

16 July 2021

Rio Tinto releases second quarter production results

Rio Tinto Chief Executive Jakob Stausholm, said: "The global economy, in particular China, recovered strongly and we are intensely focused on servicing our customers with as much product as we can. However, we faced some challenges in the first half notably at our Pilbara operations, which were impacted by replacement mine tie-ins and materially higher rainfall. Heightened COVID-19 constraints, which resulted in numerous travel restrictions, added further pressure on the business and limited our ability to access additional people, particularly in Western Australia and Mongolia, in order to deliver operational improvements or maintenance initiatives and accelerate projects.

"Safety is our first priority and our performance in this area remains robust in challenging conditions. However, as identified shortly after my appointment, operationally we are not where we want to be. Our first half performance has reaffirmed my belief that we have identified the right priorities to strengthen the business: to become the best operator, strive for impeccable ESG credentials, excel in development and secure a strong social licence. We have made initial progress against our priorities, but a large volume of work remains to make Rio Tinto even stronger, so we can continue to deliver superior returns to shareholders, invest in sustaining and growing our portfolio, and make a broader contribution to society."

Production*		Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Pilbara iron ore shipments (100% basis)	Mt	76.3	-12%	-2%	154.1	-3%
Pilbara iron ore production (100% basis)	Mt	75.9	-9%	-1%	152.3	-5%
Bauxite	Mt	13.7	-6%	+1%	27.3	-4%
Aluminium	kt	816	+4%	+2%	1,619	+3%
Mined copper	kt	115.5	-13%	-4%	236.1	-11%
Titanium dioxide slag	kt	298	+14%	+7%	577	+4%
IOC iron ore pellets and concentrate	Mt	2.7	-2%	+16%	5.1	-5%

*Rio Tinto share unless otherwise stated

Q2 Operational update

- Our colleague Nico Swart was tragically killed in a shooting incident whilst driving to work at Richards Bay Minerals (RBM) in South Africa on 24 May. Our sympathies are with Nico's family and we are offering ongoing support to his family, friends and colleagues.
- We continue to prioritise the safety of our people and communities as some regions experience a resurgence of COVID-19. We have exceeded 30 months without a fatality on site but our all injury frequency rate (AIFR) of 0.39 has seen a slight increase versus the second quarter of 2020 (0.37), and prior quarter (0.35), which underlines that there is no room for complacency.
- We expect iron ore shipments to be at the low end of the guidance range which remains subject to COVID-19 disruptions, tie-in and ramp up of brownfield replacement mines and management of cultural heritage. Mined copper and bauxite production is expected to be at the low end of the guidance range. Full year titanium dioxide slag production guidance has been removed as a result of risks around the timing of resumption of operations at RBM in South Africa, due to an escalation in the security situation. We are working with the local and federal governments and police to ensure we can safely resume operations.
- Pilbara iron ore production of 75.9 million tonnes (100% basis) was 9% lower than the second quarter of 2020 due to above average rainfall in the West Pilbara, shutdowns to enable replacement mines to be tied in, processing plant availability, and cultural heritage management. Shipments of 76.3 million tonnes (100% basis) were 12% lower than the second quarter of 2020 with some additional drawdown of inventories. Ongoing COVID-19 restrictions and a tight labour market have further impacted our ability to access experienced contractors and particular skill sets.
- Bauxite production of 13.7 million tonnes was 6% lower than the second quarter of 2020 due to ongoing system instability following severe wet weather in Eastern Australia in the first quarter.

- Aluminium production of 0.8 million tonnes was 4% higher than the second quarter of 2020, underpinned by the ISAL smelter in Iceland and the Becancour smelter in Quebec operating at full capacity, and the Kitimat smelter in British Columbia nearing completion of its pot relining cycle.
- Mined copper production of 115.5 thousand tonnes was 13% lower than the second quarter of 2020, with lower recoveries and throughput at Escondida as a result of the prolonged impact of COVID-19, and a planned relocation of the in-pit crusher at Kennecott in April. On 31 May, an anticipated slope failure occurred in the south east wall of the Bingham Canyon pit at Kennecott. There were no injuries or damage to equipment as the slide was accurately predicted by our geotechnical experts. Mining in the affected area restarted progressively in June. No ore has been sterilised and we expect to recover the material from the slide which is largely copper bearing ore. Mining rates will however be slower due to the size distribution of the material, and therefore some high-grade production scheduled for late 2021 will be deferred to 2022.
- Titanium dioxide slag production of 298 thousand tonnes was 14% higher than the second quarter of 2020 due to consistent production at the Fer et Titane (RTFT) metallurgical complex in Quebec. Following weeks of violent disruptions, our RBM operations have been significantly hampered. As a result, we have declared force majeure, with all operations curtailed.
- Production of pellets and concentrate at Iron Ore Company of Canada (IOC) was 2% lower than the second quarter of 2020 due to labour and equipment availability issues impacting product feed. Force majeure declared in April following the fire at the port has been lifted.
- On 17 June, Peter Cunningham was [appointed](#) as Chief Financial Officer with immediate effect. Peter also joined the Rio Tinto Board as an executive director at the same time. On 7 July, we [announced](#) the appointment of Isabelle Deschamps who will join on 25 October as Chief Legal Officer & External Affairs, succeeding Barbara Levi.
- On 4 June, we [announced](#) the appointment of Ben Wyatt as a non-executive director of the Rio Tinto Board. Mr Wyatt, an Australian citizen, and former Treasurer and Aboriginal Affairs Minister in the Western Australian Government, will join the Board on 1 September 2021.
- In the second quarter, we entered into four partnerships to progress our work to decarbonise our value chain. These include one with the Australian Renewable Energy Agency (ARENA) to study whether hydrogen can replace natural gas in alumina refineries to reduce emissions, and one with POSCO to jointly explore, develop and demonstrate technologies to transition to a low-carbon emission steel value chain.

Production guidance

Rio Tinto share, unless otherwise stated	2020 Actuals	H1 2021 Actuals	2021
Pilbara iron ore (shipments, 100% basis) (Mt)	331	154	325 to 340 ¹
Bauxite (Mt)	56	27	56 to 59 ²
Alumina (Mt)	8.0	4.0	7.8 to 8.2
Aluminium (Mt)	3.2	1.6	3.1 to 3.3
Mined copper (kt)	528	236	500 to 550 ²
Refined copper (kt)	155	111	210 to 250
Diamonds (M carats) ³	3.7	1.9	3.0 to 3.8
Titanium dioxide slag (Mt)	1.1	0.6	N/A ⁴
IOC iron ore pellets and concentrate (Mt)	10.4	5.1	10.5 to 12.0
Boric oxide equivalent (Mt)	0.5	0.3	~0.5

¹At the low end of the range and remains subject to COVID-19 disruptions, risks around tie-in of new mines and management of cultural heritage.

²At the low end of the range.

³Diamonds 2021 guidance and actuals are for Diavik only for comparability, following Argyle closure in 2020. Unadjusted Diamonds production for 2020 was 14.7 million carats, including both Diavik and Argyle operations.

⁴Full year titanium dioxide slag production guidance has been removed as a result of risks around the timing of resumption of operations due to an escalation in the security situation at our Richards Bay Minerals operation in South Africa.

Operating costs

- Pilbara iron ore 2021 unit cost guidance is now \$18.0-\$18.5 per tonne (previously \$16.7-17.7). This is an underlying cost increase of around A\$0.3 billion (100% basis) relative to prior guidance or 4%. The change reflects price escalation of key input costs (diesel and labour), costs related to mine heritage management, and COVID-19 related costs (YTD actual ~A\$100m; no COVID-19 costs included in previous guidance). Operating cost guidance is based on A\$:US\$ exchange rate of 0.77 (unchanged).
- Copper C1 unit cost guidance for 2021 is unchanged at 60-75 US cents/lb.

- We will continue to monitor government-imposed restrictions related to COVID-19, and any other potential COVID-19 related disruptions. Restrictions on movement and availability of people can impact our ability to execute planned maintenance and deliver or accelerate projects.
- Iron ore shipments and bauxite production guidance remain subject to weather and market conditions. We expect iron ore shipments to be at the low end of the guidance range which remains subject to tie-in and ramp up of brownfield replacement mines, and ongoing cultural heritage management. Progress has been made on tying in approximately 90 million tonnes of replacement mine capacity at existing hubs in Robe Valley, West Angelas and Western Turner Syncline Phase 2. Replacement projects remain on track for completion in 2021, and Gudai-Darri is set to ramp up during 2022. The tight labour market in Western Australia has limited our access to experienced contractors and specific skill sets.
- The full impact on our Pilbara iron ore operations, mine developments and heritage approach from the reform of the Aboriginal Heritage Act 1972 (WA) remains unknown. We continue to engage with Traditional Owners regarding current and proposed plans for mining activities and work through development scenarios, adjusting mine plans where required. Given the quality of our resource, we retain a range of development options in the Pilbara, subject to heritage and environmental approvals.

EBITDA Sensitivities: previously published for 2020, next update on 28 July 2021

	Average price/rate for 2020	(\$m) impact on full year 2020 underlying EBITDA of 10% price/rate change
Copper	281c/lb	370
Aluminium	\$1,702/t	577
Gold	\$1,770/oz	62
Pilbara iron ore (FOB)*	\$98.9/dmt	2,318
A\$	0.69US\$	617
C\$	0.75US\$	201
Oil (Brent)	\$42/bbl	85

*FOB based on monthly freight-adjusted 62% iron fines CFR

Note: The sensitivities give the estimated effect on underlying EBITDA, assuming that each individual price or exchange rate moved in isolation. The relationship between currencies and commodity prices is a complex one and movements in exchange rates can affect movements in commodity prices and vice versa. The exchange rate sensitivities include the effect on operating costs but exclude the effect of revaluation of foreign currency working capital. Please use them with care.

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.

Investments, growth and development projects

- We continue to proactively manage COVID-19 and prioritise work across critical projects, as challenges associated with interstate and international border access continue, impacting the availability and movement of people, most notably in Australia, Canada and Mongolia. Capital expenditure remains unchanged at around \$7.5 billion each year from 2021 to 2023.
- Exploration and evaluation operating expense in the first half of 2021 was \$324 million, \$44 million (16%) higher than the first half of 2020, with continued progress in Australia, and ramp up of activities in Europe and North America, with some delays in South America due to COVID-19 restrictions.

Pilbara replacement projects

- At Gudai-Darri, mining has commenced with more than nine million cubic metres of pre-stripping completed in June. Labour shortages have impacted both steel fabrication and site construction activities. First ore in the crusher is expected in 2021, although commissioning is later than originally planned. The project is expected to ramp up in early 2022, consistent with previous guidance.
- First ore at West Angelas (C, D) was achieved in June with load commissioning expected later in the year following delays related to heritage management. First ore at Robe Valley (Mesa B, C, H) and Western Turner Syncline Phase 2 is still expected in 2021, consistent with previous guidance.

Oyu Tolgoi underground project¹

Technical progress

- Project progress has been significantly affected by heightened COVID-19 constraints in Mongolia. To comply with COVID-19 restrictions, site manning levels were less than 25% of planned requirements. Despite these restrictions, as the Material Handling System 1 had been ahead of the definitive estimate schedule, it is now 90% complete with technical criteria achieved to support undercut commencement, subject to the ongoing impacts of COVID-19 and satisfactory resolution of the non-technical undercut criteria.
- In the quarter, there was very little progress on the Conveyor to Surface Decline, with no progress on the majority of other planned works including shafts 3 and 4. However, recent easing of quarantine constraints and increasing workforce vaccination rates on site has supported gradual improvements in site resourcing. The impact of the additional restrictions experienced in the first half is ongoing and still to be determined.
- Contractual commitments to future works such as Material Handling System 2 and concentrator upgrades have been delayed pending approval by the Oyu Tolgoi board as part of the increased budget to complete the project.
- An update on panels 1 and 2 will be provided when the work to understand potential flow on impacts is complete, particularly from shafts 3 and 4 delays.

Other updates

- Following the Presidential election, engagements continue and the negotiation team is in the process of remobilising to continue formal discussions with the Government of Mongolia. All stakeholders remain committed to moving the project forward and ensuring a long-term solution to the issues under discussion. As previously reported, a number of additional milestones need to be met in order to ensure that the project can commence caving operations (undercut) including: key regulatory milestones including registration of the updated Resources and Reserves and acceptance of the updated Feasibility Study (OTFS20) by the relevant governmental agencies of Mongolia; project budget uplift in line with the definitive estimate to be approved by the Oyu Tolgoi board; funding plan in line with the Heads of Agreement signed in April between Rio Tinto and Turquoise Hill Resources (TRQ) to be approved by the Oyu Tolgoi Board; and milestones for the power solution.

Other key projects and exploration and evaluation

- The Zulti South project in South Africa remains on full suspension.
- At the Kemano hydropower tunnel project in British Columbia, Canada, works have resumed at full capacity and the tunnel boring excavation is now 74% complete, having achieved a total of 5,660 metres. The project is scheduled to complete in the second half of 2022, subject to there being no further COVID-19 delays.
- At the Resolution Copper project in Arizona, we are continuing to work with the US Forest Service to review the Final Environmental Impact Statement (EIS) and draft Record of Decision. Mine studies continue to progress in parallel.
- At the Winu project in Western Australia, we continue to actively engage with the Traditional Owners and we plan to commence discussions on the initial scope and mine design, also in consultation with the Western Australian Environmental Protection Authority, with sanction now targeted for next year and first production in 2025 partly due to COVID-19 constraints. Drilling, fieldwork and study activities continue to progress.
- At the Simandou iron ore project in Guinea, we are reviewing results from the technical optimisation of the infrastructure studies, and product test sample analysis is now underway. A new office was established in Conakry in the second quarter as we expand our in-country team.
- The feasibility study at the Jadar lithium-borate project in Serbia is progressing to plan and on track to be complete by the end of 2021. An investment decision is scheduled for this year, subject to permitting and other approvals.

¹Project baseline reporting has been updated following endorsement of the definitive estimate by Rio Tinto Board and Turquoise Hill Resources (pending Oyu Tolgoi board approval). The definitive estimate assumed COVID-19 restrictions in 2021 that were no more stringent than those experienced in September 2020 and noted that should COVID-19 constraints continue beyond 2021 or should the COVID-19 situation escalate further in 2021 leading to tougher restrictions, additional costs and schedule impacts will arise. Since the definitive estimate, at the end of 2020, Mongolia implemented additional restrictions in response to community transmission cases, and in March 2021 the first cases of COVID-19 were identified at Oyu Tolgoi resulting in temporary site shutdown, quarantine measures and further travel and movement restrictions. The impact of these additional restrictions, which have continued throughout this period and are beyond those experienced in September 2020, is ongoing and still to be determined.

Sustainability highlights

We continue to advance our sustainability agenda. On 30 April, we [released](#) updated information in relation to our global tailings facilities to align with the requirements of the Global Industry Standard for Tailings Management (GISTM). The latest [disclosure](#) builds on previously disclosed information on each of our global tailings facilities released in June 2019.

On 10 June, the Informal Working Group of the Taskforce on Nature-related Financial Disclosures (TNFD) launched a framework - that we contributed to and [endorsed](#). The framework will help organisations like ours build a complete picture of environmental risks and opportunities. The TNFD framework will help businesses report and act on evolving nature-related risks.

In June, we [released](#) our 2020 Statement on Modern Slavery, highlighting the concrete steps we are taking to identify and address modern slavery risks throughout our global business and supply chains. It is our fifth report in line with UK legislation and the first time we have reported under the new Australian legislation.

In the first half we [launched the Everyday Respect](#) initiative, to improve how we prevent and respond to sexual harassment, bullying and racism at work. A number of employee listening sessions have been held to date, led by an independent consultant.

Communities & Social Performance (CSP)

We have continued to focus on rebuilding relationships in the Pilbara and beyond and to re-establish best practice in communities and social performance. We acknowledge we still have a long way to go. An area of focus has been early discussions about the modernisation of agreements and listening to and understanding Traditional Owner perspectives and concerns. In line with a commitment we made in March, by the end of September, we intend to release additional disclosures on the progress of Communities and Social Performance actions as part of our efforts to increase transparency in our approach to cultural heritage.

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

In the second quarter, we recognised a year since the destruction of the Juukan Gorge rock shelters. We reflected on the magnitude of what was lost by our actions, and that the hurt we have caused will never be forgotten. Positive discussions are progressing between Puutu Kunti Kurrama and Pinikura (PKKP) leadership and Rio Tinto Iron Ore on a co-management of country approach. Going forward, a key focus will be to jointly determine an appropriate remedy for the destruction of Juukan Gorge, with discussions to progress in the coming months. This follows the completion of some rehabilitation works around Juukan Gorge.

The Wintawari Guruma Aboriginal Corporation (WGAC) recently made a submission to the Joint Standing Committee on Northern Australia in relation to management of heritage at the Marandoo mine in the 1990s. Communication continues with WGAC, we have apologised to WGAC for our past actions at Marandoo and are committed to meeting with them again to discuss these issues, and agreement modernisation, at a time when they are ready to re-engage with us.

Cultural heritage management

The first phase of the Integrated Heritage Management Process to manage cultural heritage is now complete. Known sites of cultural significance have been re-assessed and mine plans adjusted or measures taken to avoid disturbance, and we increased buffer zones in some cases.

Our communities expertise

We are focused on building social performance capability and competency and have continued to expand our CSP Area of Expertise, with more than 300 CSP professionals working on 60 sites in 35 countries (compared with 250 CSP professionals in 2020).

We also further developed our internal capability with the delivery of a new co-developed cultural awareness training via immersive virtual reality. We are on track to have 90% of our 14,000 Pilbara iron ore employees complete this training by mid-August 2021.

The \$50 million investment to attract, retain and grow Indigenous professionals and leaders has enabled us to nearly triple the number of Indigenous leaders in Rio Tinto over the past 12 months to 19 through internal promotion and recruitment, ahead of the original target. The 2021 target has been revised to 50 Indigenous leaders.

Indigenous Advisory Group

In line with our commitment to establish an Indigenous Advisory Group (IAG), the terms of reference are under active development to ensure the group can help us manage policies and positions that are important to Indigenous Australia and our broader business. Further consultation with Traditional Owners and Indigenous leaders is planned for the third quarter.

Other key community initiatives in the quarter

On 18 June, we [commemorated](#) 20 years of our Western Cape Communities Co-Existence Agreement (WCCCA) with Traditional Owners at the official opening of the new Western Cape Communities Trust building in Weipa, Queensland. The Land Use Agreement, which was signed on 14 March 2001, was developed in consultation with 11 Traditional Owner Groups in the region. The WCCCA agreement was one of the first Indigenous Land Use Agreements between a mining company and Traditional Owners in Australia. Since 2002, 206 local Aboriginal persons have successfully completed their traineeships with Rio Tinto.

We acknowledge Traditional Owner calls for further action on increased opportunities for Aboriginal businesses. This is a high priority for us and we are working to improve our approach to Indigenous Business Development in Western Australia and beyond. In the first half of 2021, we have increased procurement with Indigenous vendors by around 40% compared with the first half of 2020. The Indigenous Business Development strategy is expected to be finalised in July and engagement with Pilbara Aboriginal Businesses has commenced.

Climate change and our value chain

We progressed initiatives in the second quarter in line with our commitment to being part of the transition to a low-carbon future, decarbonise our business and value chain, and progress our scope 1 and 2 targets, and scope 3 goals.

Decarbonisation initiatives

- On 20 April, we [announced](#) that ELYSIS, our joint venture with Alcoa, had selected our Alma smelter in Saguenay-Lac-Saint-Jean, Quebec, for the first installation and demonstration of its inert anode technology at a commercial size of 450 kiloamperes (kA), and on 29 June, we [announced](#) the start of construction of the first prototype cells. This will build on ongoing work at the nearby ELYSIS Industrial Research and Development Centre. The 450 kA cells at Alma will be supported by investments of C\$20 million from the Government of Quebec and C\$20 million from the Government of Canada.
- In May, we signed a charter agreement with Singapore's ship management company Eastern Pacific Shipping (EPS) for three liquefied natural gas (LNG) dual-fuel Newcastlemax bulk carriers, to further reduce our scope 3 shipping emissions. The delivery of the ships will commence from the second half of 2023.
- On 12 May, we [announced](#) the Charge On Innovation Challenge, along with other Founding Patrons: BHP and Vale, and in partnership with Australia's Mining Equipment, Technology and Services (METS) industry body Austmine. The Challenge is a global competition for technology innovators to develop new concepts for large-scale haul truck electrification systems to help significantly cut emissions from surface mine operations and unlock safety, productivity, and operational improvements.
- On 16 June, we [announced](#) a partnership with the Australian Renewable Energy Agency (ARENA) to study whether hydrogen can replace natural gas in alumina refineries to reduce emissions. We will conduct a A\$1.2 million feasibility study, equally funded with ARENA through a A\$580,000 grant, into using clean hydrogen to replace natural gas in the calcination process of refining at the Yarwun alumina refinery in Gladstone.
- On 23 June, we [announced](#) a Memorandum of Understanding (MoU) with Schneider Electric to develop a circular and sustainable market ecosystem for both companies and their customers. The partnership will draw on Schneider Electric's Energy as a Service expertise to evaluate the use of innovative solutions, including microgrids, to supply energy from low-carbon sources, and artificial intelligence and advanced analytics to help meet sustainability goals at Rio Tinto sites and throughout its supply chain.
- On 8 July, we [announced](#) a MoU with POSCO, the largest steel producer in South Korea and one of the world's leading steel producers, to jointly explore, develop and demonstrate technologies to transition to a low-carbon emission steel value chain.

Product stewardship initiatives

- On 3 May, we [announced](#) our ISAL smelter in Iceland has been certified by the Aluminium Stewardship Initiative (ASI) for meeting the highest internationally recognised standards for responsible aluminium production.

- For personal use only
- On 25 May, we [announced](#) a MoU with InoBat, a European battery technology and manufacturing company, to work together to accelerate the establishment of a “cradle to cradle” battery manufacturing and recycling value chain in Serbia.
 - On 27 May, we [announced](#) a partnership with CompTech to bring a new generation of aluminium alloys to the market for use in advanced technologies such as electric vehicles and 5G antennas.
 - On 17 June, we [announced](#) the commencement of operations at a new commercial scale demonstration plant to produce high-quality scandium oxide at our Rio Tinto Fer et Titane (RTFT) metallurgical complex in Sorel-Tracy, Quebec. Commissioning work is now being undertaken as production ramps up to a capacity of three tonnes of scandium oxide per year. RTFT is already considering the potential for further investments to add additional modules in line with market demand.

Our markets

We expect continued global recovery with most key indicators of economic activity back to pre COVID-19 levels. This follows supportive government policies and vaccine deployment success. We remain watchful of risks, in particular variant infection and vaccination rates.

- Rising inflation is primarily being driven by the current imbalances in supply and demand, as industry producers adjust activity following some disruption.
- China's economic growth is becoming more balanced on fading stimulus-related demand and tightening credit conditions. Consumption and non-real estate demand has continued to recover.
- Consumer confidence is rising in the United States as COVID-19 restrictions are reduced. Consumer demand is expected to rotate from goods towards services while supply gradually responds to stronger activity. Housing market growth is slowing from the peak in starts in the fourth quarter of 2020 and first quarter of 2021, albeit settling at a historically strong level.
- Economic indicators in Europe show a strong recovery is already underway, however some countries' reopening plans are at risk with the variant surge.
- The iron ore price has remained resilient on a surge in demand while supply has struggled to keep pace. China's steel demand is up 5% year on year in the first half, with the construction and automotive sectors performing strongly. Consumption was also robust across the rest of the world, with demand recovering +15% in 2021 versus 2020. The major iron ore producers' supply continues to lag expectations, while high cost supply balances the overall market. Meanwhile, scrap is recovering from the lows in the first half of 2020, with global scrap consumption in the first half of 2021 set to rise 18% year on year as crude steel output and scrap availability improves.
- The aluminium price has continued to be supported in tight physical markets with elevated LME and premia, and strong demand in global semis (+8% in 2021 versus 2020).
- Copper prices have continued to rally driven by multi-year weakness in supply growth (at ~1% year on year) and strong demand recovery in China and the rest of the world. Investor positions challenged all-time highs, although have since retreated from the first quarter peak.

Average realised prices achieved for our major commodities

	Units	H1 21	Q2 21	Q1 21	H1 20	FY 20
Pilbara iron ore	FOB, \$/wmt	154.9	168.6	141.3	78.5	91.0
Pilbara iron ore	FOB, \$/dmt	168.4	183.2	153.6	85.4	98.9
Aluminium*	Metal \$/t	2,626	2,820	2,421	1,849	1,946
Copper**	US cents per pound	415	442	390	250.0	283.0
IOC pellets	\$/wmt	218.3	247.3	192.7	117.0	127.6

*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 the first half by \$202 million (first half 2020 negative impact of \$26 million).

COVID-19

Our number one priority remains the safety, health and well-being of our employees, contractors, their families and the communities where we operate. Since COVID-19 started, we have implemented a range of preventive measures to keep our people safe, in accordance with government guidance. As a company, we also benefited from our host governments recognising mining as an essential business, and allowing us to continue operating and delivering products to our customers. This meant people remained employed, suppliers had our business, and taxes and royalties continued to be paid. In the second quarter there has been a resurgence of the virus, including second and third waves in regions where we have assets and offices including Mongolia, India, the Americas and South Africa.

- In Mongolia, the situation has been very difficult as cases surged in Ulaanbaatar and at Oyu Tolgoi site. We continue to work closely with the Government of Mongolia and health authorities, and apply the strictest measures, including quarantine and testing for all employees before access to site. The vaccination programme is progressing well.
- India was affected by a second wave in the second quarter. The Delhi region, where our office and most of our people are located, was severely impacted. Our business resilience team in India together with central teams worked to ensure the health and safety of our people by securing medical services and equipment to the extent possible. We continue our partnership with the Charities Aid Foundation (CAF) to provide healthcare essentials, including oxygen supplies, to support the communities that we work in.
- South Africa is experiencing an aggressive third wave. Increased restrictions are now in place to control a surge of infections. The majority of our workforce are working remotely.
- With the outbreaks across Australia, we are closely monitoring State border closures and applying site access controls and travel management protocols.

Full details of initiatives taken to date can be found on our [website](#).

IRON ORE

Rio Tinto share of production (Million tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Pilbara Blend and SP10 Lump ¹	18.3	-4%	+1%	36.3	-3%
Pilbara Blend and SP10 Fines ¹	28.8	-7%	+2%	57.0	-3%
Robe Valley Lump	1.2	-8%	-7%	2.5	-10%
Robe Valley Fines	1.9	-37%	-15%	4.1	-24%
Yandicoogina Fines (HIY)	13.4	-10%	-1%	26.9	-7%
Total Pilbara production	63.5	-8%	—%	126.9	-5%
Total Pilbara production (100% basis)	75.9	-9%	-1%	152.3	-5%

Rio Tinto share of shipments (Million tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Pilbara Blend Lump	12.8	-23%	—%	25.7	-17%
Pilbara Blend Fines	27.8	-16%	-3%	56.4	-6%
Robe Valley Lump	0.9	-16%	-9%	2.0	-13%
Robe Valley Fines	2.2	-27%	-9%	4.6	-19%
Yandicoogina Fines (HIY)	13.6	-12%	-4%	27.9	-2%
SP10 Lump ¹	3.7	+270%	+41%	6.4	+217%
SP10 Fines ¹	2.8	+76%	-4%	5.7	+113%
Total Pilbara shipments ²	64.0	-11%	-1%	128.6	-3%
Total Pilbara shipments (100% basis) ²	76.3	-12%	-2%	154.1	-3%
Total Pilbara Shipments (consolidated basis) ^{2, 3}	65.6	-11%	-1%	132.1	-3%

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 by the group 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 152.3 million tonnes (Rio Tinto share 126.9 million tonnes) in the first half of 2021, 5% lower than the first half of 2020 due to above average rainfall, shutdowns to enable replacement mines to be tied in, processing plant availability and cultural heritage management. Ongoing COVID-19 restrictions and a tight labour market have further impacted our ability to access experienced contractors and particular skill sets.

Sustained wet weather had an estimated impact of around 3 million tonnes in the first half. Consistent and above average rainfall impacted mine operations, particularly at West Pilbara and Robe Valley operations. The recorded rainfall days were 30% and 70% above the five year average at Paraburdoo and Karratha respectively, while rainfall at Pannawonica was 60% above the five year average.

The impact from shutdowns to enable replacement mines to be tied in at Western Turner Syncline and Robe Valley, and reduced processing plant availability, particularly at Yandicoogina, is estimated to be 4 million tonnes in the first half. Execution of shutdowns was also impacted by labour shortages due to COVID-19 restrictions and high labour demand.

We continue to prioritise engagement with Traditional Owners and cultural heritage management in daily site operations. To date, 2021 production has been reduced by around 2 million tonnes as mine plans have been amended, and buffers and exclusion zones have been incorporated to protect areas of high cultural significance. Mine plan changes have also resulted in increased production of SP-10.

Blast management plans have been developed to create smaller, higher controlled blasts to minimise vibration and protect heritage sites (approximately 11% of blasts in the first half), which has had some impact on mining productivity and materials handling. Going forward this will remain a risk factor, however we are adapting mine practices and improving productivity.

Mine production risks remain in the second half, as we complete construction and commissioning of Gudai-Darri, our first new hub in over five years, and ramp up production from replacement mines. The increased tightness in Western Australia's labour market continues, in particular shortages of roles relating to structural, mechanical, electrical and instrumentation disciplines, which is amplified by ongoing COVID-19 travel restrictions. Despite these impacts, all projects are expected to achieve first ore in the period previously disclosed, although completion in 2021 is slightly later than planned.

First half shipments of 154.1 million tonnes (Rio Tinto share 128.6 million tonnes) were 3% lower than the first half of 2020 with some additional drawdown of inventories. Full year iron ore shipments guidance is expected to be at the low end of the range and remains subject to COVID-19 disruptions, tie-in and ramp up of replacement mines and cultural heritage management.

In June we successfully completed a planned five week maintenance shut at one of our four port terminals, East Intercourse Island (EII), slightly ahead of plan. During the shut we replaced four 'apron feeders' below the rail car dumper that were around 50 years old.

Approximately 12% of sales in the first half 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 29% of sales in the first half were made on a free on board (FOB) basis, with the remainder sold including freight.

Achieved average pricing in the first half of 2021 was \$154.9 per wet metric tonne on an FOB basis (equivalent to \$168.4 per dry metric tonne, at 8% moisture assumption). This compares to the average first half price for the monthly average Platts index for 62% iron fines converted to an FOB basis of \$172.6 per dry metric tonne.

On 22 June, we [announced](#) the deployment of the world's first fully autonomous water trucks at Gudai-Darri. The three new water trucks will join a fleet of Caterpillar heavy mobile equipment including autonomous haul trucks and production drills, and will be primarily used for dust suppression on site. The trucks will enhance productivity by enabling mine operations to digitally track water consumption and reduce waste.

China Portside Trading

We continue to significantly increase port sales in China, with 5.4 million tonnes of sales in the first half of 2021 (3.6 million tonnes in the second quarter), doubling 2020's volumes. In the second quarter, we surpassed 10 million tonnes since the programme commenced and completed the first bonded sale to a steel mill in Indonesia ex Zhanjiang port. Our portside operation handles product from our operations in the Pilbara and in Canada as well as third party product, and provides blending and screening capabilities. Approximately 85% of products sold were either blended or screened in Chinese ports in the first half of 2021.

ALUMINIUM

Rio Tinto share of production ('000 tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Bauxite	13,699	-6%	+1%	27,264	-4%
Bauxite third party shipments	9,493	-11%	+5%	18,517	-8%
Alumina	2,012	+1%	-1%	4,047	+1%
Aluminium	816	+4%	+2%	1,619	+3%

Bauxite

Second quarter bauxite production of 13.7 million tonnes was 6% lower than the second quarter of 2020 due to ongoing system instability following severe wet weather in Eastern Australia in the first quarter. The same period of 2020 had strong production due to deferrals of planned shutdowns from COVID-19 restrictions.

The non-managed CBG joint venture in Guinea experienced shipping constraints, which was partly offset by higher production from the Porto Trombetas (MRN) joint venture in Brazil.

Alumina

Alumina production in the second quarter of 2.0 million tonnes was 1% higher than the corresponding period of 2020, reflecting strong operational performance at the refineries. Production was 1% lower than the first quarter of 2021, primarily due to a planned refinery shutdown at Yarwun during the quarter.

Aluminium

Second quarter aluminium production of 0.8 million tonnes was 4% higher than the same period of 2020, underpinned by the ISAL smelter in Iceland and Becancour smelter in Quebec operating at full capacity, and the Kitimat smelter in British Columbia nearing completion of its pot relining cycle. The Saguenay smelters had a strong performance in the second quarter, with stable performance maintained across the remaining portfolio.

Average realised aluminium prices including premiums for value-added products (VAP) increased 42% to \$2,626 per tonne in the first half of 2021 (first half 2020: \$1,849 per tonne). The LME price increased by 41% to \$2,245 per tonne (first half 2020: \$1,595), whilst the mid-west premium duty paid improved 28% to \$318 per tonne in the first half of 2021 (first half 2020: \$249 per tonne). Our VAP sales improved to 50% of primary metal sold in the first half of 2021 (first half 2020: 40%). Product premiums for VAP sales remained steady, averaging \$207 per tonne of VAP sold (first half 2020: \$208 per tonne).

We are closely monitoring the impact of global chip shortages on the automotive industry, and so far strong demand in other sectors has offset any impact on overall demand for aluminium.

COPPER

Rio Tinto share of production ('000 tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Mined copper					
Kennecott	33.7	-8%	+2%	67.0	-6%
Escondida	69.5	-17%	-4%	141.6	-17%
Oyu Tolgoi	12.3	+1%	-19%	27.5	+15%
Refined copper					
Kennecott	36.9	+411%	-18%	82.1	+144%
Escondida	15.3	-22%	+10%	29.3	-28%

Kennecott

Mined copper production was 8% lower than the same quarter of 2020, due to a planned relocation of the in-pit crusher in April and a slope failure in May.

The successful relocation of the crusher to a new area outside of the pit is a significant milestone as it enables access to additional ore and reduces the risk of a potential geotechnical event on key mine infrastructure.

On 31 May, an anticipated slope failure occurred in the south east wall of the Bingham Canyon pit. There were no injuries or damage to equipment as the slope deformation was methodically tracked since May 2020 and the timing of the slide was accurately predicted by our best-in-class slope monitoring systems and geotechnical team.

Mining in the affected area restarted progressively in June using remote equipment. No ore has been sterilised and much of the fallen material is copper bearing ore which is being mined. Mining rates are expected to be slower due to the size distribution of the fallen material, and we therefore expect that some high-grade production scheduled for late 2021 will be deferred to 2022.

With the transition to the south wall largely complete, copper head grades have started to increase as expected averaging 0.48% in the second quarter (compared to 0.41% in the same period of 2020 and 0.38% in the prior quarter). While we will continue the transition to higher grade material, grades are now expected to increase at a slower pace than previously forecast for the remainder of 2021, as a result of the slope failure.

Refined copper production was 411% higher than the same quarter of 2020 driven by solid smelter performance, while production in the same period of 2020 was negatively impacted by the earthquake in March 2020 and the planned major shutdown that commenced in May 2020.

Escondida

Mined copper production was 17% lower than the same quarter of 2020, mainly due to 8% lower concentrator throughput (351 thousand tonnes per day in the second quarter of 2021 versus 381 thousand tonnes per day in the second quarter of 2020), 4% lower grade in ore feed to concentrators and 34% lower recoverable copper in ore stacked for leaching. This was as a result of ongoing preventive measures in response to the resurgence of COVID-19 in the region, which has continued to impact workforce availability. Refined copper production was 22% lower than the corresponding period in 2020 due to lower material stacked.

Oyu Tolgoi

Mined copper production from the open pit was 1% higher than the same quarter of 2020 with higher head grades and copper recovery, partly offset by lower manning levels due to COVID-19.

Second quarter shipments have been affected by Chinese border restrictions due to increased cases of COVID-19 in Mongolia. Force majeure declared on shipments from 30 March remains in place, as we continue to work closely with the Mongolian and Chinese authorities and our customers to manage the risk of supply chain disruptions. Cross-border concentrate shipments into China have resumed with some measures in place to transport greater volumes in a safe and efficient manner, however uncertainty continues to exist with the COVID-19 resurgence in Mongolia. Safety is our first priority and strict measures are in place to protect our people.

Provisional pricing

At 30 June 2021, the Group had an estimated 185 million pounds of copper sales that were provisionally priced at 434 cents per pound. This compares with 260 million pounds of open shipments at 31 December 2020, provisionally priced at 336 cents per pound. Provisional pricing adjustments positively impacted revenues in the first half by \$202 million (first half 2020 negative impact of \$26 million). This includes mark to market adjustments in respect of shipments open at the period end and final adjustments in respect of shipments for which the price was settled during the period.

MINERALS

Rio Tinto share of production (million tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Iron ore pellets and concentrate					
IOC	2.7	-2%	+16%	5.1	-5%

Rio Tinto share of production ('000 tonnes)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Minerals					
Borates - B ₂ O ₃ content	126	-5%	+3%	248	-4%
Titanium dioxide slag	298	+14%	+7%	577	+4%

Rio Tinto share of production ('000 carats)	Q2 2021	vs Q2 2020	vs Q1 2021	H1 2021	vs H1 2020
Diavik	851	-12%	-15%	1,858	+2%

Iron Ore Company of Canada (IOC)

Iron ore pellets and concentrate production was 2% lower than the second quarter of 2020 due to labour and equipment availability issues impacting product feed.

Force majeure declared in April has been lifted following the temporary cessation of ship loading due to a fire in March and maintenance activities.

Borates

Borates production in the second quarter was 5% lower than the same period of 2020, but 3% higher than the prior quarter with improved refinery operating rates to match market demand. Completion of planned major maintenance in May combined with productivity initiatives will help support system stability in the second half.

Iron and Titanium

Titanium dioxide production was 14% higher than second quarter of 2020 with consistent production at the Fer et Titane (RTFT) metallurgical complex in Quebec. Following weeks of violent disruptions, our Richards Bay Minerals (RBM) operations have been significantly hampered. As a result, we have declared force majeure, with all operations curtailed. Full year titanium dioxide slag production guidance has been removed as a result of risks around the timing of resumption of operations. We are working with the local and federal governments and police to ensure we can safely resume operations.

Our colleague Nico Swart was tragically killed in a shooting incident whilst driving to work at RBM in South Africa on 24 May. Our sympathies are with Nico's family and we are offering ongoing support to his family, friends and colleagues.

Diamonds

At Diavik, carats recovered in the second quarter were 12% lower than the second quarter of 2020, due to lower grades partly offset by higher processed ore.

On 18 May, we [previewed](#) our final showcase of rare Argyle pink, red and blue diamonds from its iconic mine in the remote east Kimberley region of Western Australia. Mining ceased at Argyle in November, 2020 and the 2021 Argyle Pink Diamonds Tender is the final collection of the rarest diamonds from the final year of Argyle operations.

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 2021 was \$324 million, compared with \$280 million in the first half of 2020. Approximately 41% of this expenditure was incurred by central exploration, 35% by Copper, 18% by Minerals and 6% by Iron Ore.

There were no significant divestments of central exploration properties in the first half of 2021.

Exploration highlights

Rio Tinto has a strong portfolio of projects with activity in 19 countries across eight commodities in early exploration and studies stages. All projects have followed government COVID-19 requirements and guidelines while focusing on protecting well-being and health of local communities. The bulk of the exploration expenditure in the second quarter focused on copper in Australia, Canada, United States, Kazakhstan 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. The Falcon diamonds project in Saskatchewan, Canada is currently on care and maintenance. In May, we acquired approximately 8% stake in Western Copper and Gold Corporation. The proceeds of the transaction will be used for additional studies at the Casino Project in Yukon, Canada.

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; Copper/Gold: Winu, Australia	Copper: La Granja, Peru, Pribrezhniy, Kazakhstan Nickel: Tamarack, US (3rd party operated) Calibre-Magnum, Australia	Copper Greenfield: Australia, Chile, China, Kazakhstan, Nicaragua, Peru, Serbia, US, Zambia, Brazil, Canada, Colombia, Finland, Namibia Nickel Greenfield: Canada, Finland
Diamonds	Falcon*, Canada		Diamonds Greenfield: Canada Diamonds Brownfield: Diavik
Minerals	Lithium borates: Jadar, Serbia Potash: KL262, Canada Heavy mineral sands: Mutamba, Mozambique (3rd party operated)		
Iron Ore	Pilbara, Australia Simandou, Guinea	Pilbara, Australia	Greenfield and Brownfield: Pilbara

*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 Steve Allen, 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		
		2020 Q2	2021 Q1	2021 Q2	2020 H1	2021 H1	Q2 21 vs Q2 20	Q2 21 vs Q1 21	H1 21 vs H1 20
Principal commodities									
Alumina	('000 t)	1,990	2,034	2,012	4,000	4,047	+1%	-1%	+1%
Aluminium	('000 t)	785	803	816	1,568	1,619	+4%	+2%	+3%
Bauxite	('000 t)	14,560	13,566	13,699	28,373	27,264	-6%	+1%	-4%
Borates	('000 t)	132	122	126	258	248	-5%	+3%	-4%
Copper - mined	('000 t)	132.8	120.5	115.5	265.7	236.1	-13%	-4%	-11%
Copper - refined	('000 t)	26.9	59.2	52.3	74.1	111.4	+94%	-12%	+50%
Diamonds	('000 cts)	963	1,007	851	1,820	1,858	-12%	-15%	+2%
Iron Ore	('000 t)	71,689	65,681	66,241	138,477	131,922	-8%	+1%	-5%
Titanium dioxide slag	('000 t)	262	279	298	555	577	+14%	+7%	+4%
Other Metals & Minerals									
Gold - mined	('000 oz)	63.6	96.4	80.1	125.1	176.5	+26%	-17%	+41%
Gold - refined	('000 oz)	30.1	56.8	43.6	74.9	100.4	45%	-23%	34%
Molybdenum	('000 t)	3.9	5.0	1.1	8.9	6.1	-71%	-78%	-32%
Uranium	('000 lbs)	718	65	—	1,393	65	-100%	-100%	-95%
Salt	('000 t)	1,425	1,411	1,458	2,469	2,869	+2%	+3%	+16%
Silver - mined	('000 oz)	1,077	1,005	925	2,104	1,930	-14%	-8%	-8%
Silver - refined	('000 oz)	382	812	609	844	1,421	+59%	-25%	+68%

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 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
ALUMINA								
Production ('000 tonnes)								
Jonquière (Vaudreuil)	100 %	340	347	364	352	349	713	701
Jonquière (Vaudreuil) specialty Alumina plant	100 %	25	22	24	22	28	49	50
Queensland Alumina	80 %	711	763	774	743	756	1,424	1,499
São Luis (Alumar)	10 %	95	98	99	95	97	188	192
Yarwun	100 %	820	725	823	822	782	1,626	1,604
Rio Tinto total alumina production		1,990	1,954	2,085	2,034	2,012	4,000	4,047
ALUMINIUM								
Production ('000 tonnes)								
Australia - Bell Bay	100 %	49	48	48	46	47	96	93
Australia - Boyne Island	59 %	75	76	77	74	75	150	149
Australia - Tomago	52 %	76	77	77	75	75	151	150
Canada - six wholly owned	100 %	370	375	387	385	391	744	776
Canada - Alouette (Sept-Îles)	40 %	62	63	63	62	63	123	125
Canada - Bécancour	25 %	26	26	29	28	29	44	57
Iceland - ISAL (Reykjavik)	100 %	44	46	48	49	51	89	99
New Zealand - Tiwai Point	79 %	65	66	67	65	65	131	130
Oman - Sohar	20 %	20	20	20	20	20	39	39
Rio Tinto total aluminium production		785	797	815	803	816	1,568	1,619
BAUXITE								
Production ('000 tonnes) (a)								
Gove	100 %	3,186	3,147	3,090	2,879	3,030	6,062	5,909
Porto Trombetas	12 %	270	396	392	254	364	608	618
Sangaredi	(b)	1,742	1,920	1,887	1,887	1,755	3,621	3,642
Weipa	100 %	9,362	8,997	7,929	8,545	8,550	18,082	17,095
Rio Tinto total bauxite production		14,560	14,459	13,299	13,566	13,699	28,373	27,264

(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 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
BORATES								
Production ('000 tonnes B₂O₃ content)								
Rio Tinto Borates - borates	100 %	132	123	100	122	126	258	248
COPPER								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	36.5	34.7	33.8	33.2	33.7	71.5	67.0
Escondida	30 %	84.0	82.8	84.8	72.1	69.5	170.2	141.6
Oyu Tolgoi (b)	34 %	12.2	12.2	14.0	15.2	12.3	24.0	27.5
Rio Tinto total mine production		132.8	129.6	132.5	120.5	115.5	265.7	236.1
Refined production ('000 tonnes)								
Escondida	30 %	19.7	14.4	15.2	14.0	15.3	40.5	29.3
Rio Tinto Kennecott (c)	100 %	7.2	10.4	40.9	45.2	36.9	33.6	82.1
Rio Tinto total refined production		26.9	24.8	56.1	59.2	52.3	74.1	111.4

(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.

(c) We continue to process third party concentrate to optimise smelter utilisation, including 13.7 thousand tonnes of cathode produced from purchased concentrate in the first half of 2021. 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	60 %	963	1,001	910	1,007	851	1,820	1,858
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GOLD

Mine production ('000 ounces) (a)

Bingham Canyon	100 %	40.2	43.7	45.3	36.2	30.5	82.1	66.7
Escondida	30 %	13.0	12.7	14.3	11.4	11.7	23.8	23.1
Oyu Tolgoi (b)	34 %	10.4	12.3	29.4	48.8	37.9	19.2	86.7
Rio Tinto total mine production		63.6	68.7	89.1	96.4	80.1	125.1	176.5

Refined production ('000 ounces)

Rio Tinto Kennecott	100 %	30.1	3.7	38.9	56.8	43.6	74.9	100.4
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(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 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
IRON ORE								
Production ('000 tonnes) (a)								
Hamersley mines	(b)	53,187	54,852	53,316	47,063	47,621	102,514	94,684
Hamersley - Channar (c)	100 %	1,334	1,710	1,935	2,250	2,712	2,494	4,963
Hope Downs	50 %	5,659	6,625	6,571	5,616	5,960	11,326	11,576
Iron Ore Company of Canada	59 %	2,762	2,340	2,740	2,345	2,721	5,322	5,066
Robe River - Pannawonica (Mesas J and A)	53 %	4,307	3,882	3,988	3,506	3,090	8,187	6,596
Robe River - West Angelas	53 %	4,440	4,298	5,199	4,900	4,137	8,634	9,037
Rio Tinto iron ore production ('000 tonnes)		71,689	73,707	73,749	65,681	66,241	138,477	131,922
Breakdown of Production:								
Pilbara Blend and SP10 Lump (d)		18,970	18,253	21,666	18,050	18,265	37,474	36,315
Pilbara Blend and SP10 Fines (d)		30,866	33,570	31,122	28,245	28,796	58,600	57,042
Robe Valley Lump		1,326	1,399	1,364	1,307	1,219	2,798	2,527
Robe Valley Fines		2,981	2,483	2,624	2,199	1,871	5,388	4,070
Yandicoogina Fines (HIY)		14,784	15,662	14,233	13,534	13,369	28,893	26,903
Pilbara iron ore production ('000 tonnes)		68,927	71,366	71,009	63,336	63,520	133,154	126,856
IOC Concentrate		1,523	1,038	1,297	871	1,154	2,446	2,025
IOC Pellets		1,240	1,302	1,443	1,474	1,567	2,877	3,041
IOC iron ore production ('000 tonnes)		2,762	2,340	2,740	2,345	2,721	5,322	5,066
Breakdown of Shipments:								
Pilbara Blend Lump		16,700	15,514	16,280	12,842	12,830	31,085	25,672
Pilbara Blend Fines		33,036	31,710	35,140	28,565	27,795	59,728	56,360
Robe Valley Lump		1,118	1,112	1,246	1,025	934	2,250	1,959
Robe Valley Fines		2,999	2,724	3,062	2,402	2,190	5,687	4,591
Yandicoogina Fines (HIY)		15,578	14,203	15,055	14,222	13,640	28,491	27,862
SP10 Lump (d)		1,014	822	1,037	2,664	3,748	2,020	6,411
SP10 Fines (d)		1,603	1,488	1,771	2,923	2,817	2,692	5,740
Pilbara iron ore shipments ('000 tonnes) (e)		72,048	67,574	73,590	64,642	63,953	131,951	128,595
Pilbara iron ore shipments - consolidated basis ('000 tonnes) (e) (g)								
IOC Concentrate		1,410	1,355	1,157	1,019	1,048	2,416	2,067
IOC Pellets		1,320	1,378	1,539	1,477	1,303	3,089	2,780
IOC Iron ore shipments ('000 tonnes) (e)		2,731	2,733	2,696	2,496	2,352	5,506	4,847
Rio Tinto iron ore shipments ('000 tonnes) (e)		74,779	70,307	76,286	67,137	66,305	137,457	133,442
Rio Tinto iron ore sales ('000 tonnes) (f)		74,808	69,993	75,765	65,415	67,032	137,241	132,447

(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 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) Rio Tinto's ownership interest in Channar mine increased from 60% to 100%, following conclusion of its joint venture with Sinosteel Corporation upon reaching planned 290 million tonnes production on 22 October 2020. Production is reported at 100% from this date onward. Historic data is unchanged.

(d) SP10 include other lower grade products.

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

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

(g) 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 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
MOLYBDENUM								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	3.9	5.1	6.4	5.0	1.1	8.9	6.1
(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.								
SALT								
Production ('000 tonnes)								
Dampier Salt	68 %	1,425	1,279	1,113	1,411	1,458	2,469	2,869
SILVER								
Mine production ('000 ounces) (a)								
Bingham Canyon	100 %	526	586	555	524	476	1,064	1,000
Escondida	30 %	480	474	488	395	370	897	766
Oyu Tolgoi (b)	34 %	71	73	77	85	79	143	164
Rio Tinto total mine production		1,077	1,133	1,120	1,005	925	2,104	1,930
Refined production ('000 ounces)								
Rio Tinto Kennecott	100 %	382	70	449	812	609	844	1,421
(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 %	262	293	272	279	298	555	577
(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 %	718	735	742	65	—	1,393	65

(a) ERA production data are drummed U₃O₈.
ERA ceased processing operations on 8 January 2021, as required by the Ranger Authority.

Rio Tinto's Argyle operations were closed in 2020. 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.

Rio Tinto percentage interest shown above is at 30 June 2021.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
ALUMINA								
Smelter Grade Alumina - Aluminium Group								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80 %	889	953	968	929	945	1,780	1,874
Yarwun refinery - Queensland	100 %	820	725	823	822	782	1,626	1,604
<i>Brazil</i>								
São Luis (Alumar) refinery	10 %	945	976	990	953	968	1,882	1,920
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100 %	340	347	364	352	349	713	701
(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 %	25	22	24	22	28	49	50

Rio Tinto percentage interest shown above is at 30 June 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
ALUMINIUM								
Primary Aluminium								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100 %	49	48	48	46	47	96	93
Boyne Island smelter - Queensland	59 %	126	128	129	124	127	252	251
Tomago smelter - New South Wales	52 %	148	150	149	145	146	293	292
<i>Canada</i>								
Alma smelter - Quebec	100 %	118	118	119	117	117	236	234
Alouette (Sept-Îles) smelter - Quebec	40 %	155	156	158	155	157	308	312
Arvida smelter - Quebec	100 %	42	41	41	40	42	86	83
Arvida AP60 smelter - Quebec	100 %	15	15	15	15	15	30	30
Bécancour smelter - Quebec	25 %	102	104	115	112	117	174	229
Grande-Baie smelter - Quebec	100 %	55	55	57	56	57	113	113
Kitimat smelter - British Columbia	100 %	78	84	91	95	97	154	191
Laterrière smelter - Quebec	100 %	62	62	63	62	63	125	125
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100 %	44	46	48	49	51	89	99
<i>New Zealand</i>								
Tiwai Point smelter	79 %	82	84	84	82	82	165	164
<i>Oman</i>								
Sohar smelter	20 %	99	100	100	98	99	197	196

Rio Tinto percentage interest shown above is at 30 June 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
BAUXITE								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100 %	3,186	3,147	3,090	2,879	3,030	6,062	5,909
Weipa mine - Queensland	100 %	9,362	8,997	7,929	8,545	8,550	18,082	17,095
<i>Brazil</i>								
Porto Trombetas (MRN) mine	12 %	2,251	3,296	3,268	2,117	3,033	5,065	5,150
<i>Guinea</i>								
Sangaredi mine (a)	23 %	3,871	4,267	4,193	4,194	3,899	8,046	8,093
Rio Tinto share of bauxite shipments								
Share of total bauxite shipments ('000 tonnes)		14,668	14,117	12,993	13,444	13,602	28,235	27,046
Share of third party bauxite shipments ('000 tonnes)		10,721	10,064	9,104	9,024	9,493	20,190	18,517

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

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
BORATES								
Rio Tinto Borates - borates	100 %							
<i>US</i>								
Borates ('000 tonnes) (a)		132	123	100	122	126	258	248

(a) Production is expressed as B₂O₃ content.

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
COPPER & GOLD								
Escondida	30 %							
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)		34,755	34,733	36,303	32,654	31,903	68,194	64,556
Average copper grade (%)		0.81	0.85	0.83	0.78	0.78	0.81	0.78
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		236.8	243.9	246.1	207.8	202.8	466.8	410.7
Contained gold ('000 ounces)		43.4	42.3	47.8	38.0	38.9	79.4	76.8
Contained silver ('000 ounces)		1,599	1,580	1,627	1,318	1,234	2,989	2,552
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		43.3	32.1	36.5	32.5	28.7	100.5	61.2
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		65.5	47.9	50.8	46.6	51.1	135.2	97.8

(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 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
COPPER & GOLD (continued)								
Rio Tinto Kennecott								
Bingham Canyon mine	100 %							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		10,083	12,860	11,418	10,054	7,918	20,398	17,972
Average ore grade:								
Copper (%)		0.41	0.32	0.34	0.38	0.48	0.39	0.42
Gold (g/t)		0.23	0.21	0.22	0.21	0.21	0.23	0.21
Silver (g/t)		2.14	2.00	2.07	2.30	2.64	2.15	2.45
Molybdenum (%)		0.056	0.053	0.068	0.058	0.021	0.057	0.042
Copper concentrates produced ('000 tonnes)		135	140	138	140	141	283	281
Average concentrate grade (% Cu)		26.6	24.7	24.2	23.7	23.9	25.1	23.8
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		36.5	34.7	33.8	33.2	33.7	71.5	67.0
Gold ('000 ounces)		40.2	43.7	45.3	36.2	30.5	82.1	66.7
Silver ('000 ounces)		526	586	555	524	476	1,064	1,000
Molybdenum concentrates produced ('000 tonnes):								
Molybdenum in concentrates ('000 tonnes)		7.8	10.3	12.2	9.4	2.2	18.2	11.6
		3.9	5.1	6.4	5.0	1.1	8.9	6.1
Kennecott smelter & refinery								
	100 %							
Copper concentrates smelted ('000 tonnes)		51	1	234	240	103	212	344
Copper anodes produced ('000 tonnes) (b)		(2.1)	20.2	44.8	50.5	23.5	21.9	73.9
Production of refined metal:								
Copper ('000 tonnes) (c)		7.2	10.4	40.9	45.2	36.9	33.6	82.1
Gold ('000 ounces) (d)		30.1	3.7	38.9	56.8	43.6	74.9	100.4
Silver ('000 ounces) (d)		382	70	449	812	609	844	1,421

(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, including 13.7 thousand tonnes of cathode produced from purchased concentrate in the first half of 2021. 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 30 June 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
COPPER & GOLD (continued)								
Turquoise Hill Resources								
Oyu Tolgoi mine (a)	34 %							
<i>Mongolia</i>								
Ore Treated ('000 tonnes)		9,645	10,072	9,594	9,813	9,401	20,534	19,214
Average mill head grades:								
Copper (%)		0.47	0.45	0.50	0.56	0.47	0.45	0.51
Gold (g/t)		0.19	0.21	0.41	0.68	0.50	0.17	0.59
Silver (g/t)		1.22	1.22	1.16	1.29	1.19	1.18	1.24
Copper concentrates produced ('000 tonnes)		169.9	168.5	190.2	201.9	173.2	334.4	375.1
Average concentrate grade (% Cu)		21.5	21.5	21.9	22.5	21.2	21.4	21.9
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		36.5	36.3	41.6	45.4	36.7	71.7	82.2
Gold in concentrates ('000 ounces)		31.1	36.7	87.8	145.7	113.1	57.3	258.7
Silver in concentrates ('000 ounces)		212	219	231	255	235	426	490
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		39.7	34.4	37.9	39.0	19.6	65.5	58.6
Gold in concentrates ('000 ounces)		30.8	33.6	65.8	110.9	72.6	50.5	183.4
Silver in concentrates ('000 ounces)		220	201	194	207	106	365	313

(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 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
DIAMONDS								
Argyle Diamonds (a)	100 %							
<i>Western Australia</i>								
AK1 ore processed ('000 tonnes)		1,571	1,802	1,078	—	—	2,893	—
AK1 diamonds produced ('000 carats)		3,271	3,203	1,893	—	—	5,849	—
Diavik Diamonds	60 %							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		626	679	643	632	669	1,197	1,301
Diamonds recovered ('000 carats)		1,606	1,668	1,517	1,678	1,418	3,033	3,096

(a) Rio Tinto's Argyle operations were closed in 2020.

Rio Tinto percentage interest shown above is at 30 June 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
IRON ORE								
Rio Tinto Iron Ore								
<i>Western Australia</i>								
Pilbara Operations								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	53,187	54,852	53,316	47,063	47,621	102,514	94,684
Hamersley - Channar (b)	100 %	2,223	2,849	2,169	2,250	2,712	4,157	4,963
Hope Downs	50 %	11,318	13,250	13,142	11,232	11,920	22,652	23,152
Robe River - Pannawonica (Mesas J and A)	53 %	8,126	7,324	7,525	6,616	5,830	15,446	12,446
Robe River - West Angelas	53 %	8,378	8,110	9,809	9,246	7,806	16,290	17,052
Total production ('000 tonnes)		83,232	86,385	85,961	76,406	75,889	161,059	152,296
Breakdown of total production:								
Pilbara Blend and SP10 Lump (c)		23,222	22,674	25,888	21,901	21,946	45,813	43,847
Pilbara Blend and SP10 Fines (c)		37,100	40,725	38,316	34,356	34,743	70,906	69,099
Robe Valley Lump		2,502	2,639	2,574	2,467	2,300	5,279	4,767
Robe Valley Fines		5,625	4,685	4,951	4,149	3,530	10,167	7,679
Yandicoogina Fines (HIY)		14,784	15,662	14,233	13,534	13,369	28,893	26,903
Breakdown of total shipments:								
Pilbara Blend Lump		20,339	19,118	20,155	15,740	15,631	37,844	31,371
Pilbara Blend Fines		40,379	39,230	42,727	35,777	34,607	73,576	70,384
Robe Valley Lump		2,110	2,098	2,351	1,934	1,762	4,245	3,696
Robe Valley Fines		5,659	5,140	5,778	4,532	4,131	10,730	8,663
Yandicoogina Fines (HIY)		15,578	14,203	15,055	14,222	13,640	28,491	27,862
SP10 Lump (c)		1,014	822	1,037	2,664	3,748	2,020	6,411
SP10 Fines (c)		1,603	1,488	1,771	2,923	2,817	2,692	5,740
Total shipments ('000 tonnes) (d)		86,681	82,099	88,873	77,791	76,336	159,598	154,128
	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
Iron Ore Company of Canada								
	59 %							
<i>Newfoundland & Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		2,593	1,768	2,208	1,484	1,965	4,165	3,449
Pellets ('000 tonnes)		2,112	2,217	2,457	2,510	2,669	4,899	5,178
IOC Total production ('000 tonnes)		4,704	3,985	4,666	3,993	4,634	9,064	8,627
Shipments:								
Concentrates ('000 tonnes)		2,402	2,307	1,970	1,735	1,785	4,115	3,521
Pellets ('000 tonnes)		2,248	2,347	2,620	2,515	2,220	5,261	4,734
IOC Total Shipments ('000 tonnes) (d)		4,650	4,654	4,591	4,250	4,005	9,376	8,255
Global Iron Ore Totals								
Iron Ore Production ('000 tonnes)		87,936	90,370	90,627	80,400	80,523	170,123	160,923
Iron Ore Shipments ('000 tonnes)		91,332	86,753	93,464	82,041	80,341	168,974	162,383
Iron Ore Sales ('000 tonnes) (e)		91,361	86,398	92,942	80,319	81,068	168,758	161,388

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, 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) Rio Tinto's ownership interest in Channar mine increased from 60% to 100%, following conclusion of its joint venture with Sinosteel Corporation upon reaching planned 290 million tonnes production on 22 October 2020. Historic data is unchanged.

(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) 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 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	H1 2020	H1 2021
SALT								
Dampier Salt	68 %							
<i>Western Australia</i>								
Salt production ('000 tonnes)		2,085	1,871	1,628	2,064	2,132	3,612	4,196
TITANIUM DIOXIDE SLAG								
Rio Tinto Iron & Titanium	100 %							
<i>Canada and South Africa</i>								
(Rio Tinto share) (a)								
Titanium dioxide slag ('000 tonnes)		262	293	272	279	298	555	577

(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.

URANIUM								
Energy Resources of Australia Ltd								
Ranger mine (a)	86 %							
<i>Northern Territory, Australia</i>								
U ₃ O ₈ Production ('000 lbs)		831	851	860	75	—	1,760	75

(a) ERA production data are drummed U₃O₈. ERA ceased processing operations on 8 January 2021, as required by the Ranger Authority.

Rio Tinto percentage interest shown above is at 30 June 2021. The data represent full production and sales on a 100% basis unless otherwise stated.