	-11 %	+4 %	71.5	-24 %
Escondida	84.0	+2 %	-3 %	170.2	+7 %
Oyu Tolgoi	12.2	-7 %	+4 %	24.0	-16 %
Refined copper					
Rio Tinto Kennecott	7.2	-89 %	-73 %	33.6	-64 %
Escondida	19.7	+3 %	-6 %	40.5	+7 %

Rio Tinto share of production ('000 carats)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Argyle	3,271	-1 %	+27 %	5,849	-4 %
Diavik	963	-19 %	+12 %	1,820	-17 %

Kennecott

Mined copper production was 11% lower than the same quarter of 2019, primarily due to pit sequencing and lower copper grades, with the end of the east wall lower pit mining approaching. Copper grades were 11% lower in the second quarter of 2020 compared with the same quarter of 2019. Grades will continue to be lower through 2020 before increasing from the first half of 2021, with the transition from east wall to south wall mining.

Refined copper was 89% lower than the same quarter in 2019, driven by the shutdown of the flash converting furnace required as a result of the earthquake on 18 March, and the consequent shutdown of anode production. Low levels of refined copper produced in the second quarter were based on anodes refined prior to the shutdown and refining of scrap anodes.

The planned 45-day smelter shutdown in May has concluded and we are now focused on the safe re-start of the smelter. The flash converting furnace rebuild required following the earthquake in Utah on 18 March is on track for completion by the second half of July.

Escondida

Escondida operated with a reduced workforce to incorporate preventative measures in response to COVID-19 in the second quarter. Despite this, mined copper production was 2% higher than the same quarter of 2019 due to record concentrator throughput, which was offset by 6% lower grade and 3% lower amount of material stacked into the leaching pads.

Oyu Tolgoi

Mined copper production from the open pit was 7% lower than the same quarter of 2019 primarily due to a scheduled maintenance shutdown in the mill. Sales recovered in the second quarter with the easing of COVID-19 trucking restrictions within China and improved border access. Mine development and production phasing have been successfully accelerated so that access to higher copper and gold grades are now expected in the second half of 2020 instead of the originally planned first half of 2021.

Provisional pricing

At 30 June 2020, the Group had an estimated 230 million pounds of copper sales that were provisionally priced at 255 cents per pound. The final price of these sales will be determined during the second half of 2020. This compares with 220 million pounds of open shipments at 31 December 2019, provisionally priced at 277 cents per pound.

Diamonds

At Argyle, carat production was 1% lower than the same period of 2019 as a result of an 11% reduction in recovered grade, partially offset by higher tonnes mined and processed. Preparation continues for the safe cessation of Argyle operations before the end of 2020 and closure activities commencing in 2021.

At Diavik, carats recovered in second quarter 2020 were 19% lower than the second quarter of 2019 due to lower processed tonnes and lower grade in the underground.

We continue to execute our value over volume strategy to match market demand during a challenging period for the industry.

ENERGY AND MINERALS

Rio Tinto share of production (million tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Iron ore pellets and concentrate					
IOC	2.8	+9 %	+8 %	5.3	+6 %

Rio Tinto share of production ('000 tonnes)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Minerals					
Borates - B ₂ O ₃ content	132	-5 %	+5 %	258	+2 %
Titanium dioxide slag	262	-13 %	-10 %	555	-7 %

Rio Tinto share of production ('000 lbs)	Q2 2020	vs Q2 2019	vs Q1 2020	H1 2020	vs H1 2019
Uranium					
Energy Resources of Australia	718	+16 %	+6 %	1,393	-1 %

Iron Ore Company of Canada (IOC)

Iron ore pellets and concentrate production was 9% higher than the second quarter of 2019 with focus on higher concentrator feed (28% higher than the corresponding period). In the second quarter of 2019, production was adversely affected by a flooding incident.

In the second quarter, we continued to focus on the optimisation of product mix (pellet and concentrate) to match market demand.

Borates

Borates production was 5% below the corresponding period of 2019. Refinery operating rates continued to be below name plate capacity during the quarter. We adjust refinery operating rates to match market demand for borates products. Market demand is being adversely impacted by COVID-19 in a number of end-use segments.

Iron and Titanium

Titanium dioxide feedstock production was 13% lower than same period of 2019, due to community disruptions that resulted in a site wide shutdown at RBM in December 2019. Operations have resumed at RBM following COVID-19 restrictions. However, we are managing the situation carefully in the challenging South African environment.

We have restarted production at the Rio Tinto Fer et Titane (RTFT) metal powder plant in Sorel-Tracy, Quebec. The restart follows a temporary suspension of production that was implemented in the first quarter due to the slowdown in demand from the automotive industry.

Uranium

ERA's Ranger operation continued to process existing stockpiles uninterrupted during the second quarter, 16% higher than the second quarter of 2019. We sold additional material from inventory to capitalise on improved market conditions.

EXPLORATION AND EVALUATION

Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in the first half of 2020 was \$280 million, compared with \$287 million in the first half of 2019. Approximately 44% of this expenditure was incurred by central exploration, 41% by Copper & Diamonds, 10% by Energy & Minerals and the remainder by Iron Ore and Aluminium.

There were no significant divestments of central exploration properties in the second quarter of 2020.

Exploration highlights

Rio Tinto has a strong portfolio of projects with activity in 15 countries across six commodities. Due to COVID-19, there have been significant impacts on exploration activities in some jurisdictions. All projects have followed government requirements and guidelines while focusing on protecting well-being and health of local and indigenous communities. The bulk of the exploration expenditure in this quarter focused on copper in Australia, Brazil, Canada, Chile, Colombia, Kazakhstan, Mongolia, Peru, Serbia, United States and Zambia, and diamonds projects in Canada. Mine-lease exploration continued at Rio Tinto managed businesses including Pilbara Iron in Australia, and Diavik in Canada. At Winu, studies are ongoing and drilling has focused on resource definition and brownfield exploration. At Falcon, processing of samples collected in 2020 is ongoing. A summary of activity for the quarter is as follows:

Commodities	Studies stage	Advanced projects	Greenfield/Brownfield programmes
Bauxite		Amargosa, Brazil*; Sanxai, Laos*	Cape York, Australia
Base Metals	Copper/molybdenum: Resolution, US; Winu, Australia	La Granja, Peru Nickel: Tamarack, US (3rd party operated) Pribrezhniy, Kazakhstan	Copper Greenfield: Australia, Chile, China, Kazakhstan, Nicaragua, Peru, Serbia, US, Zambia, Brazil, Canada, Colombia, Finland Nickel Greenfield: Canada, Finland
Diamonds	Falcon, Canada		Greenfield: Canada Brownfield: Diavik, Canada
Minerals	Lithium borates: Jadar, Serbia Heavy mineral sands: Mutamba, Mozambique (third party operated)		
Iron Ore	Pilbara, Australia	Pilbara, Australia	Brownfield: Pilbara, Australia

*Limited 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 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			Half Year		% change		
		2019 Q2	2020 Q1	2020 Q2	2019 H1	2020 H1	Q2 20 vs Q2 19	Q2 20 vs Q1 20	H1 20 vs H1 19
Principal commodities									
Alumina	('000 t)	1,878	2,010	1,990	3,886	4,000	+6 %	-1 %	+3 %
Aluminium	('000 t)	803	783	785	1,599	1,568	-2 %	0 %	-2 %
Bauxite	('000 t)	13,407	13,813	14,560	26,171	28,373	+9 %	+5 %	+8 %
Borates	('000 t)	138	126	132	253	258	-5 %	+5 %	+2 %
Copper - mined	('000 t)	136.9	133.0	132.8	280.8	265.7	-3 %	0 %	-5 %
Copper - refined	('000 t)	82.3	47.2	26.9	130.6	74.1	-67 %	-43 %	-43 %
Diamonds	('000 cts)	4,481	3,434	4,235	8,277	7,669	-5 %	+23 %	-7 %
Iron Ore	('000 t)	68,141	66,787	71,689	134,723	138,477	+5 %	+7 %	+3 %
Titanium dioxide slag	('000 t)	303	293	262	599	555	-13 %	-10 %	-7 %
Uranium	('000 lbs)	620	676	718	1,413	1,393	+16 %	+6 %	-1 %
Other Metals & Minerals									
Gold - mined	('000 oz)	111.6	61.5	63.6	227.0	125.1	-43 %	+3 %	-45 %
Gold - refined	('000 oz)	52.9	44.8	30.1	94.6	74.9	-43 %	-33 %	-21 %
Molybdenum	('000 t)	2.6	5.1	3.9	4.4	8.9	+50 %	-24 %	+101 %
Salt	('000 t)	1,269	1,044	1,425	2,579	2,469	+12 %	+37 %	-4 %
Silver - mined	('000 oz)	1,403	1,027	1,077	2,883	2,104	-23 %	+5 %	-27 %
Silver - refined	('000 oz)	734	462	382	1,351	844	-48 %	-17 %	-38 %

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	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
ALUMINA								
Production ('000 tonnes)								
Jonquière (Vaudreuil)	100 %	336	360	345	373	340	709	713
Jonquière (Vaudreuil) specialty Alumina	100 %	31	28	24	24	25	57	49
Queensland Alumina	80 %	668	669	716	713	711	1,378	1,424
São Luis (Alumar)	10 %	86	99	97	94	95	172	188
Yarwun	100 %	757	671	850	806	820	1,570	1,626
Rio Tinto total alumina production		1,878	1,826	2,032	2,010	1,990	3,886	4,000
ALUMINIUM								
Production ('000 tonnes)								
Australia - Bell Bay	100 %	47	48	48	47	49	92	96
Australia - Boyne Island	59 %	75	75	74	75	75	147	150
Australia - Tomago	52 %	76	77	76	75	76	150	151
Canada - six wholly owned	100 %	400	399	383	375	370	800	744
Canada - Alouette (Sept-Îles)	40 %	60	61	62	61	62	118	123
Canada - Bécancour	25 %	4	4	7	18	26	8	44
Iceland - ISAL (Reykjavik)	100 %	52	36	43	45	44	105	89
New Zealand - Tiwai Point	79 %	69	70	69	67	65	140	131
Oman - Sohar	20 %	19	20	20	20	20	39	39
Rio Tinto total aluminium production		803	789	783	783	785	1,599	1,568
BAUXITE								
Production ('000 tonnes) (a)								
Gove	100 %	2,957	2,968	3,273	2,876	3,186	5,960	6,062
Porto Trombetas	12 %	287	385	371	338	270	572	608
Sangaredi	(b)	1,630	1,749	1,227	1,879	1,742	3,189	3,621
Weipa	100 %	8,533	8,695	10,267	8,720	9,362	16,450	18,082
Rio Tinto total bauxite production		13,407	13,796	15,137	13,813	14,560	26,171	28,373

(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) 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	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
BORATES								
Production ('000 tonnes B₂O₃ content)								
Rio Tinto Borates - borates	100 %	138	138	128	126	132	253	258
COPPER								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	41.1	57.8	35.4	35.0	36.5	93.7	71.5
Escondida	30 %	82.7	90.5	92.3	86.2	84.0	158.7	170.2
Oyu Tolgoi (b)	34 %	13.1	9.5	11.0	11.8	12.2	28.5	24.0
Rio Tinto total mine production		136.9	157.9	138.7	133.0	132.8	280.8	265.7
Refined production ('000 tonnes)								
Escondida	30 %	19.0	16.8	20.5	20.9	19.7	37.7	40.5
Rio Tinto Kennecott	100 %	63.3	40.3	51.4	26.4	7.2	92.8	33.6
Rio Tinto total refined production		82.3	57.1	71.9	47.2	26.9	130.6	74.1

(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) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

DIAMONDS

Production ('000 carats)								
Argyle	100 %	3,292	3,558	3,363	2,578	3,271	6,079	5,849
Diavik	60 %	1,188	994	840	857	963	2,198	1,820
Rio Tinto total diamond production		4,481	4,551	4,203	3,434	4,235	8,277	7,669

GOLD

Mine production ('000 ounces) (a)								
Bingham Canyon	100 %	65.1	64.6	52.0	41.9	40.2	118.0	82.1
Escondida	30 %	22.4	14.6	14.8	10.8	13.0	44.6	23.8
Oyu Tolgoi (b)	34 %	24.1	8.6	8.2	8.8	10.4	64.3	19.2
Rio Tinto total mine production		111.6	87.8	75.0	61.5	63.6	227.0	125.1
Refined production ('000 ounces)								
Rio Tinto Kennecott	100 %	52.9	60.8	63.3	44.8	30.1	94.6	74.9

(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) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

Rio Tinto share of production

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
IRON ORE								
Production ('000 tonnes) (a)								
Hamersley mines	(b)	50,087	55,567	52,521	49,327	53,187	101,304	102,514
Hamersley - Channar	60 %	1,451	947	1,452	1,160	1,334	2,382	2,494
Hope Downs	50 %	6,051	6,077	6,047	5,667	5,659	12,007	11,326
Iron Ore Company of Canada	59 %	2,532	2,960	2,564	2,560	2,762	5,012	5,322
Robe River - Pannawonica (Mesas J and A)	53 %	3,329	4,725	4,360	3,880	4,307	5,200	8,187
Robe River - West Angelas	53 %	4,692	4,840	4,409	4,193	4,440	8,817	8,634
Rio Tinto iron ore production ('000 tonnes)		68,141	75,117	71,352	66,787	71,689	134,723	138,477
Breakdown of Production:								
Pilbara Blend and SP10 Lump (c)		19,842	21,015	19,930	18,504	18,970	39,821	37,474
Pilbara Blend and SP10 Fines (c)		28,463	31,713	30,304	27,734	30,866	57,242	58,600
Robe Valley Lump		1,201	1,650	1,574	1,472	1,326	1,836	2,798
Robe Valley Fines		2,128	3,075	2,786	2,407	2,981	3,363	5,388
Yandicoogina Fines (HIY)		13,975	14,704	14,194	14,110	14,784	27,448	28,893
Pilbara iron ore production ('000 tonnes)		65,610	72,156	68,788	64,227	68,927	129,711	133,154
IOC Concentrate		1,193	1,400	1,146	923	1,523	2,083	2,446
IOC Pellets		1,339	1,560	1,418	1,637	1,240	2,929	2,877
IOC iron ore production ('000 tonnes)		2,532	2,960	2,564	2,560	2,762	5,012	5,322
Breakdown of Shipments:								
Pilbara Blend Lump		18,009	15,948	16,176	14,385	16,700	33,781	31,085
Pilbara Blend Fines		32,165	30,032	31,182	26,692	33,036	59,029	59,728
Robe Valley Lump		1,037	1,290	1,246	1,132	1,118	1,494	2,250
Robe Valley Fines		2,577	3,349	3,259	2,688	2,999	3,885	5,687
Yandicoogina Fines (HIY)		15,212	14,286	15,260	12,913	15,578	27,505	28,491
SP10 Lump (c)		635	2,685	2,072	1,006	1,014	635	2,020
SP10 Fines (c)		1,747	4,057	2,081	1,089	1,603	3,289	2,692
Pilbara iron ore shipments ('000 tonnes) (d)		71,382	71,646	71,277	59,903	72,048	129,618	131,951
Pilbara iron ore shipments - consolidated basis ('000 tonnes) (d) (f)		73,230	73,787	73,401	61,729	73,976	132,772	135,704
IOC Concentrate		1,315	1,425	1,223	1,006	1,410	1,830	2,416
IOC Pellets		1,423	1,229	1,413	1,769	1,320	2,999	3,089
IOC Iron ore shipments ('000 tonnes) (d)		2,738	2,654	2,636	2,775	2,731	4,830	5,506
Rio Tinto iron ore shipments ('000 tonnes) (d)		74,119	74,300	73,913	62,678	74,779	134,448	137,457
Rio Tinto iron ore sales ('000 tonnes) (e)		74,119	74,300	72,334	62,433	74,808	134,448	137,241

(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, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass 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 include 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) The difference between Rio Tinto sales and shipments represents volumes 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	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
MOLYBDENUM								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	2.6	2.1	4.7	5.1	3.9	4.4	8.9

(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 %	1,269	1,392	1,450	1,044	1,425	2,579	2,469

SILVER								
Mine production ('000 ounces) (a)								
Bingham Canyon	100 %	700	768	605	538	526	1,442	1,064
Escondida	30 %	622	488	539	417	480	1,279	897
Oyu Tolgoi (b)	34 %	80	64	64	72	71	163	143
Rio Tinto total mine production		1,403	1,320	1,209	1,027	1,077	2,883	2,104
Refined production ('000 ounces)								
Rio Tinto Kennecott	100 %	734	664	839	462	382	1,351	844

(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) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

TITANIUM DIOXIDE SLAG								
Production ('000 tonnes)								
Rio Tinto Iron & Titanium (a)	100 %	303	321	286	293	262	599	555

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

URANIUM								
Production ('000 lbs U₃O₈) (a)								
Energy Resources of Australia	86 %	620	585	642	676	718	1,413	1,393

(a) ERA production data are drummed U₃O₈.
On 25 February 2020, Rio Tinto's ownership interest in ERA increased from 68.39% to 86.33%, following completion of its offer to ensure ERA has the funds it needs to meet its current rehabilitation obligations. Production is reported including this change from 1 March 2020.

Rio Tinto's interest in the Rössing operations were sold in 2019. No data for these operations are included in the Share of production table.

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.

The Rio Tinto percentage shown above is at 30 June 2020.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
ALUMINA								
Smelter Grade Alumina - Aluminium Group								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80.0 %	834	836	895	891	889	1,723	1,780
Yarwun refinery - Queensland	100.0 %	757	671	850	806	820	1,570	1,626
<i>Brazil</i>								
São Luis (Alumar) refinery	10.0 %	864	989	966	936	945	1,723	1,882
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100.0 %	336	360	345	373	340	709	713

(a) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.

Speciality Alumina - Aluminium Group								
Speciality alumina production ('000 tonnes)								
<i>Canada</i>								
Jonquière (Vaudreuil) plant – Quebec	100.0 %	31	28	24	24	25	57	49

Rio Tinto percentage interest shown above is at 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
ALUMINIUM								
Primary Aluminium								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100.0 %	47	48	48	47	49	92	96
Boyne Island smelter - Queensland	59.4 %	126	125	125	126	126	248	252
Tomago smelter - New South Wales	51.6 %	147	149	148	145	148	292	293
<i>Canada</i>								
Alma smelter - Quebec	100.0 %	118	119	119	118	118	233	236
Alouette (Sept-Îles) smelter - Quebec	40.0 %	150	153	155	153	155	294	308
Arvida smelter - Quebec	100.0 %	44	45	44	44	42	86	86
Arvida AP60 smelter - Quebec	100.0 %	15	15	15	15	15	29	30
Bécancour smelter - Quebec	25.1 %	16	16	28	72	102	33	174
Grande-Baie smelter - Quebec	100.0 %	58	59	59	58	55	116	113
Kitimat smelter - British Columbia	100.0 %	102	96	81	76	78	208	154
Laterrière smelter - Quebec	100.0 %	64	65	65	64	62	128	125
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100.0 %	52	36	43	45	44	105	89
<i>New Zealand</i>								
Tiwai Point smelter	79.4 %	87	88	87	84	82	176	165
<i>Oman</i>								
Sohar smelter	20.0 %	97	98	98	99	99	194	197

Rio Tinto percentage interest shown above is at 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
BAUXITE								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100.0 %	2,957	2,968	3,273	2,876	3,186	5,960	6,062
Weipa mine - Queensland	100.0 %	8,533	8,695	10,267	8,720	9,362	16,450	18,082
<i>Brazil</i>								
Porto Trombetas (MRN) mine	12.0 %	2,393	3,205	3,090	2,814	2,251	4,765	5,065
<i>Guinea</i>								
Sangaredi mine (a)	23.0 %	3,623	3,887	2,727	4,175	3,871	7,087	8,046
Rio Tinto share of bauxite shipments								
Share of total bauxite shipments ('000 tonnes)		13,122	13,912	14,849	13,567	14,668	25,847	28,235
Share of third party bauxite shipments ('000 tonnes)		9,477	10,361	10,968	9,469	10,721	18,318	20,190

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

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
BORATES								
Rio Tinto Borates - borates	100.0 %							
<i>US</i>								
Borates ('000 tonnes) (a)		138	138	128	126	132	253	258

(a) Production is expressed as B₂O₃ content.

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
COPPER & GOLD								
Escondida								
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)	30.0 %	32,519	33,956	33,659	33,440	34,755	64,546	68,194
Average copper grade (%)		0.86	0.86	0.87	0.82	0.81	0.84	0.81
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		230.9	245.0	246.1	230.0	236.8	447.8	466.8
Contained gold ('000 ounces)		74.7	48.8	49.2	36.0	43.4	148.7	79.4
Contained silver ('000 ounces)		2,074	1,626	1,798	1,390	1,599	4,263	2,989
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		44.7	56.8	61.7	57.2	43.3	81.2	100.5
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		63.5	55.9	68.4	69.6	65.5	125.8	135.2

(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 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
COPPER & GOLD (continued)								
Rio Tinto Kennecott								
Bingham Canyon mine	100.0 %							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		10,123	10,084	11,141	10,315	10,083	20,808	20,398
Average ore grade:								
Copper (%)		0.46	0.64	0.36	0.37	0.41	0.50	0.39
Gold (g/t)		0.33	0.30	0.23	0.22	0.23	0.29	0.23
Silver (g/t)		2.84	2.74	2.09	2.16	2.14	2.80	2.15
Molybdenum (%)		0.039	0.039	0.061	0.058	0.056	0.035	0.057
Copper concentrates produced ('000 tonnes)		161	207	156	148	135	368	283
Average concentrate grade (% Cu)		25.5	27.8	22.6	23.7	26.6	25.4	25.1
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		41.1	57.8	35.4	35.0	36.5	93.7	71.5
Gold ('000 ounces)		65.1	64.6	52.0	41.9	40.2	118.0	82.1
Silver ('000 ounces)		700	768	605	538	526	1,442	1,064
Molybdenum concentrates produced ('000 tonnes):		5.0	4.3	9.4	10.4	7.8	8.7	18.2
Molybdenum in concentrates ('000 tonnes)		2.6	2.1	4.7	5.1	3.9	4.4	8.9
Kennecott smelter & refinery								
	100.0 %							
Copper concentrates smelted ('000 tonnes)		207	160	216	161	51	411	212
Copper anodes produced ('000 tonnes) (b)		60.3	39.3	53.7	24.0	(2.1)	93.6	21.9
Production of refined metal:								
Copper ('000 tonnes)		63.3	40.3	51.4	26.4	7.2	92.8	33.6
Gold ('000 ounces) (c)		52.9	60.8	63.3	44.8	30.1	94.6	74.9
Silver ('000 ounces) (c)		734	664	839	462	382	1,351	844

(a) Includes a small amount of copper in precipitates. (b) New metal excluding recycled material. (c) Includes gold and silver in intermediate products.

Rio Tinto percentage interest shown above is at 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
COPPER & GOLD (continued)								
Turquoise Hill Resources								
Oyu Tolgoi mine (a)	33.5 %							
<i>Mongolia</i>								
Ore Treated ('000 tonnes)		10,394	10,040	11,088	10,889	9,645	19,649	20,534
Average mill head grades:								
Copper (%)		0.46	0.37	0.42	0.42	0.47	0.51	0.45
Gold (g/t)		0.31	0.14	0.15	0.15	0.19	0.44	0.17
Silver (g/t)		1.20	1.03	1.06	1.14	1.22	1.23	1.18
Copper concentrates produced ('000 tonnes)		180.6	131.3	152.6	164.5	169.9	390.7	334.4
Average concentrate grade (% Cu)		21.7	21.7	21.6	21.4	21.5	21.8	21.4
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		39.2	28.4	32.9	35.2	36.5	85.0	71.7
Gold in concentrates ('000 ounces)		71.8	25.6	24.3	26.2	31.1	191.9	57.3
Silver in concentrates ('000 ounces)		239	191	190	214	212	486	426
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		46.6	32.5	32.3	25.8	39.7	85.1	65.5
Gold in concentrates ('000 ounces)		115.6	35.4	24.7	19.7	30.8	213.5	50.5
Silver in concentrates ('000 ounces)		245	207	244	146	220	445	365

(a) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources.

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
DIAMONDS								
Argyle Diamonds	100.0 %							
<i>Western Australia</i>								
AK1 ore processed ('000 tonnes)		1,427	1,716	1,977	1,322	1,571	2,674	2,893
AK1 diamonds produced ('000 carats)		3,292	3,558	3,363	2,578	3,271	6,079	5,849
Diavik Diamonds	60.0 %							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		671	628	516	571	626	1,291	1,197
Diamonds recovered ('000 carats)		1,980	1,656	1,400	1,428	1,606	3,663	3,033

Rio Tinto percentage interest shown above is at 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
IRON ORE								
Rio Tinto Iron Ore								
<i>Western Australia</i>								
Pilbara Operations								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	50,087	55,567	52,521	49,327	53,187	101,304	102,514
Hamersley - Channar	60.0 %	2,419	1,579	2,420	1,934	2,223	3,971	4,157
Hope Downs	50.0 %	12,101	12,155	12,095	11,334	11,318	24,015	22,652
Robe River - Pannawonica (Mesas J and K)	53.0 %	6,282	8,914	8,225	7,320	8,126	9,811	15,446
Robe River - West Angelas	53.0 %	8,853	9,133	8,318	7,912	8,378	16,635	16,290
Total production ('000 tonnes)		79,741	87,347	83,579	77,827	83,232	155,736	161,059
Breakdown of total production:								
Pilbara Blend and SP10 Lump (b)		24,291	25,434	24,326	22,592	23,222	48,359	45,813
Pilbara Blend and SP10 Fines (b)		35,194	38,296	36,833	33,806	37,100	70,118	70,906
Robe Valley Lump		2,266	3,113	2,969	2,778	2,502	3,465	5,279
Robe Valley Fines		4,015	5,802	5,256	4,542	5,625	6,346	10,167
Yandicoogina Fines (HIY)		13,975	14,704	14,194	14,110	14,784	27,448	28,893
Breakdown of total shipments:								
Pilbara Blend Lump		21,653	19,329	19,680	17,506	20,339	40,621	37,844
Pilbara Blend Fines		39,358	36,947	39,186	33,197	40,379	72,374	73,576
Robe Valley Lump		1,957	2,433	2,350	2,135	2,110	2,820	4,245
Robe Valley Fines		4,862	6,318	6,149	5,071	5,659	7,330	10,730
Yandicoogina Fines (HIY)		15,212	14,286	15,260	12,913	15,578	27,505	28,491
SP10 Lump (b)		635	2,685	2,072	1,006	1,014	635	2,020
SP10 Fines (b)		1,747	4,057	2,081	1,089	1,603	3,289	2,692
Total shipments ('000 tonnes) (c)		85,423	86,055	86,779	72,916	86,681	154,573	159,598
	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
Iron Ore Company of Canada 58.7 %								
<i>Newfoundland & Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		2,031	2,384	1,951	1,572	2,593	3,547	4,165
Pellets ('000 tonnes)		2,280	2,657	2,415	2,788	2,112	4,989	4,899
IOC Total production ('000 tonnes)		4,311	5,041	4,366	4,360	4,704	8,536	9,064
Shipments:								
Concentrates ('000 tonnes)		2,239	2,427	2,083	1,713	2,402	3,117	4,115
Pellets ('000 tonnes)		2,424	2,093	2,406	3,013	2,248	5,108	5,261
IOC Total Shipments ('000 tonnes) (c)		4,663	4,520	4,490	4,726	4,650	8,225	9,376
Global Iron Ore Totals								
Iron Ore Production ('000 tonnes)		84,052	92,389	87,945	82,187	87,936	164,272	170,123
Iron Ore Shipments ('000 tonnes)		90,085	90,576	91,269	77,642	91,332	162,798	168,974
Iron Ore Sales ('000 tonnes) (d)		90,085	90,576	89,690	77,397	91,361	162,798	168,758

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass 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 include 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 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	H1 2019	H1 2020
SALT								
Dampier Salt	68.4 %							
<i>Western Australia</i>								
Salt production ('000 tonnes)		1,856	2,036	2,121	1,527	2,085	3,773	3,612
TITANIUM DIOXIDE SLAG								
Rio Tinto Iron & Titanium	100.0 %							
<i>Canada and South Africa</i>								
(Rio Tinto share) (a)								
Titanium dioxide slag ('000 tonnes)		303	321	286	293	262	599	555
URANIUM								
Energy Resources of Australia Ltd								
Ranger mine (a)	86.3 %							
<i>Northern Territory, Australia</i>								
U ₃ O ₈ Production ('000 lbs)		906	855	939	928	831	2,066	1,760
Rössing Uranium Ltd (a) (b)	0 %							
<i>Namibia</i>								
U ₃ O ₈ Production ('000 lbs)		1,665	247	—	—	—	2,833	—

(a) ERA production data are drummed U₃O₈.

On 25 February 2020, Rio Tinto's ownership interest in ERA increased from 68.39% to 86.33%, following completion of its offer to ensure ERA has the funds it needs to meet its current rehabilitation obligations. Production is reported including this change from 1 March 2020.

(a) Rössing production data are drummed U₃O₈.

(b) On 16 July 2019, Rio Tinto completed the sale of its entire 68.62% interest in the Rössing mine in Namibia to China National Uranium Corporation Limited. Production is reported up to the date of completion.

Rio Tinto percentage interest shown above is at 30 June 2020. The data represent full production and sales on a 100% basis unless otherwise stated.