

RioTinto

Pioneering progress

2018 Sustainable development report



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At the heart of our sustainability strategy – and our business – are our people and their safety.”

Chief executive's message



We produce materials essential to human progress; aluminium for our cars and smartphones; anti-microbial copper for hospitals; borates that help crops grow; responsible diamonds that celebrate enduring love. We believe we can be part of the world's sustainability solution.

As the expectations of society increase in the 21st century, we know we must do better to explain our contribution and purpose beyond delivering shareholder value. This is one reason why, in 2018, we refreshed our sustainability strategy, developing an integrated approach linked to the United Nations' Sustainable Development Goals. This approach ensures that material sustainability issues are integrated into our business strategy.

As a result, we produced a number of firsts in 2018 – our first climate change strategy in many years and, in parallel, our first report in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). In addition, we produced our first transparency and civil society statements, and our first global parental leave policy.

We discussed our approach and initiatives with investors and civil society groups in the latter half of the year; the response has been largely positive, with some good ideas for improvement shared as well. We look forward to working together with our many partners in the coming months and years to deliver our goals.

At the heart of our sustainability strategy – and our business – are our people and their safety. This year, we remember Francis Lalancette, Muzi Patrick Nhlenyama and Daniel Patterson – our colleagues who went to work last year but did not return home. Like all of us at Rio Tinto, I am deeply saddened by their tragic deaths and the irreplaceable loss this has caused their families, friends and colleagues. We must do better on safety.

Aside from this, 2018 was a year of milestones on the sustainability front, and we can look back with pride at our significant achievements.

In March, Rio Tinto became the first mining company to receive White Ribbon Australia accreditation, a recognition of our efforts to eradicate domestic violence, particularly as it affects our employees, their families and our communities. We have since expanded our support to employees in Canada and the United States.

In May, we launched a partnership to develop greenhouse-gas-free aluminium smelting: our Elysis joint venture with Alcoa, supported by Apple and the governments of Canada and Quebec. Late in the year, we signed an agreement to provide aluminium certified as “responsible” by the Aluminium Stewardship Initiative (ASI) to Nespresso – we are the first company to achieve ASI certification.

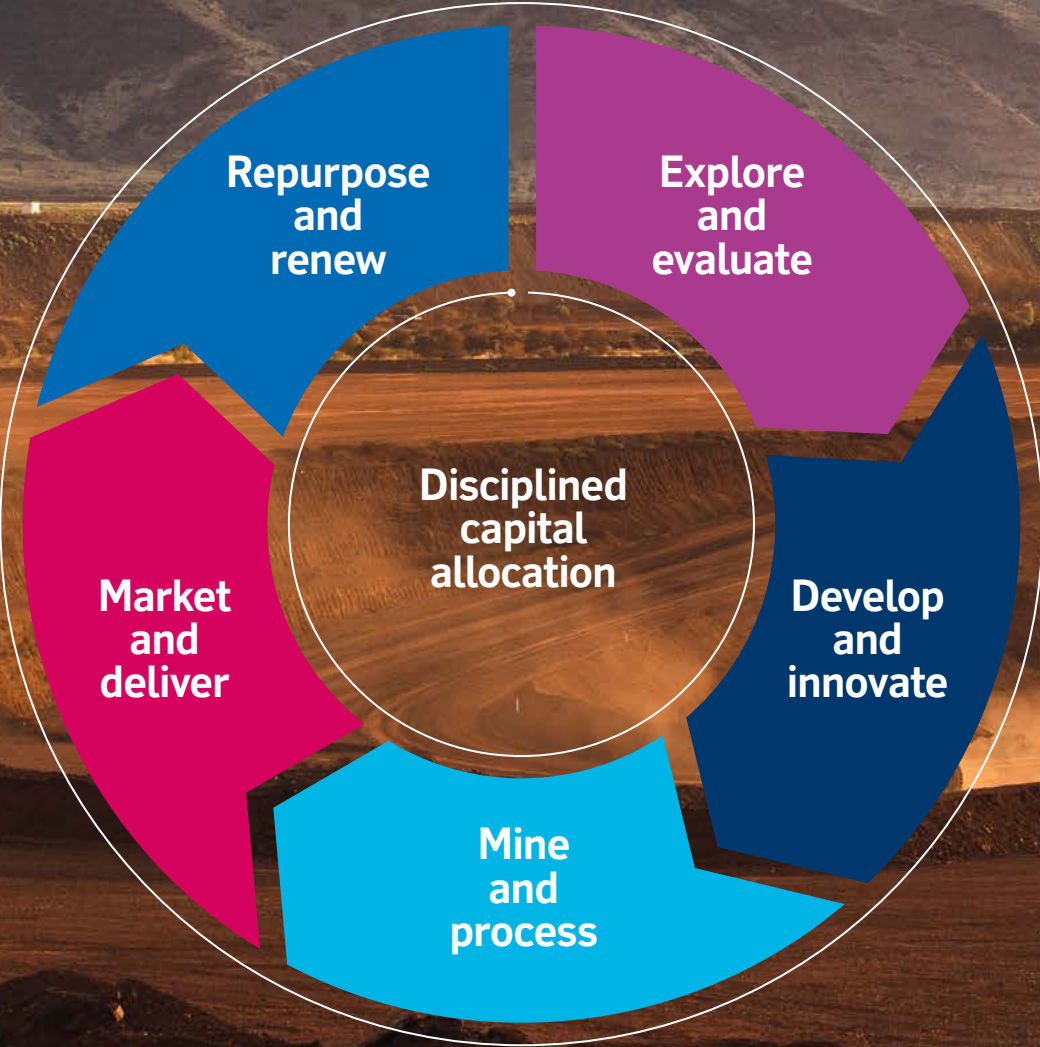
In September, we completed the sale of the last of our coal assets, becoming the only major mining company to divest completely from fossil fuel production. And in December, we completed the sale of our interest in the Grasberg copper mine, in Indonesia. Today, our portfolio is differentiated from our industry peers, with a fundamentally changed exposure to environmental, social and governance risks.

In November, we were pleased to be ranked the top extractives company and the second overall on the Corporate Human Rights Benchmark. We understand we have more work to do, but take such recognition to mean we are on the right track.

As we look to the future, we can say with certainty that Rio Tinto will be part of the solution. We will continue to make every effort to keep our people safe and healthy. Our focus on partnership and sustainability will intensify. And we will continue to create superior value for our shareholders, our communities, our employees, and the world at large.

J-S Jacques
Chief executive

Our business at a glance



Explore and evaluate

We use some of the most advanced exploration technologies in the world to find potential new sources of minerals and metals. And we consider new products and operations from an understanding of customers' and communities' needs. We are also mindful of the future: our environmental impact, as well as the diversity and balance of our portfolio.

Image: West Angelas iron ore mine, Pilbara, Western Australia

The Rio Tinto Group comprises Rio Tinto plc, a London listed public company headquartered in the UK, and Rio Tinto Limited, which is listed on the Australian Stock Exchange. The two companies are joined in a dual listed company structure as a single economic entity.

Our interests are diverse – both in geography and product. Most of our assets are in Australia and North America, with operations also in Europe, Asia, Africa, and Central and South America. To produce aluminium, copper, diamonds, gold, industrial minerals, iron ore and uranium, we own and operate open pit and underground mines, mills, refineries, smelters, power stations, research and service facilities. We also use our own railways, ports and ships to deliver materials to our customers.

Develop and innovate

We assess each potential operation with a focus on risk, potential returns, and long-term sustainability and value. Once we have approved an investment, we design and build each operation. We aim to develop every potential site to achieve optimal, long-term productivity while minimising risks. Our growing network of partners – governments, customers, suppliers and communities – is helping expand our thinking, capabilities and ability to deliver mutual benefit.

Mine and process

A safe site is a productive site, and advanced technologies are playing a more important role in how we achieve both. We also share best practices across our assets to create safe, environmentally responsible working practices and a high-performing culture that targets production at lower costs.

At the same time, our operations aim to benefit local economies by contributing jobs, taxes and royalties, contracts with local businesses and social and community investment. By understanding and respecting our business partners, employees, communities and the environment, we can create sustainable value for all our stakeholders.

Market and deliver

Our minerals and metals are used in a vast array of everyday products – from cars to coffee pods to smartphones. Our Marketing and Commercial teams ensure that we manage our products in line with market and customer needs. And our network of rail, ports and ships means that we can control end-to-end logistics to deliver our products safely, efficiently and reliably.

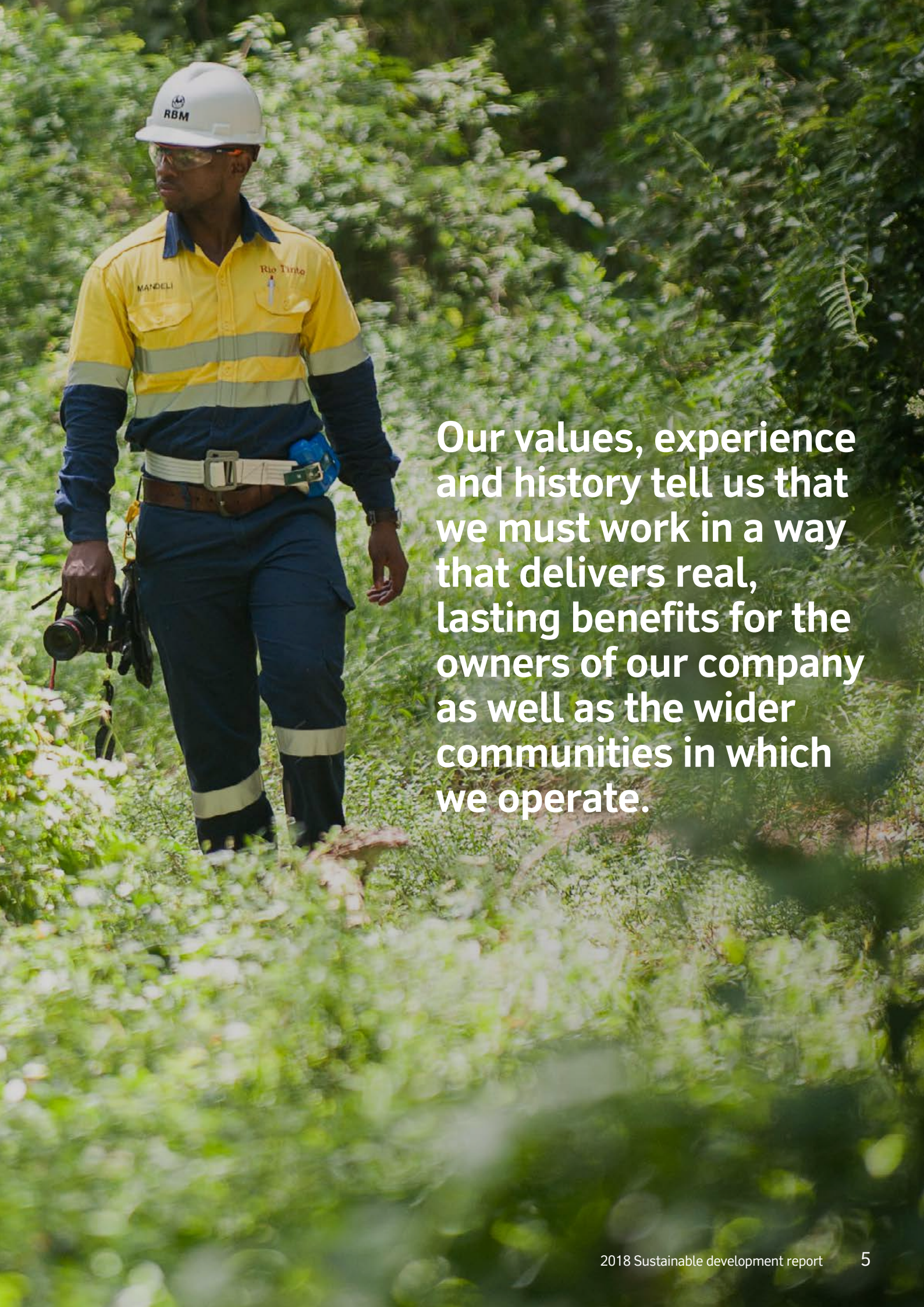
Repurpose and renew

We aim to design and run our assets to create a positive legacy once our mining activity concludes. Applying this approach could entail rehabilitating the land for a nature reserve, for example, or repurposing it for light industrial use. Each of our sites has rehabilitation plans that we review each year. We see this long-term approach – planning and operating with the future in mind – as integral to running a safe, responsible and profitable business.

Please see our Annual report for a more detailed explanation of our business model.

Our integrated sustainability approach

Image: Rehabilitated land at Richards Bay Minerals, South Africa



Our values, experience and history tell us that we must work in a way that delivers real, lasting benefits for the owners of our company as well as the wider communities in which we operate.



Our business by its very nature must have sustainability at the centre of its strategy.”

\$3.6bn

Paid in corporate tax in 2018

\$42.8bn

Direct economic contribution in 2018

\$200bn

Economic contribution over the past 5 years to the countries and communities where we operate

\$192m

Invested to strengthen health, education, cultural heritage and environment in 2018

At Rio Tinto, we produce materials essential to human progress. Achieving this purpose requires us to work, as often as not, in remote locations and sensitive, beautiful environments, often on land owned by Indigenous people. Our values, experience and history tell us that we must work in a way that delivers real, lasting benefits for the owners of our company as well as the wider communities in which we operate. We must care for our employees, respect and care for the environment while we operate, and rehabilitate the land when we cease. We must contribute our fair share to local and national economies, including through taxes, and do so transparently. These beliefs are the foundation of our views on sustainability.

This year, we again took stock of the issues facing our business, as well as the societal and economic trends changing the global landscape, and developed an integrated approach to sustainability that ensures material issues are at the heart of our business strategy and corporate governance. The expected outcome is commercial success coupled with a meaningful contribution to the world around us.

This approach comprises every facet of the work we do, but begins with running a safe, responsible and profitable business. Safety is important to Rio Tinto not only because we care for the people we work with, but because a safe business is also operationally sound. Responsibility starts at home, with a commitment to the safety, rights and wellbeing of our employees, the integrity of our business and supply chain, and respect for the environment. Profitability enables us to meet our commitments to our shareholders and assume leadership in other areas, including sustainability.

We work hard to leave a lasting, positive legacy everywhere we work. Our long-term economic contribution is one way we do this. In 2018*, Rio Tinto paid \$3.6bn in corporate taxes to governments around the world; and our direct economic contribution was \$42.8 billion. Over the past five years, our business has contributed more than \$200 billion to countries and communities everywhere we operate. We do not always build and maintain roads and bridges or schools and hospitals ourselves – but the billions we contribute support all of these.

* Our 2018 Taxes paid report will be published in April 2019.

Governance and materiality

Every year we review the sustainability topics that matter most to our business and stakeholders. Following the Global Reporting Initiative (GRI) Standards, this year we prioritised our material topics, combining an analysis of the external environment with feedback from Rio Tinto leaders and subject matter experts while also considering stakeholder expectations. This report details these topics in relation to our business in 2018.

See pages 71-72 for Reporting what matters.

Our business is often the major source of jobs and livelihoods – and sometimes, one of few avenues to opportunity. We take this responsibility seriously.

We employ 47,500 people in 35 countries. In Mongolia, we are the single largest private sector employer; approximately 93% of our employees there are Mongolian. In our Iron ore product group, in Western Australia, we employ 10,500 people: 13.5% of our residential workforce are from Indigenous groups in the Pilbara. We are a major employer in the Saguenay, in northern Quebec. At our mineral sands business in Madagascar, we have over 90% Malagasy employees. We also work with about 37,000 suppliers in more than 120 locations, supporting the employment of many thousands more. In 2018, we paid \$4.7 billion in wages and employment costs, and spent \$12.3 billion with suppliers. This year, we invested another \$192 million to strengthen the health, education, cultural heritage and environment of the places that so many of us call home. This is how economic development and prosperity is created, and sustained.

To be clear, protecting the environment is also critically important. Rio Tinto has long acknowledged the reality of climate change and its potential to have a negative impact on our business, our communities and the world around us. In 2015, we supported the outcomes of the Paris Agreement and the long-term goal to limit global average temperature rise to well below 2°C, recognising that doing so will require governments and companies alike to approach climate change with more ambition and action.

We believe we are doing our part – from helping to develop technology that can make aluminium smelters entirely GHG emissions-free to providing the world with the materials it needs, such as copper and titanium, to build a new low-carbon economy and products like electric vehicles and smartphones. This year, we also exited fossil fuel production, becoming the only major mining company to do so.

As much as we have done, there is more to do. We are not where we want to be on safety, or diversity. We appreciate that the changing nature of work presents opportunities for our business, but also significant challenges for many of our communities and our employees. Managing the coming closure of certain sites, and doing this well, will reflect our commitment.

However, as our performance in 2018 illustrates, commercial success can indeed be coupled with a meaningful contribution to the world around us. This report aims to illustrate our contribution.



Our business is often the major source of jobs and livelihoods... We take this responsibility seriously.”

47,500

Employees

35

Countries worldwide

37,000

Suppliers

120

Locations

Our sustainability framework

Our sustainability framework has three pillars that each contribute to the United Nations' 17 Sustainable Development Goals.



Pioneering materials for human progress

We are helping to pioneer a more sustainable future – through examining our own global carbon footprint, forming smart partnerships and producing materials that contribute to a low-carbon economy.

READ MORE ON PAGE 52



Collaborating to enable long-term economic benefits

We collaborate with others to enable long-term benefits where we operate – working with governments at all levels and community partners to help make a difference in people's lives.

READ MORE ON PAGE 34



Running a safe, responsible and profitable business

The foundation of our approach is to run a safe, responsible and profitable business.

READ MORE ON PAGE 10

How we contribute to the UN Sustainable Development Goals (SDGs)

In 2019, we will re-evaluate our sustainability strategy and related activities to determine our contribution to individual SDGs.



Safety is our number one priority. We make every effort to safeguard the health and wellbeing of our employees, contractors and communities – at work and at home.



In every country and region in which we operate, we strive to create an inclusive, fair culture. We do not discriminate on any basis. We are transparent about the payments we make and we aim to build resilient communities beyond our direct involvement.



Education is a means to access opportunity. We work with governments and educational institutions to help our own employees develop and grow new skills; and in our communities, we support education, training and development, so people can follow opportunity wherever they find it.



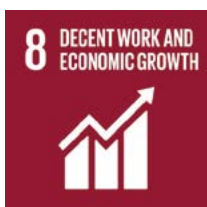
We produce the metals and minerals required to build sustainable cities and the technology required for a low-carbon future. We recognise that socio-economic development is about more than employment and social investment, and so we partner with communities, governments, civil society and others to enable local communities' long-term resilience and success.



We want to create an environment where every voice is heard, and respected, and every employee is empowered, and has equal access to opportunity. We have clear targets to improve the proportion of women in our organisation and our leadership; and are advocates for issues that are important to women, including parental leave and domestic violence policies.



Over the past decade, we have reduced our greenhouse gas (GHG) emissions by 43% and our GHG intensity by 29%. We make the materials critical to a low-carbon future. We recently published our first TCFD report and are aiming for substantial decarbonisation of our business by 2050.



We work hard to leave a lasting, positive legacy everywhere we work through our economic contribution and status as a major source of jobs and livelihoods. Over the past five years, our business has contributed more than \$200 billion to countries and communities wherever we operate.



We believe sustainable development by definition requires working in partnership with many stakeholders, global to local. This year, in addition to our many existing partnerships, we refreshed our sustainability strategy, developing an integrated approach linked to the United Nations' Sustainable Development Goals.

Running a safe, responsible and profitable business

Running a safe, responsible and profitable business is the foundation of our sustainability approach.

Staying safe, keeping others safe, and being responsible are core to who we are as a company.

Profitability allows us to meet our commitment to our shareholders while contributing to the world around us.

Running our business in this way means not only meeting production, financial and productivity targets, but also paying close attention to safety and wellbeing, inclusion and diversity, and ethics and integrity. It means thoughtfully managing our operational environment, including resources like water and air, and the rights, traditions and heritage of the communities where we operate.

Contribution to UN SDGs



2018 financial highlights

\$18.1bn

underlying EBITDA

\$8.8bn

underlying earnings

\$0.3bn

net cash balance*

42%

EBITDA margin

\$11.8bn

operating cash flow

2018 performance against targets

Goals

To reach zero fatalities, and to eliminate workplace injuries and catastrophic events

To minimise exposure to critical fatality health risks by verifying that effective controls are in place at all managed operations by the end of 2018

To reduce the rate of new occupational illnesses (per 10,000 employees) each year

To improve diversity through:

- Increasing women in senior management by 2% each year
- 50% of our graduate intake being women
- 30% of our graduate intake being nationals of the countries in which we're developing new businesses

To achieve approved local water targets in all managed operations with material water risk

- Improving our employee engagement and satisfaction

Performance

Two safety fatalities and one security fatality at managed operations

All injury frequency rate (AIFR) of 0.44, up 5% on 2017 (target 0.38)

1.45 million Critical Risk Management (CRM) verifications (target 1.2 million)

77% of managed operations achieved this target

15% increase in rate of new cases of occupational illness since 2017

- 22.6% of senior management were women, up 0.2% from 2017, with women in operational roles increasing from 10% to 15%
- 25% of our Executive Committee were women
- 36% of our graduate intake were women, down 5% from 2017
- 31% of our graduate intake were nationals from the places where we are developing new businesses
- 17.7%^(a) of our total workforce were women

- 79% of our operations met their local targets this year – the final year of our current water target programme (target 100%)
- We are in the process of establishing new water targets for 2019-23

- An eight-point increase in our employee Net Promotor Score (eNPS)
- Two-point increase in employee satisfaction score (eSAT)
- Six-point increase in average monthly engagement on Yammer

* With expected outflows in 2019, including a \$4.0 billion special dividend to our shareholders, our net debt is expected to rise in the first half of the year.

(a) Gender distribution for our total workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2018. Less than 1% of the workforce is undeclared.



Delivering safety and wellbeing

Image: Employee using automation for railway maintenance tasks, Dampier, Pilbara, Australia

Safety

Our number one priority is to keep our people, contractors and suppliers safe. This focus underpins everything we do: our leadership, our systems and controls and the standards that we set with our partners and contractors. We believe all accidents and work-related health risks are preventable, so we concentrate on identifying, understanding, managing and, where possible, eliminating these.

Tragically, three people lost their lives in 2018 at our operations. In April, a maintainer lost his life while working on a furnace rebuild at our Sorel-Tracy plant in Quebec, Canada. In July, a security guard at Richards Bay Minerals, in South Africa, was fatally assaulted. And in August, a haul truck driver was in a fatal accident at our Paraburdoo mine in Western Australia. We must get better at safety because we firmly believe our people are our most important asset. Having a safe, healthy and engaged workforce is important to deliver both our purpose and strategy. Engaged employees can also help us to sustain, evolve and expand our operations, and contribute to our partnerships with local communities and other stakeholders.

To help us manage our safety and health risks, we have developed performance standards. We apply and assure controls to manage major hazard risks, to reduce occupational illness and injury, and to minimise and eliminate fatalities and potentially disabling injuries and illnesses.

Our management processes, risk assessments and our global fatality management system, Critical Risk Management (CRM), help us to achieve this and to understand the short-term safety and long-term health impacts of our operations. CRM requires us to verify critical controls throughout the year, with a focus on the quality and coverage of controls. For example, before completing maintenance on a conveyor, we would first identify all sources of energy and verify that they have been isolated. In 2019, we will be introducing a safety maturity model to give managers a recipe for stronger safety outcomes. This will incorporate and build on our existing CRM programme and other safety tools.

We are also focusing on leadership, coaching and engagement in the field with our workforce and partners, because a more engaged workforce is one where people actively look out for their own and others' safety. Our goal is to improve our all injury frequency rate (AIFR) every year. Over the past ten years, both our AIFR and the severity of injuries have reduced (from 0.94 in 2008 to 0.44 in 2018). However, as this year's performance shows, we still have work to do.

In 2018, we improved how we categorise occupational illness, leading to a 15% rise in the rate of new cases of occupational illness from 2017 (25 up to 29 cases per 10,000 employees). The main types recorded were musculoskeletal disorders (33%), noise-induced hearing loss (32%) and stress (23%).

We are also working with local governments and health organisations to prevent our employees, contractors and communities from contracting infectious and non-infectious diseases, such as tuberculosis, Ebola, malaria, HIV/AIDS and Zika virus. In 2018, for example, the second phase of an epidemiological study to understand the possible health effects on workers from mine-related radiation exposure at our Rössing uranium mine in Namibia was completed. The outcomes should be published mid-2019.

Operational safety

The complexity of our operations makes it essential to understand the major hazard risks and the critical controls needed to prevent a catastrophic event.

We identify major hazard risks (low probability, high consequence events) and manage them through standards, analysis and external reviews and verification of controls. Please see page 20 for a discussion of our tailings policies and procedures.

This year, we strengthened our management-level governance framework as well as our visibility of reporting. We also focused on minimising process safety risks to people in occupied buildings – for example, by installing detection and protection technology and where possible removing the use of chlorine from our metal treatment units.

Because our operations include ocean transport, we also work with the International Council on Mining and Metals (ICMM) and other industry associations to refine testing for metal corrosion, leading to the safer shipping of bulk materials such as iron ore and bauxite. This led to a provisional agreement with the International Maritime Organization (IMO) for a refined test method in bulk shipping of metal ores and concentrates. Ultimately, the aim is for the IMO to approve this test method for future versions of the International Maritime Solid Bulk Cargoes (IMSBC) Code, helping businesses around the world to properly characterise their materials before shipping. This better protects goods in the hold and reduces the risk of corrosion to the ship's hull, as well as potential pollution of the marine environment.

Almost 10,000 of our employees took part in the Virgin Pulse Global Challenge, a team-based wellbeing programme that encourages employees to improve physical activity, nutrition, sleep and mental wellbeing.

Wellbeing

We promote a healthy, balanced lifestyle for our employees, including work-life balance, good nutrition, regular exercise and access to health care – all important elements of wellbeing. We also have an increasing focus on mental health.

Mental illness is one of the most rapidly growing causes of long-term sickness absence and labour market exclusion across developed countries, despite improved rates of detection and methods of intervention. We provide mental health training for managers, as studies have suggested that these improve occupational outcomes for employees with mental health problems.

One way we support mental health is through our Employee Assistance Programme, which gives employees access to professional coaching, advice and support for themselves and their families. It can help with many types of concerns, including financial and legal questions, children's needs, family relationships, advice for supporting an ill parent, balancing work and home, and dealing with change and stress. More than 95% of our employees are covered by this programme, and the rest are supported by on-site counsellors.

Another way we support mental health is through our [peer support programme](#), established in 2012 in our Iron Ore business and continuing today. This programme is also in place at a number of our other product groups. Research suggests that when people do reach out for help, particularly in a work environment, they are more likely to approach friends and colleagues than to use more formal support programmes. Our programme equips employees at all levels of the business to support their colleagues through difficult times. This year, we piloted peer support programmes at a number of our sites in Canada, with over 1,000 people taking part.

We are continuing to champion White Ribbon Australia's campaign against domestic violence. This year, we extended to North America our groundbreaking initiative supporting employees affected by domestic violence. Employees can now access up to ten days of paid extra leave, flexible work hours, financial aid and emergency accommodation if they are experiencing domestic and family abuse, or have an immediate relative who is experiencing abuse. We received White Ribbon accreditation for our Australian programme and were recognised at the 2018 Women in Resources National Awards (WIRNA) for our commitment to breaking the cycle of violence against women.

Fatigue is another critical risk in our day-to-day operations. Some of the work our employees do is physically and mentally taxing; fatigue increases the chances of injury, even when people are not at work.



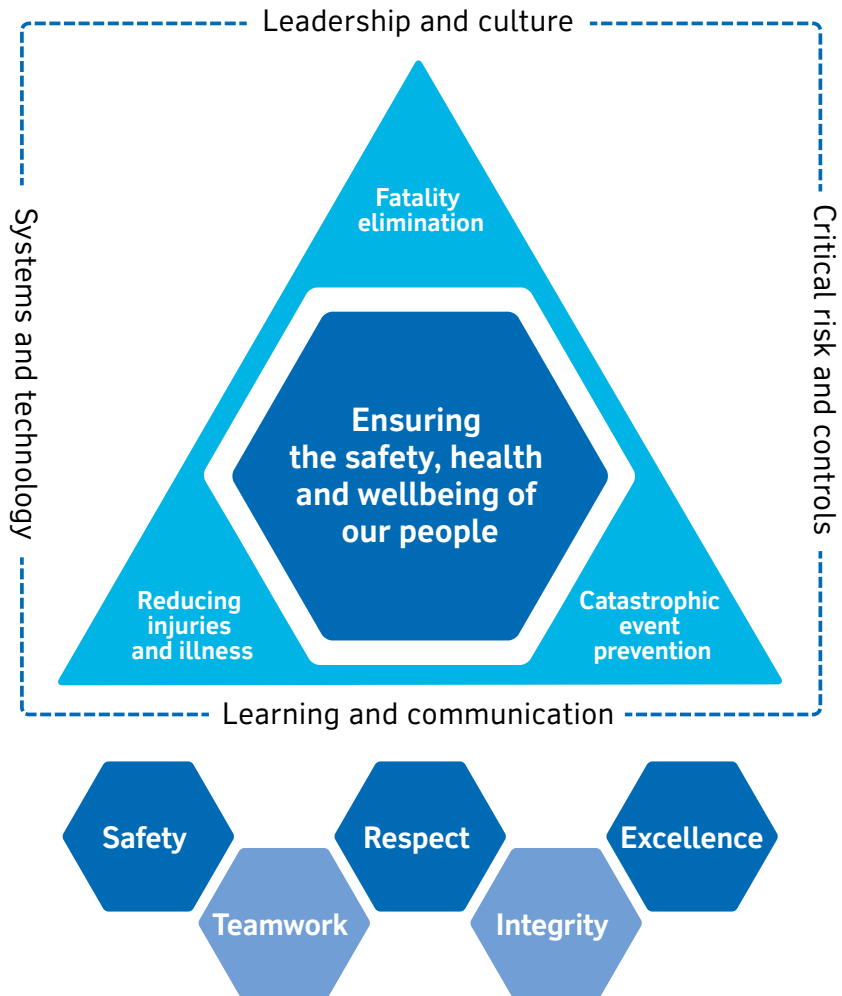
Image: Family leisure time, Dampier, Australia

WELLBEING CONTINUED

Working with the Central Queensland University in Australia and the University of Witwatersrand in South Africa, we studied our employees' attitudes towards fatigue across sites in Africa and Australia. We learned that we have a good foundation in our fatigue management systems, although controls are not always consistently applied. We have an opportunity to quickly learn and apply best practice; to this end, we will develop and roll out a standardised fatigue management framework in 2019.

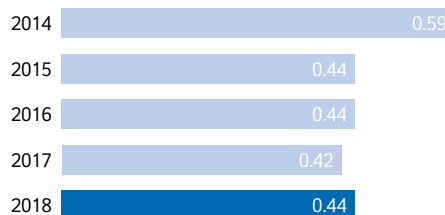
This year, we also conducted our own studies to better understand and manage fatigue-related risk, including piloting the use of wearable technology to help manage employees' fatigue. This provided valuable information to individuals on their quality and quantity of sleep, and data for the business to better understand risks and how to more effectively manage them. As a result, we provided awareness training for employees and leaders on how to reduce fatigue-related risk. We will continue to use wearable technologies to measure our effectiveness in this area.

An integrated approach to safety and health



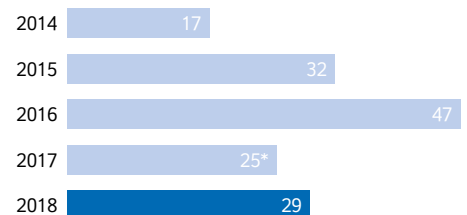
All injury frequency rate
(per 200,000 hours worked)

0.44



New cases of occupational illness
(per 10,000 employees)

29



* Number restated from those originally published to ensure comparability over time.

Protecting the environment

We aim to minimise the adverse effects of our operations on environments and communities.

This involves establishing very clear internal standards and practices that are in line with – and sometimes go beyond – international and local regulations. It also means having open dialogue with neighbouring communities – both to understand and to respond to complaints about our environmental impacts such as noise, dust and water quality.

As well as working in line with our own standards and processes, we take part in industry reviews of issues such as biodiversity, tailings management and water stewardship to share knowledge, learn from others and improve our approaches and practices.

7.9%

decrease in our greenhouse gas emissions since 2017

79%

of our 2014-18 site water targets attained

71%

of electricity used at Rio Tinto is from renewable sources

Image: Oyu Tolgoi in Mongolia is one of the most water-efficient mines of its kind in the world

Water

Water is a valuable resource and is crucial to our operations.

We balance our operational needs with those of local communities, Traditional Owners, ecosystems and regulatory requirements. And we are continuing to strengthen our water governance and planning processes to improve water management across the business. We support the new ICMM position statement on water stewardship and have begun to report our practices against the commitments in this report.

Like other mining companies, we remove groundwater to allow us to reach orebodies, and use water to process ore, manage dust emissions, supply drinking water and wastewater services, and generate hydroelectric power.

Sites manage the quality of water returned to the environment during operations and closure. However, to us, managing water does not just mean managing constrained supply. Each of our operations has its own water context: while some operations are located in water-scarce environments, others have to manage intense rainfall. Based on the World Business Council Global Water Assessment Tool, 43% of our managed sites are assessed as operating in a “water stressed” environment. Of these sites, only one was locally assessed as having its operations marginally impacted by water availability.

At some sites, mining below the water table presents challenges as to how we manage dewatering and water disposal. Many of our sites are also experiencing changes in their local water regimes due to climate change, which is a key water management consideration.

To ensure we focus on the right issues and with appropriate resources, we have committed to establishing new site-specific targets for the period 2019-23 at operational sites where water is a recognised risk. At the end of 2018, 79% of our operations with water targets attained their local performance targets for the period 2014-18. This is the highest attainment we have achieved during the five-year target programme.

Freshwater withdrawn

(in billion litres)

539



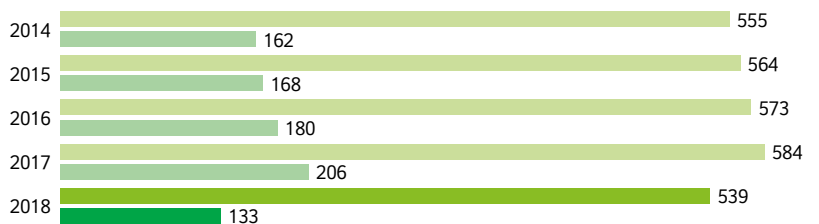
Legend: Freshwater withdrawn and used (light green), Freshwater withdrawn and discharged without use (dark green)

The sum of the categories may vary to the total figure due to rounding. Totals are provided in the “Performance data” section.

Sources of water withdrawn

(in billion litres)

672



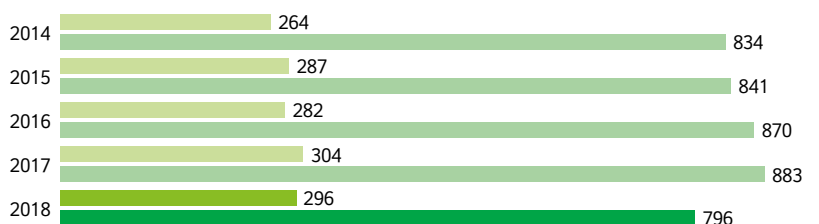
Legend: Fresh (light green), Poor (dark green)

The sum of the categories may vary to the total figure due to rounding.

Water used and recycled

(in billion litres)

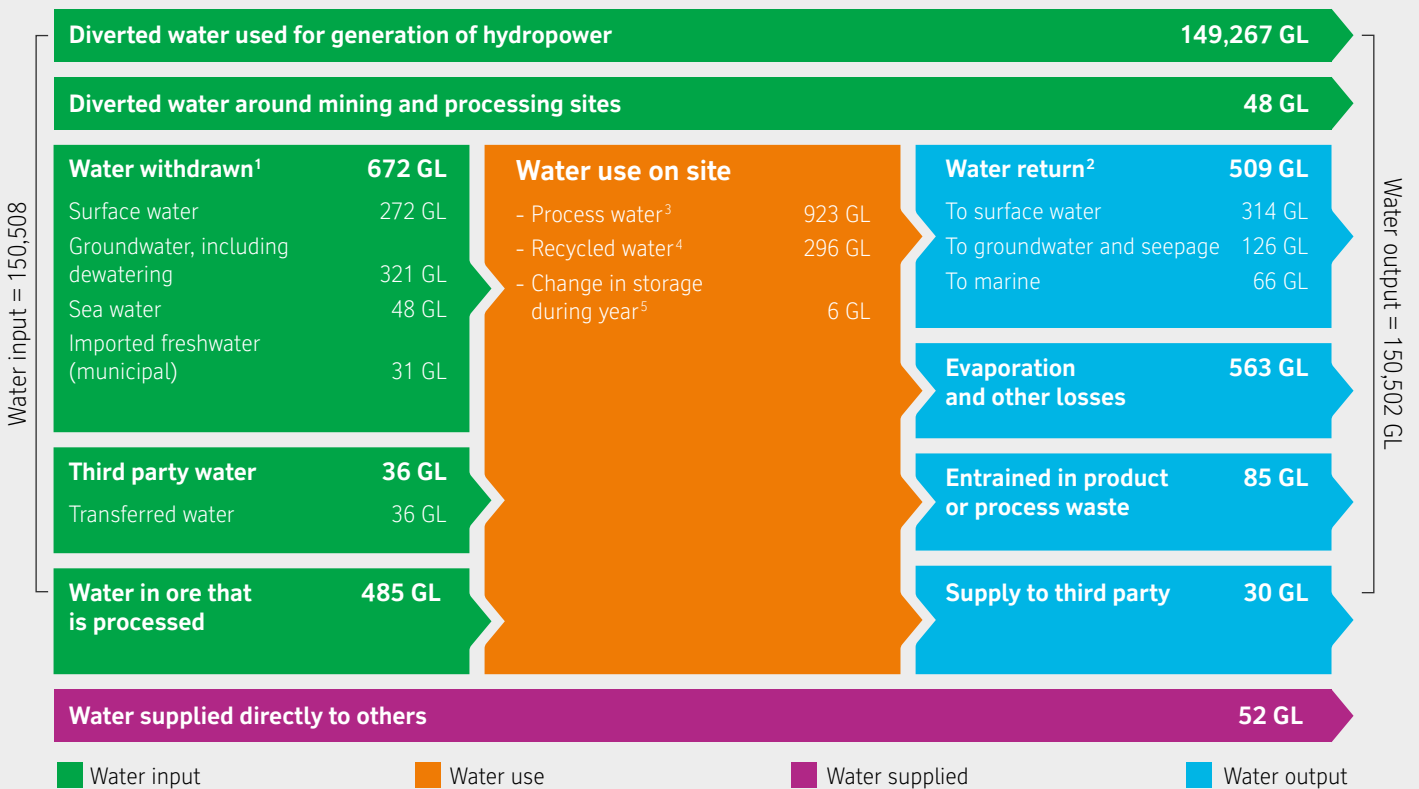
1,091



Legend: Water recycled in process (light green), Water use (dark green)



Image: Water quality testing, Boron Operations, California, US



1. Including on site impounded/imported surface, onsite/impounded groundwater (including dewatering) and marine water.
 2. Including process effluent and dewatering water discharged without use
 3. Including mining (dewatering), milling, washing, power generation, dust suppression, etc.
 4. Tailings, sewage or water contaminated in process that has been treated for re-use.
 5. The difference between total water input and total water output is "change in storage".

Tailings and structures

Mining processes create residues called tailings. Where it is not possible to reclaim and reuse these, they are discharged – normally as slurry – to storage facilities. We manage the operation of tailings and/or large water storage facilities at 32 sites worldwide, including closed and legacy sites not yet fully rehabilitated. We also have a further four non-managed operational sites and 14 non-managed legacy sites with joint venture partners.

There were no tailings or water dam related failures at our managed operations in 2018; at our non-managed operations, we work with our partners to minimise the environmental and social impacts and risks associated with tailings management.

Our approach to tailings management is in line with the ICMM position statement on tailings governance, and we continually review and audit our practices, including externally. We are working with our industry peers to better manage risks associated with tailings and water storage facilities, and also participating in two research projects led by the University of Western Australia, specifically on reducing tailings risks. Additionally, we are working to help develop and update tailings management guidelines in Australia and Canada.

To raise awareness on tailings risks and good practices, we hold regular webinars where internal and external experts share their knowledge with our employees. We also continue to develop our executive reporting protocol, and we are piloting an integrated control effectiveness tool to monitor progress and drive improvements on the ground.

In 2018, following our 2017 site reviews, we created and have started delivering seven training modules to increase understanding and capabilities around effective tailings management, particularly for nominated role personnel under our tailings standard. We also completed technical risk reviews at five sites to strengthen our technical assurance process. These were in addition to business conformance audits at 14 sites that assessed compliance with our tailings performance standard. Group Internal Audit also completed an independent assurance process to assess our approach to tailings risk management: we have good fundamentals in place, but we will continue to learn, evolve and improve our approach. Learn more at www.riotinto.com/tailings

Waste

Our main types of waste are mineral waste such as waste rock, slag and tailings, and non-mineral waste such as used oil and office waste. It is not always possible to reuse or recycle waste, so we build facilities to manage it in ways that minimise adverse environmental and community impact, disposal costs and future liabilities. We found off-site opportunities for reuse or recycling of 353,877 tonnes of our non-mineral waste and 740,249 tonnes of mineral waste in 2018. We have rigorous controls and monitoring programmes in place to prevent and mitigate the potential harmful impact of acid and metalliferous drainage (AMD) potentially generated by approximately 31% of our mineral waste through reactions with air or water.

Our controls include:

- Identifying reactive mineral potential during exploration and evaluating risk in project developments
- Identifying mining areas containing reactive wastes and applying controls during mine operations
- Choosing appropriate areas to permanently store reactive waste rock
- Using strategies during operation and at closure that isolate reactive waste to minimise AMD and collect drainage
- Regularly monitoring the performance of our mineral waste disposal programmes, including after operations are no longer active in line with closure criteria
- Completing independent, external reviews of our site-level strategies and performance
- Helping non-managed operations to manage mineral waste responsibly by joining technical committees and sharing good practice

Our Iron Ore Mineral Waste Management Team won an International Network for Acid Prevention (INAP) Best Practice award in 2018, for “Pilbara operations exemplify global best practice and deserve international recognition”.

Air

Mining processes, such as using fossil fuels, smelting metals and moving ores and waste, release gases and particulates into the atmosphere. The major air emissions from our operations are:

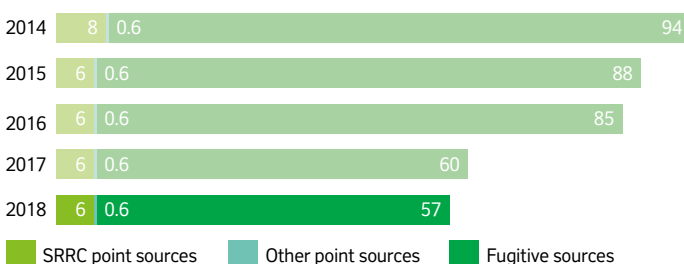
- Sulphur oxides (SOx), mainly at our aluminium and copper smelters and coal and fuel oil fired power stations
- Nitrogen oxides (NOx) from burning fossil fuels
- Particulate and gaseous fluoride emissions from aluminium smelters and, to a lesser extent, from processes that use coke and coal
- Particulate emissions less than ten micrometres in diameter (PM₁₀) from our mining activities, metal manufacturing processes and power stations

Our air quality protection standard is designed to prevent breaches under both normal and worst-case weather conditions. We focus on controlling and monitoring air emissions at source and understanding our impacts on the air quality conditions where we operate.

Particulate (PM₁₀) emissions

(000 tonnes)

62.8



The sum of the categories may vary to the total figure due to rounding. Emissions from stationary sources such as smelters, refineries, roasters and concentrators (SRRC point sources).

Biodiversity

Mining can affect biodiversity through disturbing land, waters, ecosystems and potentially the livelihoods of host communities. We work to retain the biodiversity value of sensitive areas and contribute to regional biodiversity research and conservation efforts.

Our revised environmental standards take an integrated approach to environmental management, informed by stakeholders' concerns. These standards guide our operational leaders in identifying and managing risks to the environment, often with the help of academic, civil society or Indigenous partners.

We have set up a number of international panels for specific sites to guide and assist us. The Committee for QIT Madagascar Minerals, for example, involves several biodiversity and natural resource experts from international and Malagasy institutions and is facilitated by the International Union for the Conservation of Nature (IUCN). This helps us to balance our efforts to mitigate the impacts we may have on biodiversity with the natural resource needs of local communities.

We also work closely with local communities throughout each asset's life cycle to plan for and monitor all potential impacts from our operations – and to carry out mitigation activities together. We encourage our host communities to get involved. For example, at Oyu Tolgoi, Mongolia, QIT Madagascar Minerals and Richards Bay Minerals, South Africa and Weipa, Australia, local community members monitor water and biodiversity mitigation services. In California we use a local beekeeper to rehome bees that are a safety risk to employees but provide an important service to the ecosystem in the area. At Amrun, we use native seeds collected by Traditional Owners, which has seen our rehabilitation work improve through the diversity and quality of seed collected.

We ship material between our sites all over the world. For example, bauxite and alumina from Australia, and heavy minerals from Madagascar, travel for processing and smelting to our facilities in Canada. This travel can affect global waters and marine life. We invest in marine research to assess and address these impacts.

BIODIVERSITY CONTINUED

Some of our sites are close to migratory bird paths. [Dampier Salt](#), Oyu Tolgoi, Richards Bay Minerals and QIT Madagascar Minerals work with bird conservation organisations, such as Birdlife International and their local partners, to document populations and ensure the protection of important bird areas.

In 2018, we won an Australian Mining Prospect Award for Excellence in Environmental Management for our project in Parker Point in the Pilbara, Australia, where we built an artificial reef and translocated a coral colony.

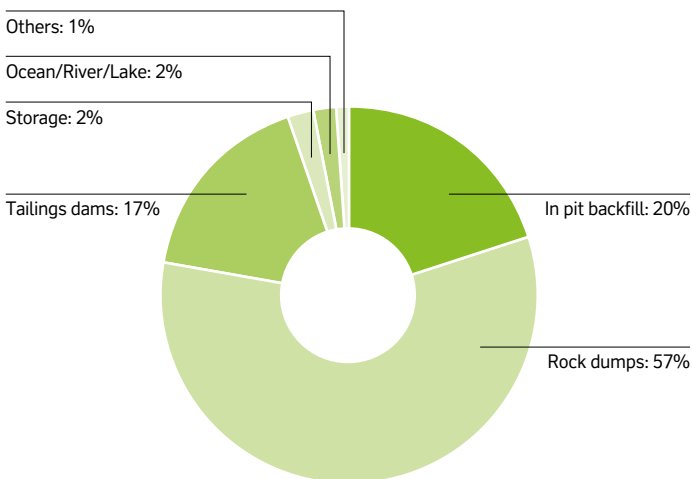
In 2018, we paid environmental fines totalling \$284,683 covering:

- In Canada, non-compliance with a sanitation certificate and multiple spillages of diesel at a port terminal
- In Mongolia, the death of four gazelles (through collision and drowning) and rehabilitation in an area that was previously used for community wood distribution
- In the US, for the settlement of multiple instances of water quality related releases from 2003 to 2017

2018 Waste performance data

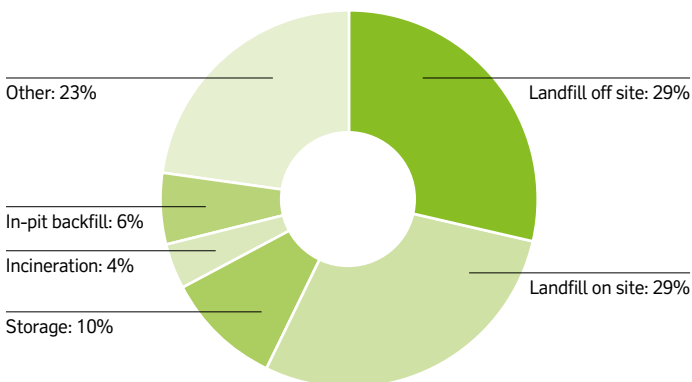
Mineral waste by disposal location

(%)



Non-mineral waste by disposal location

(%)

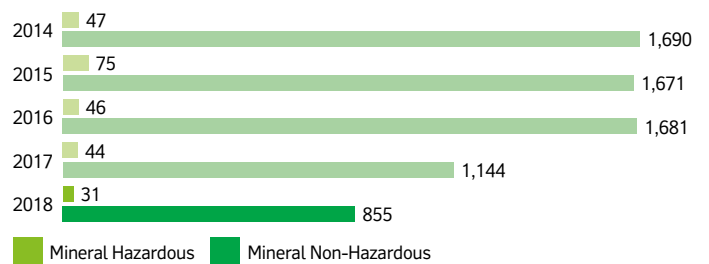


Due to rounding, the sum may not total 100%.

Hazardous and non-hazardous waste

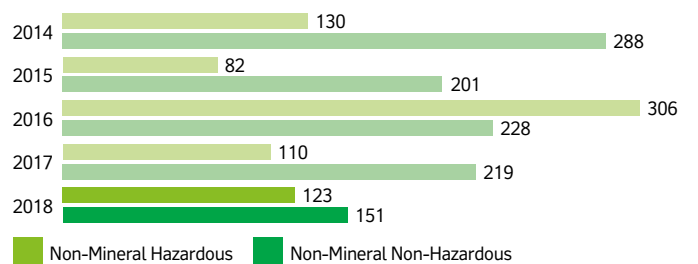
(million tonnes)

886



('000 tonnes)

274



Hazardous waste: All wastes which regulation has determined to be hazardous or where a business has made a determination in the absence of appropriate local laws.

Working with non-managed assets

We hold interests in companies and joint ventures that we do not manage and control. In 2018, the two largest were the Grasberg copper-gold mine in Indonesia, managed by PT Freeport Indonesia, a subsidiary of Freeport-McMoRan (divested in December), and the Escondida copper mine in Chile, managed by BHP. We work closely with our partners in these larger joint ventures through formal governance structures and technical exchanges to learn and improve performance. In some cases this may include providing specialists on site to help advise on particular challenges.

For more detail on our non-managed assets, see our 2018 Annual report.

Image: Escondida copper mine, Chile, managed by BHP

Our values at work

Our five values – safety, teamwork, respect, integrity and excellence – define how we treat each other and how we work with our partners.

Some of the best people in the industry work at Rio Tinto, and we want to make sure this tradition continues. We do this by fostering a culture where every voice is heard, every idea is encouraged and everyone is supported.

Respect is core to how we work. We continue to recognise and support people's right to belong to a union and to bargain collectively. We reject any form of slavery and prohibit the use of forced, bonded or child labour. And we do all we can to support our employees with disabilities, including offering them retraining and more suitable roles if they become disabled while working with us.



Image: Employee, Gove, Northern Territory, Australia

Engaging our employees

We know that having engaged people makes our business safer and more productive; we have regular dialogue with all our employees, at all levels. This year, our chief executive held well over 30 town halls and small group discussions in 20 locations; he also conducted webcasts to present annual and half-year financial results to our global employees. This year, he also launched open-door sessions where employees at manager level and below can stop by and talk to him about whatever they like. We also use Yammer, an internal social networking app, to support engagement: in 2018 nearly half of our employees were on Yammer, and average monthly engagement across nearly 2,000 groups was up six points year on year.

This year, our board also held its first-ever “employee AGM” in Brisbane, where directors discussed our purpose, strategy, culture and values, and answered questions on a wide range of topics, including business performance.

We also run global engagement surveys twice a year to understand employees’ views and perceptions. We improved our employee relations focus in 2018, achieving an eight-point increase in our employee Net Promoter Score (eNPS) and a two-point improvement in employee satisfaction (eSAT).

Clearly, engagement is also driven by fair compensation and career and skills progression. Our salary packages aim to be competitive, compliant and to strike the right balance between fixed and performance-related pay. We also work to strengthen our employees’ ability to meet evolving requirements. For example, this year, in Western Australia, where automation may have a disruptive impact on our communities, we launched a partnership with the government of Western Australia and South Metropolitan TAFE (Technical and Further Education) to develop the first nationally recognised courses in automation. This partnership aims to train and certify people in new skills, making them easily transferable – so people can follow opportunity wherever they find it.

We also introduced programmes to develop leaders. For example, more than 100 people, from frontline to senior levels, developed their global leadership and networking skills this year. Supported by an executive sponsor, they were taught by other leaders as well as an internationally recognised business faculty. More broadly, some 6,000 leaders across the company developed their leadership capabilities through our six-month Leading for Success programme.

30

Chief executive town halls and small group discussions at 20 locations

2x

Global engagement surveys each year

+2pts

Employee satisfaction

+8pts

Employee Net Promoter Score

Gender diversity

This year, we revised our policy on inclusion and diversity, jointly owned by the board and Executive Committee, to more explicitly clarify our expectations around behaviours and personal accountability. We also rolled out a gender-neutral paid parental leave in every country where we operate, making 18 weeks of paid leave available to primary carers, including single parents and employees in same-sex relationships.

We are still not where we want to be; our overall percentage of female employees dropped by 0.3% to 17.7% (6,963 women; 32,419 men). Although the number of women in operations roles rose from 5% to 15%, only 22.6% of our senior management roles are held by women (112 women; 383 men) versus 22.4% in 2017 (117 women; 406 men).

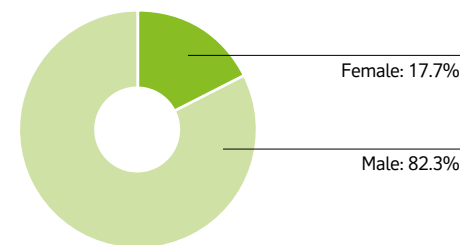
We are continuing to work with external partners, such as recruitment agencies and universities, to bring more female graduates into our business. In 2018, there were 62 women in our graduate intake (36%), and our aim in 2019 is to make this 50%.

In Australia this year, we won the Excellence in Diversity Programs and Performance Award at the 2018 Women in Resources National Awards (WIRNA) for our commitment to gender diversity and breaking the cycle of violence against women.

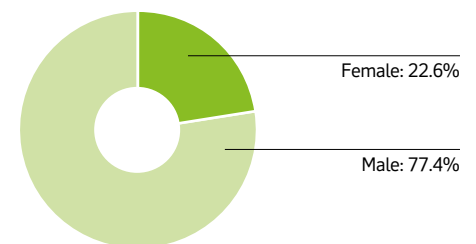
Pay equity

Our ongoing pay health checks ensure that employees with similar skills, knowledge, qualifications, experience and performance are paid equally for work of the same or comparable nature. Our Group-wide gender pay gap this year was 1% in favour of men overall and 2% in favour of men like-for-like. We are addressing these issues – see our [website](#) for more detail.

Gender diversity – all employees



Gender diversity – senior management



36%

women in our graduate intake in 2018
- still short of our 50% target

Winner

Excellence in Diversity Programs and Performance Award at the 2018 Women in Resources National Awards

Human rights

We respect and support human rights everywhere we work, in line with the Universal Declaration of Human Rights. Our salient human rights issues are those that we believe are at risk of the most severe negative impacts through our activities and business relationships. These centre around operational security, land access and resettlement, Indigenous people's rights, environmental issues such as access to water, labour rights, and issues related to migration such as access to local health services.

We carry out human rights due diligence in line with the UN Guiding Principles on Business and Human Rights (UNGPs). This includes processes and systems such as social risk analysis and impact assessments, community engagement plans, grievance mechanisms and digital tools that identify community sentiment. This in turn allows us to prevent and minimise the adverse effects of our operations on human rights. We also integrate human rights considerations into other health, safety, environment, communities and security and procurement practices, and into our business performance audits. Where our standards and procedures are stricter than existing laws or regulations, we apply our own standards.

Our policies and statements relating to human rights, together with a list of the international standards we follow, are available on the [human rights](#) page on our website. In particular, we have made voluntary commitments to the OECD Guidelines for Multinational Enterprises, the UN Global Compact and the Voluntary Principles on Security and Human Rights (VPSHR).

We also took part in several external forums to support human rights policy and regulatory development. This included publicly advocating for an Australian modern slavery reporting law alongside civil society. In November, the Australian Parliament passed the law, and we have joined multi-stakeholder forums to support its implementation. We also attended meetings of the Australian, UK and Canadian Government Working Groups on the VPSHR. And we have engaged with external benchmarking initiatives to enable investors and other stakeholders to better compare human rights performance across peers and industries.

We are proud of our 88% response rate on the [Business and Human Rights Resource Centre \(BHRRC\)](#) – a public platform for people to raise human rights concerns against businesses for their response. In 2018, we had one invitation from the BHRRC to address a civil society report on our operations, to which we responded.

In 2018, we also published our second annual slavery and human trafficking statement in line with the UK Modern Slavery Act. Each year we share this on [riotinto.com](#), outlining what we are doing to make sure slavery and human trafficking are not happening in any of our operations or supply chains. We also submitted the statement to the [Modern Slavery Registry](#).

Respect for human rights starts with people's everyday actions and decisions. So we require all our sites to provide human rights training to staff, contractors and visitors – tailored to local contexts. We also offer specific online modules to teams on issues affecting communities, procurement, security and inclusion and diversity. Our online VPSHR training is mandatory for all security personnel at high risk sites and is strongly recommended elsewhere.

This year, we also published our first annual [report](#) on how we are implementing the VPSHR. Our human rights approach was recognised by the [2018 Corporate Human Rights Benchmark](#), ranking Rio Tinto second out of 101 companies and as the top extractives company.

We ranked second out of 101 companies and were the top extractives company in the 2018 Corporate Human Rights Benchmark.

Ethics and integrity

We have clear standards around antitrust, bribery and corruption, conflicts of interest, benefits, sponsorships and donations, data privacy, fraud and third-party due diligence.

Our code of conduct, *The way we work*, provides a framework for how we should conduct our business, no matter where we work or where we are from.

Ensuring that our global business acts in line with the law, local regulations and our values requires strong compliance and governance processes. We empower and equip our people to seek guidance when faced with a business integrity dilemma – both to prevent incidents from occurring and to protect our people; resulting in consistent instincts and decisions. This year, we restructured our Ethics & Integrity team to include centralised full-time compliance resources, improve our geographical focus and make better use of data to inform risk. This new structure combines the effectiveness of regional management with the consistency of central reporting – and importantly, is independent from Group operations.

We recognise that our reputation has been damaged by the ongoing investigations into the impairment of our coal investment in Mozambique and payments made to a consultant in relation to the Simandou project in Guinea, activities that took place more than six years ago.

On the former, we reached a settlement in 2017 with the UK Financial Conduct Authority (FCA), who believe we should have impaired the asset six months earlier than we did. Importantly, the FCA found no evidence of fraud or systemic failure. Both the Australian and US authorities are pursuing claims against the Group in relation to the impairment of our Mozambique coal project. We believe these cases are unwarranted and intend to strenuously deny the allegations in court.

On Simandou, after commissioning an independent investigation, the board took the decision to self-report to the authorities in the UK, the US and Australia. We continue to cooperate fully with the relevant authorities, but the conduct and timing of these investigations is outside our control. Please see our 2018 Annual report for details of litigation and other regulatory matters.

Today, we remain focused on acting with integrity, being transparent and continuing to foster a culture in which our employees never need a reason to do the right thing.

Strengthening our culture of integrity

679

Talk to Peggy cases raised in 2018; 53% related to human resources issues, 23% to business integrity matters and 8% to health, safety or environmental issues. 12% related to information security, and 4% other

5,000

people in 17 countries received face-to-face business integrity training

99.4%

of personalised responses. Maintaining focus on end-user experience and engagement with reporter in the Talk to Peggy programme

21,500

people (98.7% of those with access to a computer) completed our annual ethics and integrity online training

100%

of senior managers validated their annual Commitment to Business Integrity Certification in the first three months of 2018

43

full-time employees across five continents and 11 countries and speaking 13 different languages in the Ethics & Integrity team

We also have a business integrity compliance programme in place to meet Group-wide and business-specific requirements and to address risks and other concerns in our host communities. We hold quarterly audit forums to monitor this programme. As needed, we also run regular face-to-face sessions with employees around the business on key risk areas to help improve awareness of business integrity dilemmas, and to equip people to deal with them. In 2018, approximately 5,000 people in 17 countries attended these sessions.

This year, we put into place a new monitoring process to allow us to spot and act quickly on potential risks. In 2019, we will be rolling out these activities more systematically in an effort to prevent incidents from occurring. Activities will include further embedding our business integrity programme to improve the user experience of our systems, improving the (near) real-time reporting of trends, strengthening our controls and sharing our learnings through internal campaigns.

In addition to employees being able to raise concerns with managers or human resources, for over a decade we have had in place a confidential and independently operated whistleblowing programme, re-launched as Talk to Peggy in 2017. This is available to all employees and their families, contractors, business partners and community members. In 2018, 679 concerns were shared either through Talk to Peggy, compliance managers or team leaders, down roughly 5% on last year. This represents a case rate of 14.9 per 1,000 employees, similar to 2017. We again observed more and more concerns raised outside our hotline this year, which we see as a positive because our employees feel more confident about raising concerns directly, rather than anonymously. We substantiated and took corrective action on 34% of the cases raised this year.

“Leader-led courageous conversations about real-life experiences and challenging issues foster a trusting environment where we all feel empowered to voice our concerns when our instincts tell us something isn't right. Listening and ensuring these matters are taken seriously is key to nurturing a culture where asking for help is seen as a sign of strength.”

Stephen Storey
Acting Head of Ethics & Integrity

Committed to transparency

We are improving our approach to transparency by listening to our shareholders and proactively engaging with stakeholders and [civil society organisations](#) (CSOs). In 2018, we ramped up our efforts by making our [VPSHR report](#) public and publishing a list of our [memberships and associations](#). This included an analysis identifying where policy positions of these organisations might conflict with our own and the amount we paid in membership fees. This helps us to protect our political integrity, as does the fact that we never donate to political parties or candidates.

We also issued a [transparency statement](#) on our contracts with, and taxes and payments to, governments, as well as the identities of the owners of companies with which we work (beneficial ownership). We are on the board of the Extractive Industries Transparency Initiative (EITI), which works to improve transparency and accountability in the extractive sector. And we are working closely with governments and the Organisation for Economic Co-operation and Development (OECD) on new tax reporting codes and policies to ensure consistency in our reporting procedures.

This year, we joined other leading multinational companies in endorsing The B Team Responsible Tax Principles, which aim to drive fairer, more sustainable tax systems and global standards of responsible tax practice. We also publish a [Taxes Paid](#) report every April, detailing how much tax we pay and where.

More ethical procurement in Africa

An increased focus in Africa on regional compliance has led to a review of contract award processes. Historically, contract awards were based only on cost and the ability of the bidder to meet the requirements. An increasing number of business integrity incidents involving procurement decisions and third parties made it clear that additional controls and governance were needed in this area.

So in 2018, we established a procurement governance committee in South Africa to make sure business integrity risks (including beneficial ownership) are considered, assessed and mitigated before contracts are awarded. This committee is a multidisciplinary group including senior management, our regional compliance team and specialists from procurement, finance and legal teams. The committee has rejected several proposed contracts that could have exposed our company to excessive risk – and we are rolling out the initiative to other countries in 2019.

COMMITTED TO TRANSPARENCY CONTINUED

Data privacy – transparency, trust and awareness

We take people’s right to data privacy very seriously. In 2018, we updated our global data privacy programme to reflect the EU General Data Protection Regulation (GDPR) and reforms in Australia and Canada. As legally obliged in certain regions, we launched a suite of new privacy statements. We also went one step further and applied these globally. Being open about the “what, why, where and who it’s shared with” around personal data and raising stakeholders’ awareness of this issue helps build trust in our business – and in how we handle people’s data.

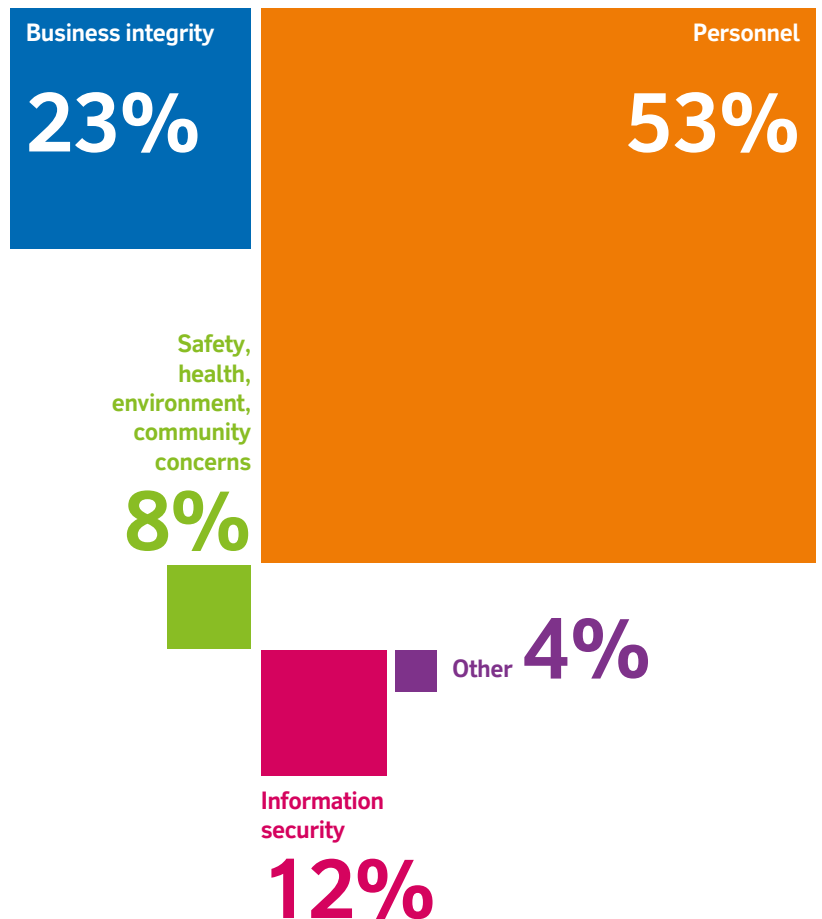
In May 2018, we also shared a new Employee Privacy Statement with all employees. This is available in 15 languages – English, French, Afrikaans, Chinese, Dutch, German, Icelandic, Japanese, Korean, Malagasy, Mongolian, Portuguese, Russian, Serbian and Spanish. We are continuing to focus on raising awareness around data privacy rights and included a series of short videos as part of our 2018 Ethics and Integrity training.

Talk to Peggy cases
(number of reports)



679

Talk to Peggy by case class
(% of cases reported)



Our products from mine to market

We are also working to improve the transparency of our supply chain across the Group. Our Supplier Code of Conduct clearly lays out our expectations on human and labour rights, safety and the environment. We have developed a new global supply contract which outlines our expectations for how our suppliers should manage modern slavery risks.

Our Know Your Supplier (KYS) procedure enables us to understand legal, ethical and reputational risks of working with certain suppliers. We use this with all new suppliers meeting the risk criteria for the procedure and, from the end of 2019, will also roll it out in contract renewals. We also have centralised monitoring for relevant third parties and where applicable, we keep a close eye on enforcement actions, sanctions-related alerts and significant changes in counterparty data.

We have also centralised and piloted our Know Your Customer (KYC) processes in late 2018 to ensure we understand our customers as well as our suppliers. Following this successful pilot, the KYC procedure was launched in January 2019 and will be progressively rolled out across the Group in 2019.

This year, we conducted 2,541 due diligence checks on third parties (KYC and KYS) – centrally monitoring more than 5,922 third parties in 2018. In 2019, we will continue to use automated technologies to enhance our risk-based monitoring of third parties.

We also have a product stewardship strategy and programmes that guide our approach to managing regulatory and sustainability risks and opportunities in delivering our product to market. Our programmes address the regulatory requirements of both our host countries and end markets, as well as those that apply during transport. For more information see Operational safety on page 14.

We centrally monitored more than

5,922

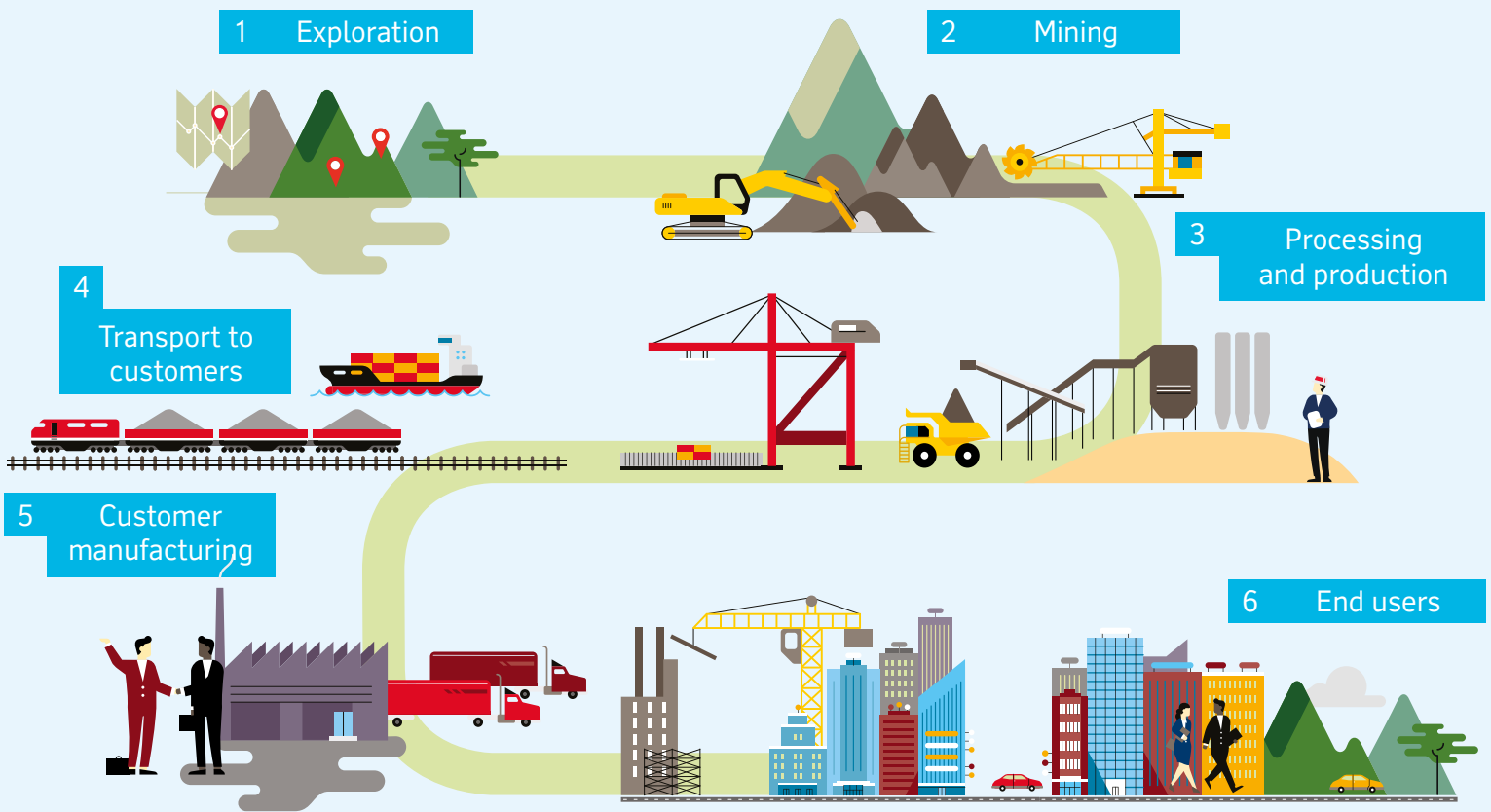
third parties in 2018

We conducted

2,541

due diligence checks on third parties (KYC and KYS)

Our products from mine to market



Collaborating to enable long-term economic benefits

Collaborating to enable long-term economic benefits is the second pillar of our approach to sustainability. Our aim is to partner with communities and governments to nurture and grow sustainable economies.

We do this by creating jobs, both directly and indirectly, by paying taxes (see our Taxes Paid in 2018 report, published in April 2019) and royalties, and by nurturing entrepreneurship where we can. This includes sourcing from local suppliers and helping to educate and equip people in local communities for the skills of the future.

Contribution to UN SDGs



We also work to maintain and preserve cultural and community heritage, for example, through our work cataloguing and preserving ancient rock art in the Pilbara, Western Australia.

Partnerships are key to developing sustainable solutions. In 2018, we began extending our collaboration to link communities with government agencies and other businesses to help communities succeed even when we are no longer present.

We contributed

\$42.8 bn

directly to the global economy in 2018 (including our share of joint ventures and associates)

This includes:

\$30.5 bn

in payments to employees (wages), taxes and royalties to governments, returns on capital invested in operations, non-government payments and community contributions

\$12.3 bn

paid to suppliers for goods and services

Our capital investment was

\$5.4 bn

attributed to growth projects in Australia and Mongolia

2018 performance against targets

Targets

By 2020:

To show local economic benefits from employment and the procurement of goods and services

To be effectively capturing and managing community complaints, and reducing repeat and significant complaints each year

Outcomes

- 36% of managed operations are on track to meet their 2020 targets and
- 59% of managed operations are actively managing and making progress towards achievement of 2020 targets. Sites that have indicated a risk of non-attainment are focused on identifying suitable interventions to ensure attainment

Working with shared purpose

Our relationships with our communities are the longest standing relationships we have. So it is important we get our engagement right by respecting their rights, doing no harm and listening.

We spent

\$192m

on community programmes in 2018

In 2018, we contributed to 994 programmes covering health, education, environmental protection, housing, agricultural and business development sectors. In total, we spent \$192 million on community programmes. This was an increase in overall community contributions of 9% compared with 2017, due to higher agreement-related payments resulting from higher commodity prices.

Communities

Our communities and social performance (CSP) standard helps us to engage usefully with our communities, and to make decisions that are informed, respectful and supported by the people they affect. It covers how we manage day-to-day impacts and concerns, identify and deal with social impacts and risks, form long-term community agreements and close operational sites.

Our CSP approach is in line with international guidelines, such as the UNGPs, the International Finance Corporation's (IFC) Performance Standards on Environmental and Social Sustainability and ICMM's Position Statement on Indigenous Peoples and Mining.

We strive for the free, prior and informed consent of Indigenous communities as defined in the 2012 International Finance Corporation Performance Standard 7 and the ICMM position statement on Indigenous Peoples and Mining. We were the first to create land agreements with Indigenous people in Australia in the 1980s, and we were the first mining company in Madagascar to recognise land ownership rights of Indigenous people. We continue to develop our approach to make sure we are respecting the rights, culture and traditions of the communities where we operate.

All of our sites must have a complaints, disputes and grievance mechanism in line with the UNGPs Criteria of Effectiveness for Non-Judicial Grievance Mechanisms. Our CSP targets for 2016-20 include reducing repeat and significant complaints and increasing economic participation at our assets. At the end of 2018, 36% of managed operations are on track to meet their 2020 targets and 59% of managed operations are actively managing and making progress towards achievement of 2020 targets. Sites that have indicated a risk of non-attainment are focused on identifying suitable interventions to ensure attainment.

From time to time, we have to resettle people and communities as a result of restrictions to land needed for our operations. We only do this when absolutely unavoidable. We work hard to help to preserve the social harmony of resettled people and to make sure their standard of living and livelihood is sustainably restored or improved over the long term. We work in line with the IFC's Land Acquisition and Involuntary Resettlement Performance Standard and our CSP standard. This year, we have been monitoring outcomes from community resettlement at our Oyu Tolgoi operations in Mongolia and have almost finished resettling communities near our Richards Bay Minerals operation in South Africa.

Respecting traditions and culture

In 2015, we announced an A\$2.6 billion investment in far north Queensland, Australia, for the construction of a bauxite mine, processing and port facilities. The project sits on Wik-Waya traditional lands; at the request of Traditional Owners, it has been named Amrun, the Wik-Waya name for the area.

When we begin projects like Amrun, we first ensure that they are aligned with the values and needs of Traditional Owners; at Amrun, we made sure our work was being conducted with respect for and appreciation of the Wik-Waya culture and its traditions. For example, every year our Amrun employees and Wik-Waya Traditional Owners camp together at a culturally significant meeting place. We learn together, we progress together and we succeed together.



Image: Ancient rock art, Murujuga, Dampier, Western Australia

A workforce that reflects our world

We want all levels of our workforce to reflect the communities in which we operate, so we focus on employing local candidates and, where needed, work with local communities and governments to develop skills and work readiness in communities. We also have coaching and mentoring programmes in place which aim to support, grow and retain more diverse talent at Rio Tinto. This year, 31% of our graduate hires (49) were from regions where we are developing new business; exceeding our target of 30%.

We are continuing to pioneer progress in Mongolia as we run our Oyu Tolgoi operation and build the next phase, our underground copper mine expansion, where approximately 93% of the workforce are Mongolian. At the end of 2018 we had spent over \$2 billion with Mongolian suppliers.

We are also proud to be one of the largest private sector employers of Indigenous Australians, with over 1,484 full time Indigenous employees, roughly 8% of our Australian employees. Across our Iron Ore business, 13.5% of our residential workforce are from Indigenous groups in the Pilbara. And 27% of our employees at our Diavik Diamond Mine in Canada are from Indigenous groups.

We also offer employment, training, and learning opportunities to local suppliers specifically aimed at helping Indigenous people participate in the local economy.

31%
of our graduate hires in 2018 were from regions where we are developing new business

93%
of the workforce at our Oyu Tolgoi operation are Mongolian

\$2bn
Spent with Mongolian suppliers by the end of 2018

27%
of employees at our Diavik Diamond Mine in Canada are from Indigenous groups

1,484
Full time Indigenous employees in Australia – making us one of the largest private sector employers of Indigenous Australians

13.5%
of our residential workforce across our Iron Ore business are from Indigenous groups in the Pilbara

Community agreements

Having stable access to the land on and around our mines is critical. Many of our operations are on land that holds deep meaning for local communities and land-connected people, such as Indigenous communities, and it is essential that we have healthy, mutually respectful relationships. This both enhances our relationships with our communities and helps to avoid delays, legal action and compliance costs.

Each of our operations has a system for identifying and understanding cultural heritage values, their significance and options for managing significant issues. In Canada and Australia, we also have Indigenous strategies in place that aim to improve social, economic and cultural wellbeing. To achieve this and to help with approvals and permits, we create community agreements.

These agreements are the basis of many of our relationships, and are an essential part of the planning, operation and closure actions of every project and operational site. They typically include commitments on land use, cultural heritage, environment, employment and procurement. We have 40 comprehensive participation agreements and more than 120 global exploration access agreements in place across the business, mostly with Indigenous communities.

In Australia, for example, our comprehensive land access agreements provide for funds paid to Traditional Owners in acknowledgement of our operations and presence on traditionally owned lands. These payments are typically made through trust funds or foundations that have sound governance mechanisms and clear compliance requirements. The money can be applied for and used for a variety of purposes, according to agreed distribution conditions.

Through these agreements, we aim to obtain the free, prior and informed consent of Indigenous communities, as defined in the IFC's Indigenous Peoples Performance Standard and the ICMM Position Statement on Indigenous peoples and mining. Our [Why agreements matter](#) guide also supports good practice in agreement-making.

COMMUNITY AGREEMENTS CONTINUED

Cementing our relationship with the Cheslatta First Nation, in British Columbia, Canada

This year, we continued to meet with the **Cheslatta First Nation, in British Columbia, Canada**, to work towards an agreement that will define our relationship for years to come, while acknowledging our Kemano T2 project in the Nechako watershed. We also held workshops with Cheslatta, Haisla and other concerned First Nations to present opportunities for jobs and contracts related to the project.

Supporting our local communities and suppliers in Queensland, Australia

In **Queensland, Australia**, we have an almost 20-year agreement in place with Traditional Owners in Cape York, underpinned by the **Western Cape Communities Co-existence Agreement (WCCCA)**. This shapes our operations in many ways. At our existing Western Cape operations, 25% of our employees are Indigenous and Torres Strait Islander people. Our **Amrun Project** has set a benchmark in supporting local and regional suppliers; we have made more than \$2.1 billion in purchases from more than 1,200 Australian suppliers – over 800 from the state of Queensland. Western Cape York businesses alone have supplied more than \$240 million worth of goods and services – with more than 770 Queensland and 70 Western Cape businesses engaged.

Working with traditional land owners in the Pilbara

In September 2018, the Federal Court of Australia formally recognised the **Niyaparli people, Traditional Owners in the Pilbara**, as native title holders of their country, a move we strongly and publicly supported. We have had a participation agreement with the Niyaparli people in place since 2011. This provides a framework for our dialogue around current and future mining activities – helping us to work closely together to manage the environment and Indigenous culture. Employment and contracting opportunities for Niyaparli people and Niyaparli-owned businesses are also an important aspect of our partnership. In line with the agreement, all Rio Tinto employees and long-term contractors working on Niyaparli land receive cultural awareness training.

Image: Employee, Amrun, Queensland, Australia



Refining our approach to community investments

In 2017, we reviewed our approach to community investment and partnership activities. Our investment approach aims to align our discretionary spend with community needs and our business strategy, to ensure the partnerships create shared value. This also includes in-kind donations such as employee time.

This approach encompasses a range of stakeholders, from leaders in our host communities to global organisations. In 2018, we developed a new Group standard: a systematic approach to achieving excellence in investment with our partners. This details the governance processes relating to our community investments to make sure they are delivered with integrity and in line with our values.



Image: Rio Tinto Naturescape Kings Park, Perth, Western Australia

Sourcing locally

Our preference is to employ local people, buy local products and engage local services. In areas where the skills, goods and standards we need are not available, we invest in establishing and supporting new supply chains. We have CSP targets in place for employing local people and engaging local businesses at each of our operations. We also build the skills of local people and take part in employment-related programmes to help youth, women and Indigenous people benefit from employment and procurement opportunities.

For example, this year, our Iron Ore business introduced a programme to support local procurement. Among other things, this offers local businesses a special online portal to register their interest in working with Rio Tinto and discover upcoming opportunities.

We also help local businesses build their skills because we want these businesses to thrive. So in July 2018, we partnered with the [Regional Chambers of Commerce & Industry Western Australia](#), to help develop and deliver a business Capability Enhancement Programme. Together, we are helping strengthen more Pilbara businesses through workshops and events, covering marketing and pitching, tender writing and safety essentials.

This programme is a collaboration with a collective ambition to strengthen the capabilities and build sustainable businesses while developing industry within our communities. It demonstrates our commitment to local procurement, economic growth, development and diversification in the Pilbara.

Regional economic development

Socioeconomic development is about more than employment and social investment. It is about efforts to make local communities successful and resilient over the long term.

Our economic contributions are one part of the legacy we leave to the countries and communities where we work. This includes the taxes paid to local and national governments, dividends to shareholders, the direct and indirect employment we create, procurement opportunities and investment in community programmes. Our payments to suppliers form a significant part of our global economic contribution, and our impact on regional economic development.

Our business strategy takes into account local development expectations and seeks to provide a strong foundation for growth and diversification.

Scope and plan

Based on the business unit's objectives and the region's local context, we establish a preliminary intent for a regional economic development strategy.

We then share the intent with stakeholders, agree on common objectives and decide on the best path forward.

▶ Establish baseline

We work with stakeholders to develop and agree upon a thorough understanding of the local context and the potential for local economic development and diversification, as well as the barriers to overcome.

▶ Develop tailored strategy and multi-year plan

In developing the strategy/plan, we work with stakeholders to determine what needs to be done to foster the economic development and diversification of the community, as well as how and by whom. We pay particular attention to regional suppliers, their development and how we can maximise regional supply throughout the life cycle.

▶ Implement and deploy

In partnership with regional stakeholders, we establish a sound implementation approach that is tuned into the local context and is supported by appropriate measures.

▶ Monitor and audit

We monitor and audit progress against key performance indicators and adjust the plan as necessary.

100% Indigenous-owned and operated mine

In May, the 100% Indigenous-owned and operated Gulkula bauxite mine delivered first bauxite to our Gove operations. The Gulkula Regional Training Centre was established in partnership with the Gumatj Corporation, Rio Tinto and Northern Territory and Australian Governments and offers on-the-job learning opportunities for local Yolngu people. We continue to support Gulkula through buying and exporting the bauxite from the mine.



Sustainable Cashmere Project in Mongolia

We often work to support local economic interests not directly related to our operations. One example of this is in Mongolia, where we are a partner in the Sustainable Cashmere Project, an initiative to strengthen the supply chain of high-quality cashmere. This project works to give Mongolian herders better than market prices, more direct access to market, and support for improved quality and grazing practices in return for adopting better environmental and husbandry practices. Other incentives will eventually include assistance to diversify herders' income as well as other financial support, including access to loans and insurance against loss of herds.

Image: Sustainable Cashmere Project, South Gobi Desert, Mongolia



Image: FLO is Canada's largest electric vehicle charging network, owned by AddEnergie, a partner with C3E since 2010

Contributing to the “new economy” in Quebec

In Quebec, Canada, our programme focuses on economic diversification, support to equipment manufacturers, aluminium transformation and innovation. A decade ago, to address potential impacts of the closure of our Shawinigan aluminium smelter, we engaged with regional stakeholders to explore options for pre-closure investment. Regional stakeholders decided to focus on energy efficiency and renewable energy as promising sectors for attracting new businesses and people to the area. So in partnership with Hydro Quebec, we invested

C\$3 million to create and sustain the C3E (Centre of Excellence for Energy Efficiency) to help entrepreneurs commercialise technological innovations in energy efficiency and renewable energy. Today, C3E is a pillar of Shawinigan’s “new economy” and is gradually becoming one of the largest entities in Canada specialising in the development of energy efficient transportation solutions. We expect C3E to become self-sustaining over the next three years.

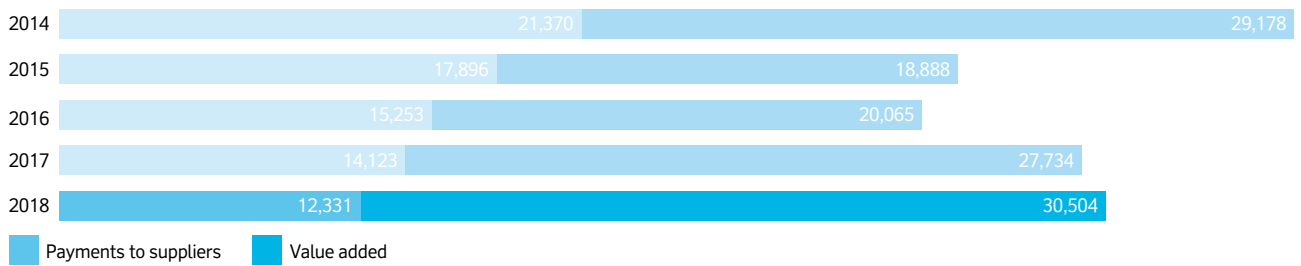
C\$3m

Invested to create and sustain the C3E (Centre of Excellence for Energy Efficiency).

Direct economic contribution

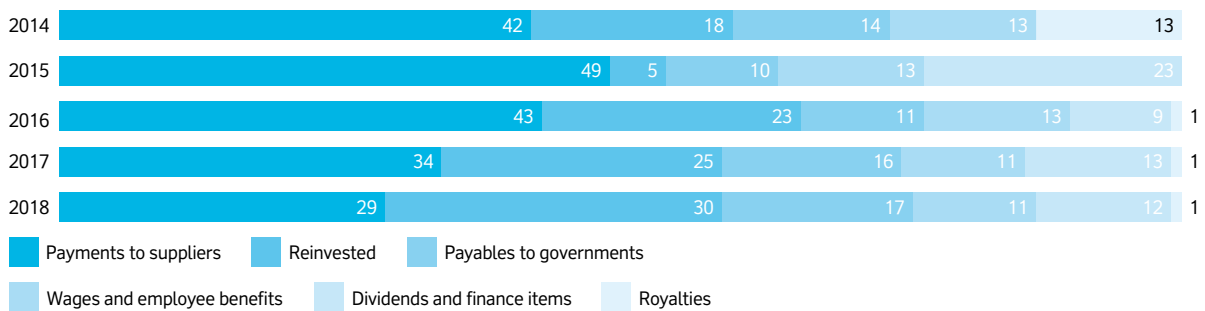
(US\$ million)

\$42.8 billion



Distribution of economic contribution

(%)



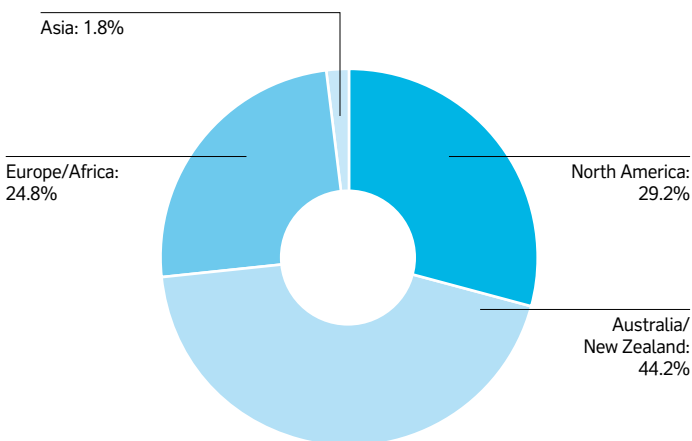
Distribution of economic contributions across jurisdictions

(US\$ million)

	Local	Regional	National	International	Total
Salaries	1,888	128	2,487	120	4,623
Payables to governments	557	1,710	4,886	64	7,216
Royalties (non-government)	246	-	-	-	246
Donations, gifts and community contributions	192	-	-	-	192
Payments to providers of capital	5,076	-	-	-	5,076
Payables to suppliers	3,487	3,450	3,133	2,261	12,331
Total	11,445	5,288	10,506	2,444	29,684

Community contributions by region

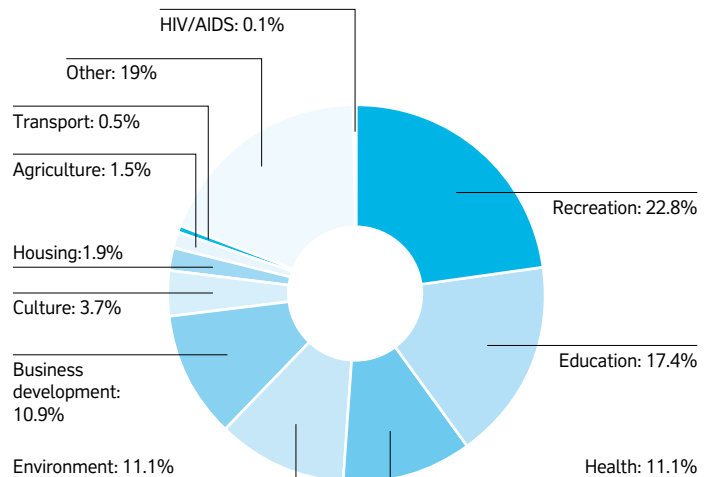
(percentage of annual total)



Excludes Rio Tinto management costs and direct payments

Community contributions by programme type

(percentage of annual total)



Excludes Rio Tinto management costs and direct payments

COLLABORATING TO ENABLE LONG-TERM ECONOMIC BENEFITS

Global engagement



Image: Dawul Community School near Argyle Diamond Mine, Western Australia

We are part of a global community, so we take an active role in a variety of dialogues on social issues and the environment. This allows us to both harness opportunities and address collective challenges that we cannot tackle on our own.

For example, we support or are members of a range of initiatives and organisations ranging from the ICMM to the UN Global Compact to Extractive Industries Transparency Initiative and, this year, the World Economic Forum.

Our involvement in organisations like these provides value to our business, investors and other stakeholders. We believe engagement is important even where there is a wide range of views with which we do not always agree. We have published [guidelines](#) which govern our approach to participation in industry associations and we critically review our memberships on a regular basis.

We also provide additional [disclosures on our memberships](#) by listing the top five groups by membership fees paid and the industry groups we engage with on climate policy issues. We also detail where others' positions on climate change are significantly different to our own.

We do not favour any political party, group or individual, and we do not involve ourselves in party political matters or make any type of payments to political parties or candidates.

Civil society has a fundamental role to play in society and in 2018 we issued a [statement](#) to that effect. We recognise that civil society organisations have varied aims and interests, with some groups focusing more on advocacy, and others engaged more in partnerships. We support the existence of an open civic space, value these diverse objectives, and will seek to work with civil society organisations in a variety of ways.

Engaging civil society organisations on sustainability

We understand the importance of listening to different voices in setting the strategic direction of our priorities and action plans around sustainability issues. So, in 2018, we convened two roundtables with civil society groups. The goal of the roundtables, held in Melbourne and Washington, DC, was to help our chairman, the chair of our Sustainability Committee and other senior executives to better understand key concerns from civil society, share our new integrated sustainability approach, and explore partnership opportunities. Issues of concern included:

- Our relationship with business associations
- Our position on climate change
- Tax payments at our Oyu Tolgoi project in Mongolia and our commitment to implement the agreements reached with herders
- Land access and resettlement at projects operated by La Compagnie de Bauxites de Guinée (CBG), which is co-owned by the Guinean government, Rio Tinto and Alcoa
- Environmental and other legacy concerns at the Bougainville Panguna mine (in which we previously held a controlling interest through our subsidiary Bougainville Copper Limited)

We also received positive feedback regarding our new sustainability approach and its three pillars and were encouraged to have more ambitious goals on climate change and better communicate our social risk management approach. We were reminded that strategies only come alive when all employees are on board.

Conversations like these are vital to understanding where we could do better in the future, as well as continued expectations to address legacy issues. We will continue to have open dialogues with civil society groups, and are committed to working to address existing grievances in line with our policies, processes and commitments.

A conversation with Megan Clark,
Sustainability Committee chair, and
Joanne Farrell, Group executive,
Health, Safety & Environment



Image: Joanne Farrell



Image: Megan Clark

JF Joanne Farrell

Maybe we can start with the basics. What role does the Sustainability Committee (SusCo) play in sustainability at Rio Tinto?

MC Megan Clark

SusCo oversees the areas of health, safety, security, environment, community and social performance. This year, we worked with the management team to develop an integrated approach to sustainability that ensures material issues are integrated into our business strategy and corporate governance. The framework is designed to help our business deliver commercial success and contribute to the world around us. (see p8)

And in answer to your question: we do two things, I'd say. First, we oversee, on behalf of the board, material sustainability risks and how management at Rio Tinto is managing those risks – what standards and controls are in place at operations, for example. We conduct internal assessments and reviews to make sure everything we do is in line with our standards. And I'd like to point out that we don't just do this from a boardroom. We go out to sites, put our hard hats on and see first-hand the risks and challenges our colleagues face – and how they're solving them. We also bring in independent auditors, who report directly to SusCo, to make sure we have an independent, outside perspective.

Second, we oversee Rio Tinto's commitment to running a safe, responsible and profitable business. On safety, we make sure management is learning from every safety incident, and is doing everything it can to progress to our goal of zero fatalities. Process safety is particularly important, and this year, for example, we reviewed the controls on toxic and asphyxiant gases.

In environment, we focus on closure planning, water storage and tailings and integrating risks and opportunities into strategy, and then reporting on our progress. So we were very involved in this year's Task Force on Climate-related Financial Disclosures (TCFD) report, for example, and of course also this SD report. In communities and social performance, we look at our relationships with communities and our performance on human rights – including assessing our supply chains.

Continues ...

JF

And what role does climate change – and what Rio Tinto is doing to address it – play in that strategy?

MC

We see climate change as a strategic imperative, and believe that Rio Tinto can and should be part of the solution. We produce a lot of the materials essential to building a low-carbon economy – aluminium, copper and, potentially, lithium. People don't realise this, but a single 1MW wind turbine needs about 3 tonnes of copper. So a transition to renewable energy is predicated on a steady, reliable supply of a wide variety of mined metals and minerals.

In terms of our business, we have integrated climate change into our strategic planning process for nearly two decades. We have reduced our emissions footprint by over 43% since 2008 and at the end of 2018, 71% of the electricity used across the business was from renewable sources. We have committed to substantial decarbonisation by 2050, and work is underway to define new emissions reduction targets to take effect when current targets expire in 2020. And today, we are the only large diversified mining company that doesn't produce coal.

We published our first climate change report in line with TCFD this year, and I'd really encourage people who want to know more to read that. It's on our website.

“

We produce a lot of the materials essential to building a low-carbon economy.”

JF

When people think about sustainability they most often think environment. You mentioned community and social performance. Can you talk a bit about those aspects of sustainability?

MC

Absolutely. Environment and climate change are critically important to us, and to me personally. We are also careful to understand and manage the aspects of our operations that could impact our communities to ensure that these risks are managed effectively. We recognise that sustainability also means putting people, their livelihoods and their needs at the centre of any solutions.

“

So far, we've spent more than A\$2.1 bn with more than 1,200 Australian suppliers.”

So for example, this year our Amrun bauxite mine started operating – six weeks early, in fact. For those who don't know Amrun, it's in a very remote part of the state of Queensland, Australia, on lands owned by the Wik-Waya people. We are the largest employer in the immediate area, so the mine is important to many families, and for many reasons.

So far, we've spent more than A\$2.1 billion with more than 1,200 Australian suppliers – over 800 from the state of Queensland. Western Cape York businesses alone have supplied more than A\$240 million worth of goods and services.

There are many other projects like Amrun at Rio Tinto – pioneering partnerships from the Pilbara to the Saguenay, in Quebec. These partnerships, with people at the centre, allow us to pursue sustainability in its truest sense.

JF What are SusCo's priorities for 2019?

MC We have quite a few. We want to see our critical risk management strategy embedded across the business, to make sure our controls, systems and culture and behaviours are in place to eliminate work place fatalities. This is crucially important.

We'll be focusing on underground safety, and the construction of our major underground copper mines at Oyu Tolgoi in Mongolia and Resolution in the United States. We'll maintain our focus on major hazard risk management, including process safety and tailings and water storage.

In the environment arena, we will continue to focus on ensuring climate change risks and opportunities are integrated into our strategy and portfolio decisions. We'll review our closure strategy for the coming decade, which includes plans for Argyle and ERA in Australia and Diavik in Canada.

And we'll also spend time overseeing our water and biodiversity management and our community and social performance work. It's going to be another big year, but we all understand – and are passionate about – the importance of sustainability at Rio Tinto.

That's the board's perspective.

“
We will continue to focus on ensuring climate change risks and opportunities are integrated into our strategy and portfolio decisions.”

MC Joanne, it's my turn to ask a question. Can you talk to us a bit about the business's priorities for 2019?

JF Of course. In broad terms, we're focusing on improvements across health, safety and environment in 2019 – and in particular, on achieving a fatality-free year, and building a strong, engaged workforce, because safety is a mindset as much as it is a process. I really believe we can do this, but more importantly, that we need to work really hard to do this. Nothing is more important.

The coming year is also going to be interesting from a sustainability perspective. I'm personally looking forward to working alongside our product groups as they start to execute against our integrated approach.

Another thing on my list for the year is to more effectively collaborate, share and learn, meaning that we become more efficient and better at what we do. This means we can quickly replicate best practices and apply the right resources in the right place, at the right time. And we'll be continuing to simplify and advance the systems we use to improve safety – for example, our Safety Maturity model, which is a suite of tools that helps our leaders get safety right.

So 2019 is going to be a big year for us – we're all really looking forward to it.

Our 2018 Sustainability Committee members

Megan Clark AC, chair
Simon Henry
Sam Laidlaw
Michael L'Estrange AO

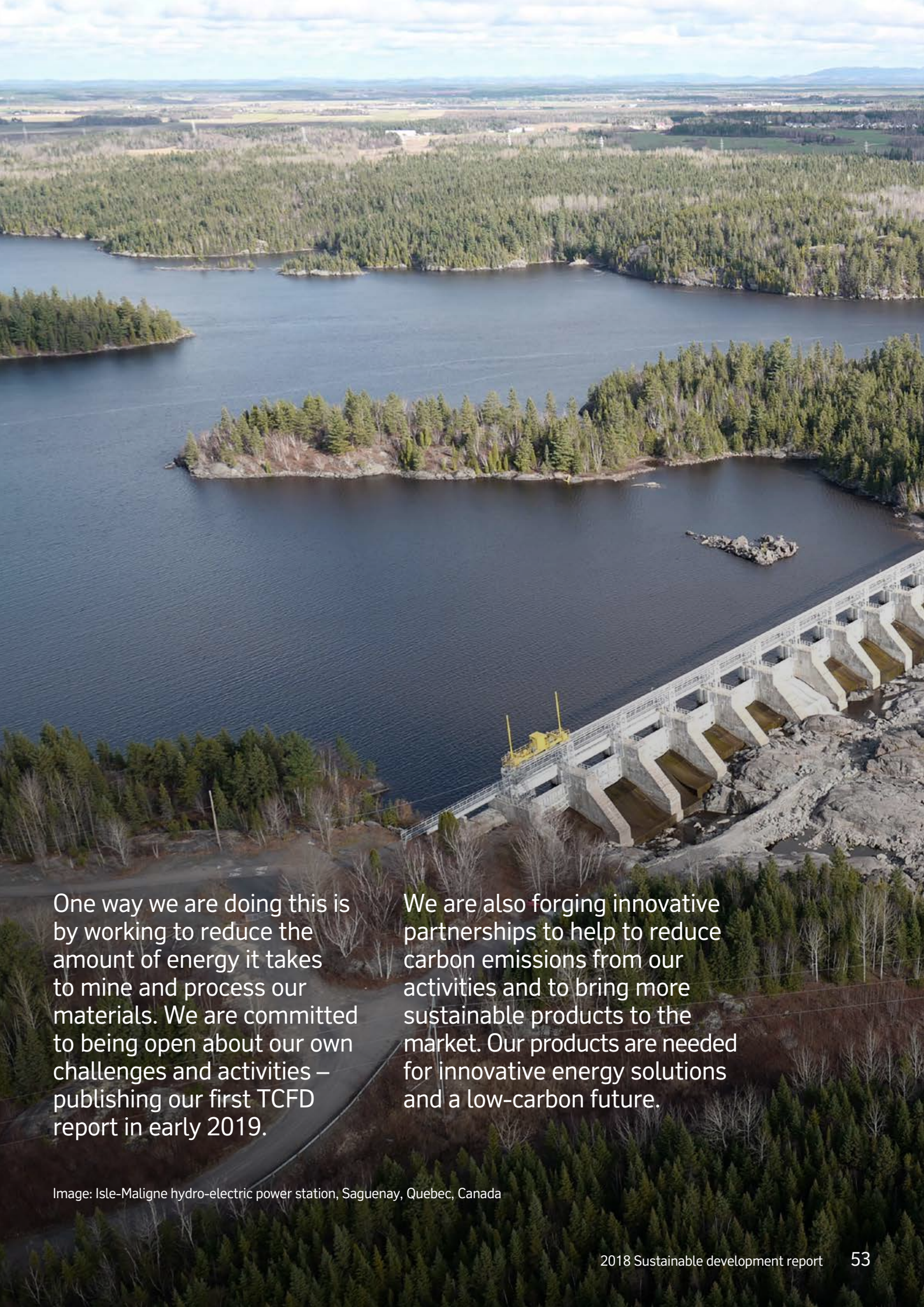
Simon Thompson will join the Sustainability Committee from 2 March, 2019

Pioneering materials for human progress

The final pillar of our sustainability strategy is to help pioneer a more sustainable future by providing the materials for human progress. The metals and minerals we produce have an essential role to play in the transition to a low-carbon economy, and we believe our portfolio is relatively well positioned for the future. While climate change presents complex challenges, we are aiming to be part of the solution.

Contribution to UN SDGs





One way we are doing this is by working to reduce the amount of energy it takes to mine and process our materials. We are committed to being open about our own challenges and activities – publishing our first TCFD report in early 2019.

We are also forging innovative partnerships to help to reduce carbon emissions from our activities and to bring more sustainable products to the market. Our products are needed for innovative energy solutions and a low-carbon future.

Image: Isle-Maligne hydro-electric power station, Saguenay, Quebec, Canada

Climate change: risks but also opportunities

Climate change is a strategic imperative for the world and for Rio Tinto. It presents a long-term challenge if governments, society and business do not take action.

It requires a long-term perspective to address both the risks and uncertainties, and the opportunities. Initiatives such as TCFD encourage more transparency on climate-related risks and opportunities aligned with objectives from the Paris Agreement, such as our resilience to a 2°C warming scenario.

We believe Rio Tinto can be part of the solution to climate change, as we provide materials that are essential to building a low-carbon economy. We have integrated climate change into our strategic planning process for nearly two decades, and are putting the transition to a low-carbon future and future energy scenarios at the heart of our business strategy. Both our Executive Committee and our full board have discussed and assessed the resilience of our business to climate scenarios and transition risks as part of their strategic discussions.

Since 1998, we have tested our investment decisions against an internal carbon price. Our progress in addressing climate change within our business is one of our seven key performance indicators. We are committed to reducing the energy intensity of our operations and the carbon intensity of our energy, and are increasingly using innovative technologies to do this. We see our greenhouse gas performance as an important indicator of our ability to manage exposure to future climate policy and legislative costs.

The climate change actions we take are consistent with our objectives of delivering superior performance and creating long-term shareholder value, fully aligned with our purpose and values.

Four main areas of focus

1. Supplying the materials essential to building a low-carbon economy
2. Managing our own footprint
3. Building resilience to physical impacts
4. Partner and advocate for policies that advance climate goals

Image: Wind turbines, Diavik Diamond Mine, Northwest Territories, Canada

1. Supplying the materials essential to building a low-carbon economy

We believe there are three key elements to consider in the transition:

- A shift away from fossil fuels and desire for higher energy efficiencies
- Increased electrification of transportation and industrial processes
- A stronger focus on material reuse and recycling, ie the circular economy

Our Ventures team is also exploring additional partnerships and investment opportunities into minerals critical to a low-carbon economy.

Materials of the low-carbon future

We supply the minerals and metals to help the world grow, and we believe they are also essential to developing a low-carbon society, including for energy storage and electricity transmission. Each of the commodities we produce has a role to play.

Iron ore is used to make steel, the fundamental building block of industry and infrastructure. Our higher-grade ores and lump products contribute to reducing GHG and other air emissions in China and elsewhere.

Aluminium is light, strong, flexible, corrosion resistant and infinitely recyclable, and can help our customers to reduce their own emissions. Our clean, hydro-powered aluminium business in Quebec supplies our customers, like those in the car industry, with sustainable materials to produce lighter and more fuel-efficient vehicles.

Copper is the primary conductor in the world's electrical infrastructure, contributing to the electrification of transportation and smart technologies. For example, electric vehicles use four to six times more copper than traditional internal combustion engine cars.

Borates are a vital ingredient of many building and technology materials and provide essential micro-nutrients for crops. This increases crop productivity, helping to feed the world's growing population and reducing the need for land clearing by producing more crops on the same footprint.

Our **titanium dioxide** business is working on the development of low-cost metal powders for 3D printing. When used by the likes of the aerospace industry, this removes the need to cast metal and reduces energy and waste.

The pre-feasibility studies of our Jadar project in Serbia have continued to progress this year. Jadar has the potential to become a world-class source of **lithium**, a key raw material for battery storage technologies used in renewable energy storage and electric vehicles.

Following the sale of our coal assets, Rio Tinto is unique among the major diversified miners in having no fossil fuel production. It also enables us to put capital into commodities with higher growth potential in a carbon-constrained world.

2. Managing our own footprint

Many of our operations are energy intensive, and we are taking action to improve both productivity and efficiency as we reduce emissions. This starts with making sure we have a strong understanding of how energy is used in our business, constantly assessing low-emission technology opportunities and building our own capability to innovate. We have had GHG emissions intensity targets since 2008 with a focus on abatement opportunities.

We have reduced our GHG emissions footprint by 43% since 2008. Today, 76% of our electricity comes from low-carbon sources and 71% from renewables (hydro, solar and wind). We have committed to substantial decarbonisation by 2050, and work is underway to define new emissions reduction targets from 2020.

We do face some challenges, however. These include our current reliance on coal-fired power in South Africa and Australia, as well as our plans to build a coal-fired power station in Mongolia in line with our investment agreement with the government.

43%

reduction in our GHG emissions footprint since 2008

76%

of our electricity comes from low-carbon sources

71%

of our electricity comes from renewable sources

We have committed to substantial decarbonisation by

2050

3. Building resilience to physical impacts

We consider climate risks over the life of our operations, from the way we design and develop new projects through to closure and beyond. We know that short-term actions can affect our medium-to-longer-term risks, so we look for ways to maximise our flexibility to future change, while avoiding measures that might constrain future adaptation options. For example, the decisions we make today on which fuels to use or design standards to apply for new assets will impact our emissions for decades to come.



See our 2019 TCFD report at www.riotinto.com/TCFD2018 for more detail on our actions in each of these four areas

4. Partnering and advocating for policies that advance climate goals

We are actively involved in climate change policy engagement across the jurisdictions in which we operate and which are important to us. We are guided by our policy position that supports market mechanisms. We believe this is the best way of achieving emissions reductions, and we support a market-

based price on carbon. Underpinning this we encourage the establishment of stable regulatory frameworks that support investment, competitiveness across jurisdictions, and the use of revenues raised from carbon pricing to facilitate the transition to a low-carbon economy. We also believe effective

action requires a level playing field, not only across our industry, but across all industries and jurisdictions: a challenge as serious as climate change mandates transparency, collaboration and a shared contribution to the solution.

We also consider the indirect (scope 3) emissions associated with our products. The three most significant sources are:

1. **536 million tCO₂-e** associated with customers using our iron ore to produce steel (a 1.3% increase from 2017) – as some customers use both our iron ore and our coal to produce steel, this is not all in addition to the coal-use emissions mentioned here
2. **17.4 million¹ tCO₂-e** associated with customers using our coal in electricity generation and steel production, a 75% decrease from 2017
3. **6.5 million tCO₂-e** associated with third-party transport of our products and raw materials, a 1.8% increase from 2017*

* 2017 figure revised upwards from 6.2 to 6.4MtCO₂-e.

1. We expect this to reduce in 2019 due to the divestment of our remaining coal assets on August 2018

2018 performance against targets

Targets

24% reduction in total greenhouse gas emissions intensity between 2008 and 2020

Outcomes

On track to meet our 2020 target, with a 2.5% drop in greenhouse gas emissions intensity over the last year and 28.9% since 2008

Greenhouse gas emissions intensity

(Indexed relative to 2008)

71.1

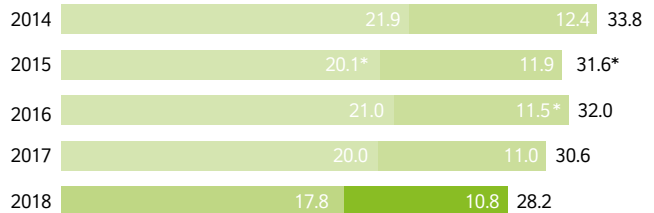


* Number restated from those originally published to ensure comparability over time.

Total greenhouse gas emissions

(million tCO₂e)

28.2

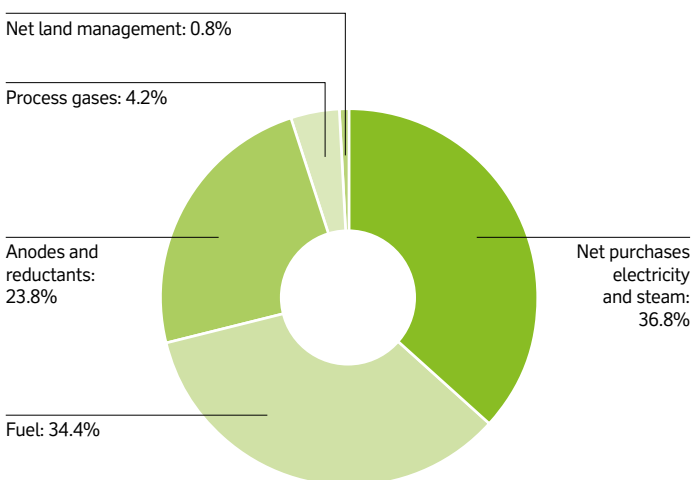


Legend: Scope 1 emissions (light green), Scope 2 emissions (dark green)

* Number restated from those originally published to ensure comparability over time.

Sources of total greenhouse gas emissions

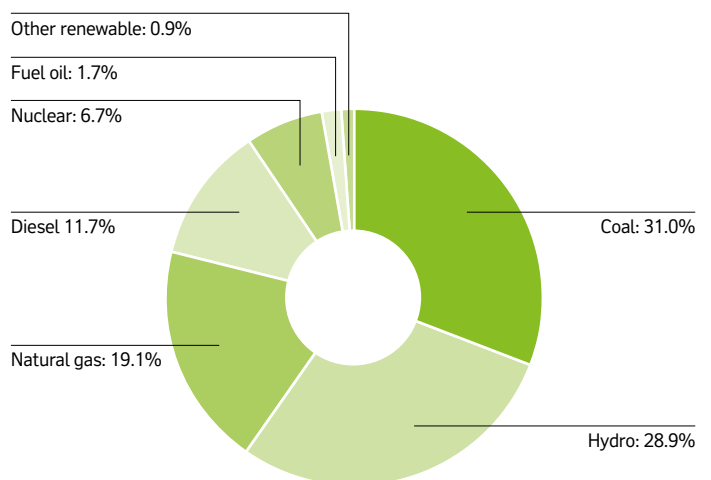
(%)



Note: Due to rounding, the sum may not total 100%

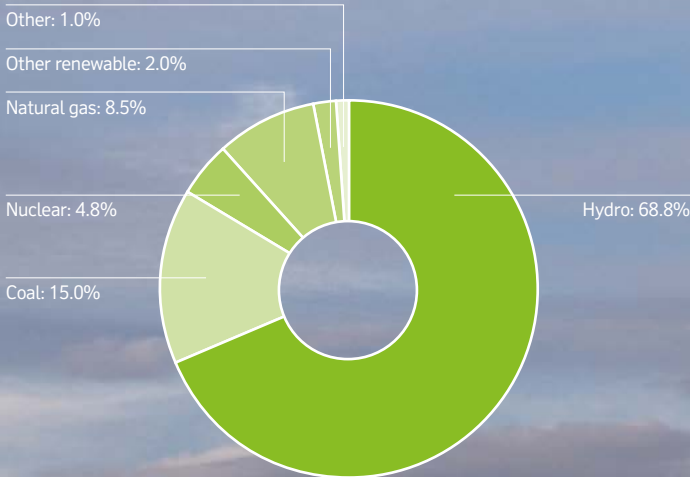
Primary sources of energy used

(%)



Note: Due to rounding, the sum may not total 100%

Sources of electricity used (%)



Note: Due to rounding, the sum may not total 100%

Creating cleaner, safer vehicles

Through the ICMM, we are working with representatives from the mining industry and original equipment manufacturers to introduce cleaner, safer vehicles to mine sites through three programmes:

1. Reducing GHG emissions: using operational and technological innovation to reduce net GHG emissions from mobile mining equipment – the resulting increase in energy efficiency and GHG-reduction technologies is aimed at achieving greenhouse gas-free surface mining vehicles by 2040
2. Reducing emissions of diesel particulate matter (DPM): using operational and technological innovations to minimise the impacts on underground mining operations from emissions of diesel particulate matter by 2025
3. Vehicle interactions (VI): promoting the innovation of collision avoidance technology available for mining vehicles by 2025



Image: Autonomous truck, West Angelas, Pilbara, Western Australia

Groundbreaking partnerships

We know that we can create a more sustainable future only by working with others. So, as well as focusing on our own operations and developing our own capabilities, we are exploring new, groundbreaking partnerships that can help us to expand more quickly into the metals and minerals of the future.

Certified “responsible” aluminium

We were the first company in the world to become certified under the Aluminium Stewardship Initiative (ASI), the highest internationally recognised standard for robust environmental, social and governance practices across the life cycle of aluminium production, use and recycling. This reinforces our commitment to sustainability and enables manufacturers and customers to show their commitment to a sustainable supply chain. This has led to immediate benefits, such as our partnership with Nespresso to supply responsible, sustainable aluminium for their coffee capsules by 2020.

We have been working to reduce the energy it takes to produce aluminium for some time. We produce some of the highest-quality, lowest carbon footprint aluminium in the world, with 80% of our aluminium group’s electricity coming from renewable sources such as hydropower. In 2016, we introduced the industry’s first certified low-carbon aluminium, RenewAl™. We are now taking this to the next level with Elysis.

Emissions-free aluminium through Elysis

For 130 years, a completely zero-carbon aluminium smelting process has been an aspiration of the industry. This year, we helped to bring this promise to life by launching Elysis, a partnership with Alcoa, supported by Apple and the governments of Canada and Quebec. Elysis technology could one day eliminate direct GHG emissions from the aluminium smelting process and replace them with pure, clean oxygen.



In Canada alone, this technology could eliminate the equivalent of 6.5 million metric tonnes of GHG emissions (if used at all aluminium smelters in the country). This is roughly equal to taking nearly 1.8 million cars off the road.

Headquartered in Quebec, Elysis will develop this revolutionary new technology from a working pilot to be ready for sale by 2024. When used at scale, this could transform the carbon footprint of all types of products – from cars to consumer electronics. Learn more at www.elysis.com.

Developing future skills

We lead our industry in automation through our Mine of the Future™ programme, involving the use of autonomous drills, trucks and trains in our operations (for more detail see Intelligent mining on page 63). Along with safety, environmental and productivity benefits, advances like these can have an impact on our employees and the communities in which we operate.

We take a long-term view to developing skills for the future in the communities in which we work. We are mapping future roles in line with the expected impact of technology and automation, and are working with schools and universities to equip students with the skills needed to work in the mines of the future.

In 2018, for example, we launched a partnership with the government of Western Australia and South Metropolitan TAFE (Technical and Further Education) to develop the first nationally recognised certificates in Automation and Remote Operations. This partnership aims to train people in the new skills required for the automation age and certify those skills, so they are easily transferable across industries.

A responsible value chain

As consumers become ever more mindful of the sustainability of the products they choose, they want reassurance that the materials that go into them reflect responsible practices throughout the value chain.

We are founders and active members of industry stewardship programmes such as the Aluminium Stewardship Initiative (ASI), and are the only aluminium producer to have our product ASI-certified as responsible throughout its life cycle. Focusing on responsible production and supply also allows us to innovate and improve performance. Our Aluminium business, for example, has one of the lowest carbon footprints in the industry and produces RenewAl™, a low-carbon aluminium brand.

We also partner with a range of organisations to ensure the integrity and reliability of our diamonds, from our mines to the market. Our reputation as a business is tied to the practices of everyone who touches our diamonds, and therefore working with others to create a responsible supply chain is critical. We are a founding member of the Diamond Producers Association (DPA), the first organisation to represent diamond producers at an international level. The DPA supports the development of the diamond sector and works to maintain and improve consumer confidence in diamonds.

We are also a founding member of the Responsible Jewellery Council (RJC). This industry organisation promotes responsible, ethical, social and environmental practices throughout the diamond, gold and platinum jewellery supply chain. And we have taken an active leadership role in the World Diamond Council (WDC), which represents the diamond industry in the Kimberley Process and has established a mechanism for guaranteeing to consumers that diamonds are conflict free.

We also have our own Australian Diamonds™ programme in the US, China and India. This independently audited system, developed with authorised diamond and jewellery manufacturers and retailers, assures consumers that their Argyle diamonds are fully traceable, all the way from the mine.



Image: Shipping copper concentrate from Oyu Tolgoi, Mongolia

Closure: ending production

Planning for the future of our sites is a core business function, the planning and implementation of which is governed by our Closure Steering Committee.

A centralised closure group supports all our businesses and oversees work to minimise the impacts and risks and to maximise benefits for stakeholders from winding down operations. All of our 66 managed operational assets are covered by closure plans; a number of these assets are coming to the end of their operating lives over the next ten years. With the oversight of our Sustainability Committee, we are working on closure plans for the next decade, with a particular focus on our Argyle diamond mine in Western Australia. The Committee also visited Energy Resources of Australia's Ranger uranium mine in the Northern Territory, to review closure planning and rehabilitation progress. At the end of 2018, we had almost \$10 billion set aside on our balance sheet for the cost of closing sites such as these.

Last year, we developed an integrated strategy to help drive greater consistency and effectiveness in the planning and implementation of our closure activity at every site. This includes progressively rehabilitating land throughout the life of an operation; in 2018, we rehabilitated 24% of the land we disturbed for mining. We also look to incorporate closure into the design of our assets as well as how to optimise decommissioning, remediation and any long-term

management obligations, such as water treatment. And we continually assess the potential to repurpose and reuse sites for future economic or social benefit. In some instances, we manage historic sites for the long term.

This work is highly collaborative, involving sustained input from our employees, landowners, communities, governments and NGOs. In some regions, regulations for large mine closures are undeveloped or untested. We are working with our stakeholders and peers, both locally and through the ICMM Closure Working Group, to better understand the opportunities around closure, to find solutions to the challenges and to engage governments to create effective and proportionate policies.

We manage a number of historic (post-production) sites, often inherited through acquisitions or mergers. We rehabilitate these sites and, where and when we can, we transfer them to local authorities or third parties.



At the end of 2018, we had almost \$10 billion set aside on our balance sheet for the cost of closing sites.”

In 2017, our legacy site in Indonesia, Kelian, was assessed by the government and the World Wildlife Fund as an ideal location for the highly endangered Sumatran rhino. Part of the site has now been designated a Protection Forest and will be used as a sanctuary for housing and breeding rhino, with the aim of eventually releasing them into the wild. This is just one example of the contribution that thoughtful closure of former mine sites can provide.

Intelligent mining

Through our Mine of the Future™ programme, we harness new and emerging technologies to make our operations more efficient, safer and more environmentally friendly. And we do this all the way through the mining life cycle: as we design, build, operate and close our assets.

Smart design

This year, we approved funding for our Koodaideri iron ore mine in Western Australia, the world's first "intelligent mine". We expect to begin construction here in 2019 and production in late 2021. In addition to technology already in use across Rio Tinto, such as autonomous trucks, trains and drills, Koodaideri has more than 70 design innovations in scope. Fully integrated mine operation and simulation systems, including digital twin technology, will improve safety, maintenance and productivity – and will be accessible in real time in the field. Koodaideri will set a benchmark for our industry in terms of automation and the use of data – making mining safer and more productive.

Building intelligently

Using technology to construct assets intelligently, and with respect for the environment and local communities, is also a priority. At our Amrun bauxite mine in Queensland, Australia, we used innovative modular engineering techniques to build the wharf more safely, faster and with a reduced environmental footprint. The result of our collaborative approach was a breakthrough in the design, fabrication and construction of wharf infrastructure that's paving the way for a more economical, less-invasive way of building large marine structures.

We also used virtual reality to help the local community and Traditional Owners understand how the mine and surrounding areas would look. We worked closely with Indigenous people in the area to understand their special connection to the country and to tap into their unique knowledge of the land. Today, we oversee activities at Amrun in real time, using the latest technology and predictive mathematical tools to run operations safely and efficiently.

Continuous improvement

In 2018, we successfully deployed the world's first automated heavy-haul, long distance rail network, AutoHaul™, in our Western Australian iron ore mining ecosystem. Operations like this reduce risk at level crossings and cut light vehicle travel in the Pilbara by 1.5 million kilometres a year. Alongside our autonomous trucks and drills, AutoHaul™ highlights our commitment to using revolutionary new technologies to make our industry safer and more productive.

By December 2018, more than 80% of our Pilbara train journeys were fully automated; this year, they travelled more than 1.6 million km autonomously.

We are also continuing to develop our autonomous haul truck fleet and, in January 2018, moved our one-billionth tonne of material using the fleet. This is bringing clear safety and productivity advantages to our operations. In 2018, each truck is estimated to have operated on average 700 hours more than conventional haul trucks, with 15% lower costs. There have been zero injuries attributed to our autonomous haul trucks.

With more than 100 autonomous trucks in use and plans in place to bring this to 140 by the end of 2019, the pace of automation across our business is accelerating.

Innovation in closure

As we plan for the eventual closure and handover of our assets, we work with stakeholders to find innovative ways to make good use of the land and ensure a sustainable future for nearby communities.

At one of our closed sites in France, we are trialling a passive biological process for water treatment through the design, creation and maintenance of a sustainable wetland environment instead of a chemical water filtration plant. Not only will this dramatically improve biodiversity, it removes the need for continued operational and maintenance activities.

At another former magnesium site in Southwest France, we are using a new flexible solar panel technology that works on any surface angle. These panels will cover 1,500 m² and are expected to produce 1.5MWh of renewable energy per year. With this pilot, we are aiming to show the efficiency and low cost of the technology, with a view to rolling it out to other Rio Tinto sites, particularly on landfills and closed tailing sites.

We are also working to find ways to reduce the environmental impact of bauxite processing, with particular attention to the red mud left as residue. As part of a European-funded

[RemovAL](#) project involving 37 members (universities, experts, other businesses), we are trialling methods for converting this bauxite residue into aggregates that can be used to make other products, such as concrete, tiles and insulation. The partnership between our Aluminium and Closure teams and other European experts is one example of collaborating to find innovative solutions to shared challenges. If successful, this could lead to commercial benefits for both active and legacy bauxite operations.

Image: Argyle Diamonds, Kimberley Ranges, Western Australia

Pioneering human progress

The world needs more, and better, solutions to our sustainability challenges, and we believe we can be part of the solution: through the materials we produce, the economic and social contributions we make, and through our approach to issues like climate change, automation and the closure of mining operations.

Operating sustainably is core to our business success and as societal expectations increase, will become even more so. We must play our part by keeping our employees safe as we respect their rights and those of our host communities. We must be responsible, transparent and adhere to strong governance as we live our values. We must contribute to the world around us by providing the materials of the future.

But we cannot do this on our own. Partnerships will define our approach and success, as will better communications on what we do, and why, and some of the challenges we face. In the year ahead this will be our focus. If you have any ideas or thoughts on how we can improve please let us know by visiting www.riotinto.com – or speaking to one of us.



People performance

The data here is reported for calendar years and, unless stated otherwise, represents all of the parameters at each managed operation, even where we have partial ownership.

Data from previous years may be adjusted if verification processes detect material errors or to ensure comparability over time. Where data has been restated, there will be a footnote to the data.

Where possible, we include data for operations acquired before 1 October of the reporting period. Operations that have been sold are included in data collection processes up until the transfer of management control.

[See more about our performance in the interactive charts on riotinto.com.](#)

Safety, health and employee overview

	2018	2017	2016	2015	2014
Employees (average) ^(a)	47,500	47,000	51,000	55,000	60,000
Fatalities at managed operations from safety incidents ^(b)	2	1	1	4	2
Fatalities at managed operations from health incidents ^(b)	–	– ^(d)	–	–	–
Fatalities at managed operations from security incidents ^(b)	1	–	–	–	–
All injury frequency rate (AIFR) (per 200,000 hours worked) ^(b)	0.44	0.42	0.44	0.44	0.59
Number of lost time injuries	228	199	206	220	381
Lost time injury frequency rate (LTIFR) (per 200,000 hours worked) ^(b)	0.27	0.25	0.26	0.25	0.37
New cases of occupational illness (per 10,000 employees) ^(c)	29	25*	47	32	17
Fines and prosecutions – safety (US\$'000)	59	29.2	62.0	23.5	95
Fines and prosecutions – health (US\$'000)	0	7.1	0.0	0.0	0.0

(a) Includes the Group's share of joint ventures and associates (rounded).

(b) Data relating to fatalities, all injury frequency rate and lost time injury frequency rate include all employee and contractor exposure hours and incidents.

(c) New cases of occupational illness are reported for employees only.

(d) Health fatality in 2017 was re-classified as non-work related.

* Numbers restated from those originally published to ensure comparability over time.

Employees by employment type^(a)

	Women	Men
Executive management	21	80
Senior management	94	312
Regular employees ^(b)	6,418	30,901
Students/interns	95	126
Total permanent employees	6,628	31,419
Temporary	335	1000
Total^(c)	6,963	32,419

(a) Gender distribution for our workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2018. Excludes non-executive directors and contractors. Less than 1% of the workforce gender is undeclared.

(b) Includes graduates.

(c) Includes temporary employees.

See more about our performance in the [interactive charts](#).

2018 PERFORMANCE DATA

Workforce profile by region

	Employees ^(a)	Women ^(b)	Men ^(b)	Fatalities ^(c)	AIFR (per 200,000 hours worked)	Occupational illnesses (per 10,000 employees) ^(d)	Absenteeism rate ^{(b)(e)}	
							Female	Male
Africa	5,000	18%	82%	1	0.33	14.61	65	69
Asia	5,000	29%	71%	–	0.16	0	42	37
Americas	16,000	14%	86%	1	0.51	33.94	52	64
Australia/New Zealand	19,500	18%	82%	1	0.55	31.03	87	82
Europe/UK	2,000	23%	77%	–	0.38	0	4	0.4
Total	47,500	18%	82%	3	0.44	28.80	64	67

(a) Includes the Group's share of joint ventures and associates (rounded).

(b) Gender distribution of our total workforce is based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2018.

(c) Fatalities at managed operations resulting from fatal safety or health incidents.

(d) Estimates based on internal health and employee databases.

(e) Absenteeism includes sick leave, disability, FMLA and other unpaid leave.

Employee hiring and turnover rates^(a)

	Gender ^(b)		Age group				Region				
	Female	Male	Under 30	30-39	40-49	Over 50	Africa	Asia	Americas	Australia/ New Zealand	Europe
Employee hiring rate	17%	12%	47%	12%	7%	4%	6%	11%	15%	13%	12%
Employee turnover rate ^(b)	9%	10%	9%	9%	8%	10%	5%	6%	7%	12%	12%

(a) Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2018.

Less than 1% of the workforce gender is undeclared. Excludes non-executive directors and contractors. Rates have been calculated over average monthly headcount in the year. In 2018 Rio Tinto's definition of turnover changed to exclude temporary workers from the calculation.

(b) Turnover rate includes the reduction of employees due to business divestment.

Employee performance reviews^(a)

	Gender		Employee category				
	Female	Male	Executive management	Senior management	Regular employees ^(b)	Operator/ trade/technical	Apprentice ^(c)
Employees receiving regular performance and career development reviews	89.05%	91.57%	53.66%	68.93%	91.57%	91.48%	N/A

(a) Includes employees who are managed according to the global performance process. There are various other local site-based performance processes that cover the remaining workforce population. Excludes non-executive directors and contractors. Gender distribution of our total workforce is based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2018. Less than 1% of the workforce gender is undeclared.

(b) Includes graduates.

(c) Apprentices are not covered under the global review process.

See more about our performance in the [interactive charts](#).

Environmental performance

The data here is reported for calendar years and, unless stated otherwise, represents all of the parameters at each managed operation, even where we have partial ownership.

Data from previous years may be adjusted if verification processes detect material errors or to ensure comparability over time. Where data has been restated, there will be a footnote to the data.

Where possible, we include data for operations acquired before 1 October of the reporting period. Operations that have been sold are included in data collection processes up until the transfer of management control. See more about our performance in the interactive charts on www.riotinto.com.

Operational environment

	2018	2017	2016	2015	2014
Significant environmental incidents	0	0	1	0	12
Fines and prosecutions – environment (US\$'000)	284.7 ^(a)	89.5	57.6	130.4	319.5
Total energy use (petajoules)	420	440*	458	433	450
Greenhouse gas emissions intensity (indexed relative to 2008)	71.1	72.9*	74.4	79.7	81.7
Greenhouse gas emissions – scope 1 (million tonnes CO ₂ equivalent)	17.8	20.0	21.0	20.1*	21.9
Greenhouse gas emissions – scope 2 (million tonnes CO ₂ equivalent)	10.8	11.0	11.5*	11.9	12.4
Greenhouse gas emissions – total (million tonnes CO ₂ equivalent)	28.2	30.6	32.0	31.6*	33.8
Freshwater withdrawal (billion litres)	539	584	573	564	555
Freshwater used (billion litres)	401	465	467	460	465
Land footprint – disturbed (square kilometres)	3,595	3,616	3,696	3,629	3,592
Land footprint – rehabilitated (square kilometres)	485	497	541	533	502
Mineral waste disposed or stored (million tonnes)	886	1,188*	1,726*	1,746	1,737
Non-mineral waste disposed or stored (million tonnes)	0.27	0.33	0.53	0.28	0.42
SO _x emissions (thousand tonnes)	84	87*	88	87	118
NO _x emissions (thousand tonnes)	62	66	69	67	75
Fluoride emissions (thousand tonnes)	2.6	2.5	2.5	2.3	3.2
Particulate (PM ₁₀) emissions (thousand tonnes)	63	67	92*	95	102

(a) In 2018, we paid environmental fines totalling US\$284,683. In Canada, non-compliance with a sanitation certificate and multiple spillages of diesel at a port terminal. In Mongolia, the death of four gazelles (through collision and drowning) and rehabilitation in an area that was previously used for community wood distribution. In the US, for the settlement of multiple instances of water quality related releases from 2003 to 2017.

* Numbers restated from those originally published to ensure comparability over time.

Greenhouse gas emissions by product group (million tonnes of CO₂ equivalent)

	Scope 1 greenhouse gas emissions	Total greenhouse gas emissions
Aluminium	9.6	15.9
Copper & Diamonds	1.3	3.5
Energy & Minerals	3.6	5.5
Iron Ore	3.2	3.1
Growth & Innovation	0.0	0.0
Other ^(a)	0.2	0.2
Rio Tinto total	17.8	28.2

Due to rounding, sum may not equal the total shown.

(a) Includes corporate offices.

See more about our performance in the [interactive charts](#).

2018 PERFORMANCE DATA

Greenhouse gas emissions by location (million tonnes of CO₂ equivalent)

	Scope 1 greenhouse gas emissions	Total greenhouse gas emissions
Australia	8.0	14.0
Canada	6.1	6.1
France	0.5	0.8
South Africa	0.5	2.3
United States	1.1	2.0
Other: Rest of Africa	0.1	0.2
Other: Rest of Europe	0.3	0.3
Other: Asia, New Zealand, Central and South America	1.1	2.4
Rio Tinto total	17.8	28.2

Due to rounding, sum may not equal the total shown.

Water withdrawal by product group (billion litres)

	Marine	Surface water	Groundwater	Municipal water	Total
Aluminium	36	31	37	13	117
Copper & Diamonds	0	23	45	1	69
Energy & Minerals	6	218	48	13	285
Iron Ore	0	0	191	4	195
Growth & Innovation	0	0	0	0	0
Other ^(a)	6	0	0	0	6
Rio Tinto total	48	272	321	31	672

Due to rounding, sum may not equal the total shown.

(a) Includes corporate offices.

Water withdrawal by location (billion litres)

	Marine	Surface water	Groundwater	Municipal water	Total
Australia	42	29	220	15	305
Canada	0	213	42	4	260
France	0	1	0	0	1
South Africa	0	11	0	7	18
United Kingdom	6	0	0	0	6
United States	0	16	30	2	48
Other: Rest of Africa	0	1	3	3	8
Other: Rest of Europe	0	0	10	0	11
Other: Asia, New Zealand, Central and South America	0	1	15	0	15
Rio Tinto total	48	272	321	31	672

Due to rounding, sum may not equal the total shown.

See more about our performance in the [interactive charts](#).

Economic performance

Economic contributions (US\$ million)

	2018	2017	2016	2015	2014
Gross sales revenue	42,835	41,857	35,318	36,784	50,041
Net cash generated from operating activities ^(a)	11,821	13,884	8,465	9,383	14,286
Underlying earnings	8,808	8,627	5,100	4,540	9,305
Underlying earnings per share (US cents)	512.3	482.84	283.8	248.8	503.4
Profit/(loss) after tax for the year	13,925	8,851	4,776	(1,719)	6,499
Net cash/(debt)	255	(3,845)	(9,587)	(13,783)	(12,496)
Capital expenditure ^(b)	5,430	4,482	3,012	4,685	8,162
Employment costs	4,728	4,765	4,881	5,446	6,659
Payables to governments ^(c)	7,217	6,637	4,025	3,666	8,938 ^(f)
Value add ^{(d) (e)}	30,504	27,734	20,065	18,888	29,178
Payments to suppliers ^(e)	12,331	14,123	15,253	17,896	21,370
Community contributions	192	176	168	187	264
Amounts paid by Rio Tinto	n/a^(g)	5,138	3,984	4,523	7,099
Amounts paid by Rio Tinto on behalf of its employees	n/a^(g)	1,402	1,416	1,569	1,839

(a) Data includes dividends from equity accounted units, and is after payments of interest, taxes and dividends to non-controlling interests in subsidiaries.

(b) Capital expenditure is presented gross before taking into account any disposals of property, plant and equipment.

(c) Total payables to governments include: Amounts paid by Rio Tinto; and Amounts paid by Rio Tinto on behalf of its employees

(d) Value add is the sum of labour, payables to governments and returns on capital invested in operations.

(e) These figures include the Group's share of joint ventures and associates.

(f) The amount reported in 2014 is based on the total payments to governments as reported in our Taxes paid report for that year.

(g) Taxes paid in 2018 report will be published later this year on riotinto.com.

See more about our performance in the [interactive charts](#).

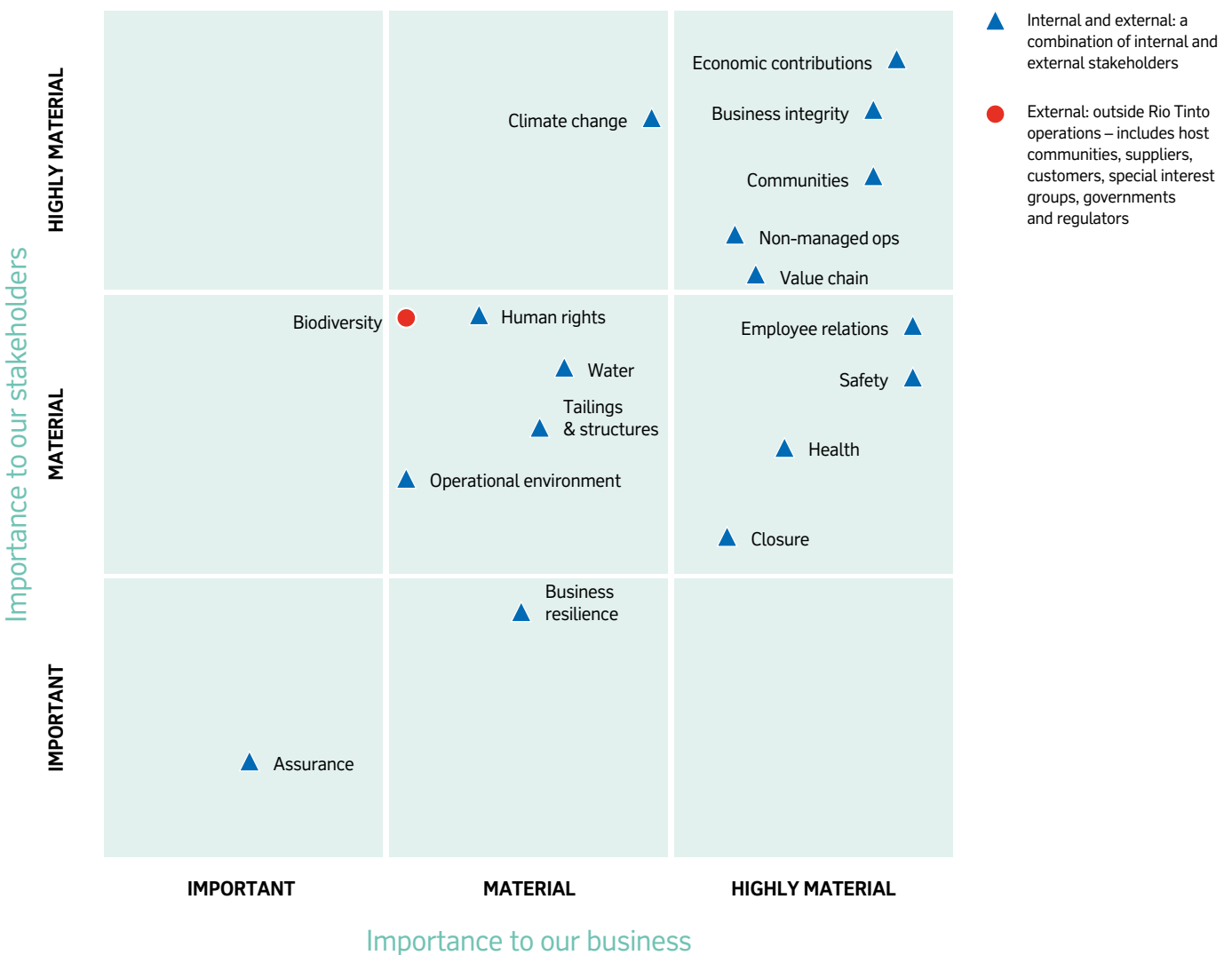
Reporting what matters

Every year we review the topics that matter most to our business and stakeholders when it comes to sustainability.

Following the Global Reporting Initiative (GRI) Standards, this year we prioritised our material topics, combining an analysis of the external environment with feedback from Rio Tinto leaders and subject matter experts while also considering stakeholder expectations. We also developed a sustainability framework, informed by this assessment and linked to the United Nations' 17 Sustainable Development Goals (UN SDGs).

As a member of the ICMM, we commit to upholding the ICMM's 10 Principles for Sustainable Development and incorporate the mandatory requirements from the ICMM position statements into our own policies, standards and practices. You can read more in our [ICMM Sustainable Development Framework](#). Our GRI index lists our disclosures and responses to the GRI Standards, as well as to relevant Mining and Metals sector supplement indicators.

We assess GRI-defined economic, environmental and social impacts across our business life cycle and align these to our sustainability framework. The boundaries of each material topic are shown in this graph.



APPENDIX 1

Reporting what matters continued

Biodiversity: Mining disturbs land, waters and potentially the livelihoods of neighbouring communities. We work to retain the biodiversity value of sensitive areas and contribute to regional biodiversity research and conservation efforts.

Business integrity: Adhering to the highest level of honesty, integrity and transparency when communicating our processes and performance is core to our values and vital to maintaining the trust and confidence of stakeholders.

Climate change: The ways we manage our energy use and the impacts of climate change – and how we explain our response to anticipated change – are critical as we move towards a low-carbon future. Our products are part of the solution.

Closure: We must consider social, environmental and economic aspects of the closure of our operations and facilities.

Communities: Developing strong and lasting relationships is paramount to our approach. This includes agreements, regional development and managing cultural and heritage impacts.

Economic contribution: Natural resources are a significant source of value for countries and our business alike. The direct and indirect economic value generated from our activities carries with it economic opportunity for our national, regional and community stakeholders.

Employee relations: People are our priority. Maintaining a safe, engaged, diverse and inclusive workforce is essential to maximising the value of our contributions to stakeholders. It's also core to our values.

Health: A healthy and engaged workforce contributes to productivity and is essential to maximising the value of our contributions. We focus on reducing exposures and industrial diseases, and on improving wellbeing.

Human rights: We work to respect the human rights of all people along our value chain. There's growing interest in the rigour of our systems, our due diligence and performance in our own business and our supply chain. Please see our Annual report on implementing the Voluntary Principles on Security and Human Rights and our Slavery and human trafficking statement for detailed information.

Non-managed operations: It is important that we continue to work with our partners to create positive performance outcomes.

Operational environment performance: Preventing and minimising impacts from our operations on surrounding environments and communities is essential to our licence to operate. Our management controls and programmes must help manage inherent risks.

Safety: Safety is our number one priority and a core value to our business. Its importance is fundamental and non-negotiable.

Tailings and structures: The mining and metals industry produces large volumes of tailings (mining residues) that need to be permanently and safely stored. We need to be transparent about the controls we have in place and our performance in managing them.

Value chain: Our business performance depends on our supply chain and the responsible, innovative and reliable supply of products to our core customers. Interest in and expectations of our value chain are increasing.

Water: Water is a valuable global resource and is crucial to our operations and communities alike.

Our stakeholders

Our stakeholders are vital to our success. What we learn from them helps us to create value for everyone. We consider any person or organisation with an interest in our activities a Rio Tinto stakeholder. This includes people potentially affected by our activities and those who influence our business decisions.

We work with customers, suppliers, investors, governments, civil society and workers' organisations and local communities to understand stakeholders' concerns, stay competitive, manage the unique risk profiles of our businesses and secure access to new sources of essential materials. These engagements and partnerships affect every stage of our value chain and mining life cycle.

We expect our people to engage ethically, honestly and constructively with all our stakeholders, wherever they are in the world.

Stakeholder	Areas of interest	Mode of engagement	Frequency
Employees	<ul style="list-style-type: none"> – A safe and healthy work environment – Inclusion and diversity – Wages, benefits and recognition – Workplace conditions and agreements – Career development – Strategic direction of the business – Governance and business integrity practices – Environment practices and standards 	<ul style="list-style-type: none"> – The way we work, policies and standards – Collective bargaining/contract negotiations – Conversations between leaders, managers and employees – Performance feedback process, employee engagement surveys – Employee communication channels (Rio Tinto Yammer, intranet), town hall meetings – Rio Tinto College training and development programmes – Company-wide community of practice calls 	Daily, weekly, monthly, quarterly, half annually and annually; based on the mode of engagement
Host communities	<ul style="list-style-type: none"> – Agreements, Indigenous people's rights, land access, cultural heritage – Employment and procurement opportunities – Community investment and infrastructure – Transparent distribution of direct and indirect contributions 	<ul style="list-style-type: none"> – The way we work, policies and standards, publications, communities and social performance guidance – Community forums, committees, meetings, personal communications – Participation in social and environmental assessments, socio-economic programmes, site visits, surveys – Partner-to-operate investments – Negotiated agreements – Complaints and grievance mechanisms, whistleblowing programme 	Programme-based and regular
Suppliers and contractors	<ul style="list-style-type: none"> – Our management of suppliers and contractors – Employment and procurement opportunities – Financial and operating performance – Responsible sourcing 	<ul style="list-style-type: none"> – Supplier Code of Conduct, Know Your Supplier procedure – Contract negotiations – Contractor safety programmes, participation in continuous improvement and safety initiatives – Local content agreements – Meetings and personal communications 	As and when required
Customers	<ul style="list-style-type: none"> – Product reliability, quality and regulation – Pricing and contracts – Logistics – Environment and resource stewardship – Responsible sourcing – Research and development 	<ul style="list-style-type: none"> – Site visits, meetings and personal communications – Know Your Customer procedure – Contract negotiations – Questionnaires and assessments linked to collective initiatives, certification schemes 	Continuous contact/visits

APPENDIX 1

Our stakeholders continued

Stakeholder	Areas of interest	Mode of engagement	Frequency
Governments and regulators	<ul style="list-style-type: none"> – Taxes and royalties – Employment and procurement opportunities – Contribution to national and regional development priorities – Government regulations, permits, licences and agreements – Regulatory and legal compliance – Legislation and policy development – Closure 	<ul style="list-style-type: none"> – Yearly, half yearly and quarterly reports and disclosures – Regular meetings and communications – Regulatory filings, responses to requests for information – Participation in legislation and policy development – Submissions to government enquiries – Business conformance audits – Tours of operations and site visits – Community and social performance initiatives 	Regularly
Shareholders, investors and analysts	<ul style="list-style-type: none"> – Financial and operating performance – Reserves and resources – Mergers, acquisitions and divestments – Safety, health, environmental and community performance disclosures – Governance, business integrity practices and human rights performance – Climate change, political risk, closure and non-managed operations 	<ul style="list-style-type: none"> – Yearly, half yearly and quarterly reports, sustainability reports, market announcements, investor seminars, annual general meetings, site tours, road shows – Regular meetings and communications – Participation in sustainability and ethical indices surveys, disclosure questionnaires and benchmarking – Investor seminars on special interest topics 	Quarterly/ annually/as and when required
Non-government organisations, special interest groups and civil society	<ul style="list-style-type: none"> – Safety, health and environmental performance – Human rights including the rights of Indigenous peoples – Employee and community relations and development – Responsible sourcing – Business integrity practices and transparency – Research and development – Partnership and investment opportunities 	<ul style="list-style-type: none"> – Yearly, half yearly and quarterly reports, sustainability reports – Regular meetings and communications – Participation in multi-stakeholder initiatives, forums, conferences, working groups – Partnerships and memberships 	As and when required
Peers and industry associations	<ul style="list-style-type: none"> – Environment and resource stewardship, closure – Technology and innovation – Sharing lessons, opportunities and best practice – Policy trends, positions and development – Industry reputation and legacy 	<ul style="list-style-type: none"> – Actively participating as members of global, national and regional organisations and industry associations and their initiatives – Regular meetings and communications – Participation in industry forums, conferences, working groups 	Yearly/ as and when required
Media	<ul style="list-style-type: none"> – Transparent disclosure and information sharing 	<ul style="list-style-type: none"> – Press releases on financial and operating performance, mergers, acquisitions and divestments – Meetings and interviews 	As and when required

Voluntary commitments, external benchmarking and accreditation

We take part in a number of global, national and regional organisations and initiatives to inform our sustainability standards, management approaches and improve our performance. There are also external organisations and initiatives which assess and recognise our performance; and we participate in industry accreditation programmes for some of our products. These external stakeholders include:



International Council on Mining & Metals (ICMM)

As a corporate member, we commit to implementing and reporting on ICMM's 10 Principles for Sustainable Development. These cover corporate governance, environmental stewardship and community engagement. Our chief executive is a member of the ICMM Council, and we participate actively in various working groups.



United Nations Global Compact (UNGC)

As a signatory to the UNGC since 2000, we commit to the Ten Principles around the core values of human rights, labour standards, environmental practice and anti-corruption.

We report our implementation of these principles in our annual Communication on Progress. We're actively involved in the UNGC Local Networks and participate in advisory groups in places such as the UK and Australia.



Voluntary Principles on Security and Human Rights (VPSHR)

The VPSHR guide extractives companies on how to maintain the safety and security of their operations in line with respect for human rights. Participants, including governments, companies and non-government organisations, agree to proactively implement or support the implementation of the VPSHR. We published our [VPSHR report](#) for the first time in 2018 (previously only provided to other participants) and have committed to doing this each year.



OECD Guidelines for Multinational Enterprises

The OECD Guidelines for Multinational Enterprises are recommendations by governments to multinational enterprises operating in or from adhering countries. They include non-binding principles and standards for responsible business conduct in a global context consistent with applicable laws and internationally recognised standards. These guidelines are the only multilaterally agreed and comprehensive code of responsible business conduct that governments have committed to promoting.

Universal Declaration of Human Rights (UDHR)* and the UN Guiding Principles on Business and Human Rights (UNGPs)*

The UDHR is a milestone document in the history of human rights which sets out, for the first time, fundamental human rights to be respected. We respect and support all internationally recognised human rights consistent with the UDHR. The UNGPs are a global reference point for preventing and addressing the risk of adverse impacts on human rights linked to business. Our human rights approach is consistent with the UNGPs.



Extractive Industries Transparency Initiative (EITI)

We are a founding member of the EITI and have played an active role in this global standard since 2003. The EITI promotes open and accountable management of natural resources to make sure our activities benefit the many, not the few. We're transparent about the taxes and royalties we pay – publishing an annual *Taxes paid* report since 2010.

Global Reporting Initiative (GRI)*

GRI is an international independent organisation with an international framework and standards for sustainability reporting. We prepare our Group-level sustainable development report in line with the GRI Sustainability Reporting Standards (Core option) and the GRI Mining and Metals Sector Supplement.

Voluntary commitments, external benchmarking and accreditation continued



United Nations' Sustainable Development Goals (SDGs)

The SDGs are a set of 17 goals and 169 targets endorsed by the UN in 2015. These present a broad sustainability agenda focused on the need to end poverty, fight inequality and injustice and respond to climate change by 2030. In 2016, our chief executive signed a public statement of support for the SDGs. These SDGs give us an important framework to show how our work with communities and other stakeholders produces tangible, long-term benefits for people. We have identified eight SDGs where we feel we can maximise our impact around the world.



Dow Jones Sustainability Indices (DJSI)

The Dow Jones Sustainability World Index is a global sustainability benchmark offered by RobecoSAM and S&P Dow Jones Indices. As a benchmark for investors, it tracks the stock performance of the world's leading companies in terms of economic, environmental and social criteria. Rio Tinto has been in the DJSI series since 2002. Our 2018 result meant we maintained our position in the Metals & Mining Sustainability Leaders Group and were included in RobecoSAM's 2018 Sustainability Yearbook.



FTSE4Good

FTSE4Good Index

The FTSE4Good Index Series measures the performance of companies demonstrating strong environmental, social and governance (ESG) practices. FTSE4Good indexes are used by a wide variety of market participants when creating or assessing sustainable investment products. We have been a constituent member of the FTSE4Good Index since becoming eligible for assessment in 2007. For 2018, our ESG rating absolute score was 4.3/5.



Carbon Disclosure Project (CDP)

The Carbon Disclosure Leadership Index is compiled by CDP, an independent, non-profit organisation that encourages companies worldwide to measure, manage and reduce their greenhouse gas emissions. We have participated in the annual questionnaire since 2010.



Corporate Human Rights Benchmark (CHRB)

The CHRB ranks 101 of the world's largest publicly traded companies in the extractives, apparel and agricultural sectors on their human rights policies and performance by conducting an open-source evidence-based assessment. Rio Tinto ranked second in the 2018 CHRB and came top of the extractives companies included in the assessment.



Responsible Jewellery Council (RJC)

The RJC is an international non-profit organisation that promotes transparent and responsible ethical, human rights, social and environmental practices throughout the jewellery industry – from mine to retail. We are a founding member and were the first mining company to be certified in 2012. We were re-certified in 2015 against the RJC Code of Practice Standard. RJC certification covers operations or activities of our businesses that produce diamonds, gold or gold in concentrates that contribute to the jewellery supply chain. This includes our diamond mines – Diavik in Canada and Argyle in Western Australia – and our Kennecott copper mine in Utah for gold. Rio Tinto Kennecott also renewed its Chain of Custody certificate for gold in 2017.



London Bullion Market Association (LBMA)

The LBMA has renewed Rio Tinto Kennecott's responsible gold certificate, which guarantees that the precious metal produced from Kennecott's refinery can be sold and traded globally. The certificate is one of the requirements for a gold refinery to get on the LBMA's Good Delivery List, universally acknowledged as the international standard for quality and responsible production. Many precious metal exchanges will accept gold bars only from refineries who appear on the list.

Voluntary commitments, external benchmarking and accreditation continued



World Diamond Council

The World Diamond Council (WDC) is an industry organisation focused on preventing conflict diamonds from entering the global supply chain. The WDC is the voice of the international diamond industry in a tripartite collaboration with governments and civil society known as the Kimberley Process (KP). The KP secures and manages monitoring processes that have virtually eliminated the trade in conflict diamonds.



Aluminium Stewardship Initiative (ASI)

The ASI aims to create sustainability and transparency throughout the aluminium industry. It has developed the world's first global Responsible Aluminium Standard, used to assess environmental, social and governance practices across the aluminium supply chain for responsible sourcing. We were the first company in the world to receive certification under the Aluminium Stewardship Initiative (ASI). This is the highest internationally recognised standard for robust environmental, social and governance practices across the life cycle of aluminium production, use and recycling.



Proteus Partners

The Proteus Partnership was formed in 2003 as a collaborative effort between leading extractive companies and the UN Environment World Conservation Monitoring Centre (UNEP-WCMC) to improve accessibility to biodiversity data for better decision making and support the further development of global biodiversity resources. As a Proteus Partner, Rio Tinto has access to the UN Environment UNEP-WCMC online biodiversity assessment tool, which allows us to scan for potential sensitive areas in areas where we are seeking tenure before major investments are made.

* Logos were not available for inclusion in this report.

Global Reporting Initiative index

We have applied the reporting principles of GRI 101: Foundation 2016 standard in this report.

General disclosures

Disclosure number	Disclosure title	Location or explanation
102-1	Name of the organisation	Annual report
102-2	Activities, brands, products and services	Annual report – Strategic report (pages 10-15), Production, reserves and operations (pages 268-270)
102-3	Location of headquarters	Annual report – Shareholder information (page 292)
102-4	Location of operations	Annual report – Production, reserves and operations (pages 282-287)
102-5	Ownership and legal form	Annual report – Shareholder information (pages 292-298)
102-6	Markets served	Annual report – Strategic report (pages 4-73)
102-7	Scale of the organisation	Annual report – Strategic report (pages 18-19) Overview – (pages 1-7)
102-8	Information on employees and other workers	2018 Performance data (pages 66-67)
102-9	Supply chain	A responsible value chain (page 61)
102-10	Significant changes to the organization and its supply chain	Annual report – 2018 Milestones (page 1) Annual report – Chairman’s statement (pages 6-7)
102-11	Precautionary principle or approach	Appendix 1 – Voluntary commitments, external benchmarking and accreditation (United Nations Global Compact) (page 75)
102-12	External initiatives	Appendix 1 – Our stakeholders (pages 73-74); Voluntary commitments, external benchmarking and accreditation (pages 75-77)
102-13	Membership of associations	Appendix 1 – Voluntary commitments, external benchmarking and accreditation (pages 75-77)
102-14	Statement from the most senior decision-maker	Chief Executive’s message (page 1) Interview with the Sustainability Committee chair (pages 48-51)
102-15	Key impacts, risks and opportunities	Annual report – Strategic report (pages 64-73); Appendix 1 – Reporting what matters (pages 71-72)
102-16	Value, principles, standards and norms of behaviour	The way we work Overview (pages 1-7)
102-18	Governance structure	Annual report – Directors’ report (pages 76-100)
102-19	Delegating authority	Annual report – Directors’ report (pages 76-100)
102-20	Executive-level responsibility for economic, environmental, and social topics	Interview with the Sustainability Committee chair (pages 48-51)
102-21	Consulting stakeholders on economic, environmental, and social topics	Appendix 1 – Our stakeholders (pages 73-74); Voluntary commitments, external benchmarking and accreditation (pages 75-77)
102-22	Composition of the highest governance body and its committees	Annual report – Directors’ report (pages 76-100)
102-23	Chair of the highest governance body	Annual report – Directors’ report (pages 76-77)
102-24	Nominating and selecting the highest governance body	Annual report – Directors’ report (pages 76-100)
102-25	Conflicts of interest	Annual report – Directors’ report (pages 76-100)
102-26	Role of highest governance body in setting purpose, values, and strategy	Annual report – Directors’ report (pages 76-100)
102-27	Collective knowledge of highest governance body	Annual report – Directors’ report (pages 76-100)
102-28	Evaluating the highest governance body’s performance	Annual report – Directors’ report (pages 86-88)
102-29	Identifying and managing economic, environmental, and social impacts	Annual report – Strategic report (pages 64-73); Appendix 1 – Reporting what matters (pages 71-72)

APPENDIX 1

Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
102-30	Effectiveness of risk management processes	Annual report – Key performance indicators (pages 20-23) Annual report – Strategic report (pages 64-73); Appendix 1 – Reporting what matters (pages 71-72)
102-31	Review of economic, environmental, and social topics	Annual report – Strategic report (pages 64-73); Appendix 1 – Reporting what matters (pages 71-72)
102-32	Highest governance body's role in sustainability reporting	Annual report – Directors' report (page 95) Interview with the Sustainability Committee chair (pages 48-51)
102-33	Communicating critical concerns	Annual report – Strategic report (pages 64-73); Appendix 1 – Reporting what matters (pages 71-72)
102-35	Remuneration policies	Annual report – Directors' report (pages 101-141)
102-36	Process for determining remuneration	Annual report – Directors' report (pages 101-141)
102-37	Stakeholders' involvement in remuneration	Annual report – Directors' report (pages 101-141)
102-40	List of stakeholder groups	Appendix 1 – Our stakeholders (pages 73-74)
102-41	Collective bargaining agreements	Rio Tinto's Human rights guidance is applicable at all sites and covers freedom of association in relation to union membership. Approximately 45% of employees are covered by collective bargaining agreements.
102-42	Stakeholder identification and selection	Appendix 1 – Our stakeholders (pages 73-74)
102-43	Approach to stakeholder engagement	Appendix 1 – Our stakeholders (pages 73-74) ICMM principle 10
102-44	Stakeholder topics and concerns	Appendix 1 – Our stakeholders (pages 73-74)
102-45	Entities in consolidated financial statements	Annual report – Financial statements (pages 144-265)
102-46	Defining report content and topic boundaries	Annual report – Sustainable development (pages 52-63) Appendix 1 – Reporting what matters (pages 71-72)
102-47	List of material topics	Annual report – Sustainable development (pages 52-63) Appendix 1 – Reporting what matters (pages 71-72)
102-48	Restatements of information	Stated accordingly
102-49	Changes in reporting	No significant changes have been made from previous reporting period
102-50	Reporting period	1 January 2018 to 31 December 2018
102-51	Date of most recent report	12 March, 2018
102-52	Reporting cycle	Annual
102-53	Contact for questions regarding the report	Contact us at sustainability@riotinto.com
102-54	Claims of reporting in accordance with GRI Standards	This report has been prepared in accordance with the GRI Standards: Core option
102-55	GRI content index	Global Reporting Initiative index (page 78-88)
102-56	External assurance	Annual report – Independent Limited Assurance Report (pages 290-291)

Management approach to disclosures

Wherever possible our approach is to minimise any negative impacts associated with our activities on people, communities and the environment, and seek opportunities to share the wealth and benefits our business creates.

An overview of the process used to determine our material topics together with the underlying reason why they have been deemed material for our business is provided in the “Reporting what matters” section on page 71. Further detail, including our approach to managing the underlying issues associated with these topics, is discussed in the relevant pages referenced within this section. Information on our current activities, including performance against targets, is detailed throughout this report, the GRI table and the 2018 Annual report.

More specific information, including publicly available copies of the relevant information, can be found online at www.riotinto.com where indicated for each GRI aspect below.

Material topics

Disclosure number	Disclosure title	Location or explanation
Economic performance		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Economic contributions (pages 71-72)
103-2	Management approach on economic performance	Collaborating to enable long-term economic benefits (pages 34-45) Annual Report – Sustainable development (pages 52-63)
103-3	Evaluation of the management approach	2018 performance against targets (page 35)
201-1	Direct economic value generated and distributed	Collaborating to enable long-term economic benefits (pages 34-45) Economic development (page 45) ICMM principle 9
201-2	Financial implications and other risks and opportunities of climate change	Climate change: Risks but also opportunities (pages 54-59) ICMM principle 6
201-3	Defined benefit plan obligations and other retirement plans	Annual report – Directors’ report (pages 101-112) Annual report – Financial statements (page 160)
201-4	Financial assistance received from government	No significant financial assistance has been received from governments during 2018.
Market presence		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72) Pay Equity
103-2	Management approach on economic performance	Annual Report – Remuneration Committee responsibilities (page 113), Fair Pay (page 102)
103-3	Evaluation of the management approach	Pay Equity (page 26)
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	All Rio Tinto operations comply with local laws and regulations. We ensure our entry level wages are equal to minimum wages of the local regulations. Pay Equity (page 26)
202-2	Proportion of senior management hired from the local community	Gender diversity (page 26), 2018 Performance data (page 66)

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Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
Indirect economic impacts		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Economic contributions & Communities (pages 71-72)
103-2	Management approach on economic performance	Collaborating to enable long-term economic benefits (pages 34-45)
103-3	Evaluation of the management approach	2018 performance against targets (page 35), Regional economic development (page 45)
203-1	Infrastructure investments and services supported	Refining our approach to community investments (page 40), Regional economic development (page 45) ICMM principle 9
203-2	Significant indirect economic impacts	Collaborating to enable long-term economic benefits (pages 34-45)
Procurement practices		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Value chain (pages 71-72)
103-2	Management approach on economic performance	Collaborating to enable long-term economic benefits (pages 34-45)
103-3	Evaluation of the management approach	2018 performance against targets (page 35), Regional economic development (page 45)
204-1	Proportion of spending on local suppliers	Sourcing locally (page 41), Regional economic development (page 45)
Anti-Corruption		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Business integrity (pages 71-72), Ethics and Integrity (pages 28-33)
103-2	The management approach and its components	Annual report – Audit Committee report (pages 90-94) Ethics and Integrity (pages 28-33) ICMM principle 1
103-3	Evaluation of the management approach	Ethics and Integrity (page 31)
205-2	Communication and training about anti-corruption policies and procedures	Annual report – Ethics and Integrity (page 58), Act ethically and responsibly (page 99) The way we work Antitrust standard Business Integrity Standard
205-3	Confirmed incidents of corruption and actions taken	Annual report – Ethics and Integrity (page 58)
Energy		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Climate change (pages 71-72)
103-2	Management approach on energy	Managing our own footprint (page 57) ICMM principle 6 Climate Change Position Statement Our approach to climate change
103-3	Evaluation of the management approach	Building resilience to physical impacts (page 58)
302-1	Energy consumption within the organization	Climate change: risks but also opportunities (pages 57-59) 2018 Performance data (pages 68-69)

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Disclosure number	Disclosure title	Location or explanation
Water		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Water (pages 71-72) Water (page 18)
103-2	Management approach on water	Water (page 18) Our approach to environmental management ICMM principle 6
103-3	Evaluation of the management approach	2018 performance against targets (page 11)
303-1	Water withdrawal by source	Water (pages 18-19) 2018 Performance data (pages 68-69)
303-2	Water sources significantly affected by withdrawal of water	Water (page 18)
303-3	Water recycled and reused	Water used and recycled (page 18)
Biodiversity		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Biodiversity (pages 71-72)
103-2	Management approach on biodiversity	Biodiversity (page 21) Biodiversity ICMM principles 2,7
103-3	Evaluation of the management approach	2018 Performance data (page 68)
304-3	Habitats protected or restored	Biodiversity (page 21) Future Reef 2.0 – a clever collaboration The bee man of Kern County, California
MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitated	2018 Performance data (page 68) In 2018, 24% of Rio Tinto's disturbed land (excluding land disturbed for hydroelectricity dams) had been rehabilitated.
Emissions		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Climate change (pages 71-72) Our approach to climate change
103-2	Management approach on emissions	Our approach to climate change Climate change: Risks but also opportunities (page 54) ICMM principle 6
103-3	Evaluation of the management approach	2018 performance against targets (page 11)
305-1	Direct (Scope 1) GHG emissions	Climate change: Risks but also opportunities (page 58) 2018 Performance data (pages 68-69)
305-2	Energy indirect (Scope 2) GHG emissions	Climate change: Risks but also opportunities (page 58) 2018 Performance data (pages 68-69)
305-3	Other indirect (Scope 3) GHG emissions	Climate change: Risks but also opportunities (page 58)
305-4	GHG emissions intensity	Climate change: Risks but also opportunities (page 58) 2018 Performance data (page 68)
305-7	Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions	Air (page 21) 2018 Performance data (page 68)

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Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
Effluents and waste		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Operational environment (pages 71-72) Waste (page 20)
103-2	Management approach on tailings and structures and waste	Waste (page 20) Tailings and structures (page 20) ICMM principle 7
103-3	Evaluation of the management approach	2018 Waste performance data (page 22)
306-1	Water discharge by quality and destination	Water balance diagram (page 19)
306-2	Waste by type and disposal method	Waste (page 22) 2018 Performance data (page 68) ICMM principle 6
MM3	Overburden, rock, tailings and sludges and their associated risks	Tailings and structures (page 20) Waste (page 22) 2018 Performance data (page 68) Our approach to managing mineral waste and acid rock drainage ICMM principle 7
Environmental compliance		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Operational environment (pages 71-72)
103-2	Management approach on Environmental compliance	Annual report – Environmental regulations (page 140)
103-3	Evaluation of the management approach	2018 Performance data (page 68)
307-1	Non-compliance with environmental laws and regulations	Environmental fines (page 22) Annual report – Environmental regulations (page 140) 2018 Performance data (page 68) ICMM principle 6
Supplier environmental assessment		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Value chain (pages 71-72)
103-2	Management approach on Supplier Environmental Assessment	Supplier Code of Conduct
103-3	Evaluation of the management approach	Committed to transparency (page 32)
308-1	New suppliers that were screened using environmental criteria	Committed to transparency (page 32)
Employment		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72)
103-2	Management approach on employment	Our values at work (pages 25-27) Employment policy Inclusion and diversity policy Why gender matters
103-3	Evaluation of the management approach	2018 Performance data (pages 66-67)
401-1	New employee hires and employee turnover	2018 Performance data (page 67)
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Annual report – Remuneration report (pages 101-112)
401-3	Parental leave	Gender diversity (page 26)

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Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
Labor/management relations		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72)
103-2	Management approach on employment	Our values at work (pages 25-27) Employment policy Inclusion and diversity policy Why gender matters
402-1	Minimum notice periods regarding operational changes	We provide the minimum notice periods required by local legislation in the regions where we operate. It is typically two to four weeks and up to three months' notice. In cases where employees are represented by labour unions, notice periods are provided by local legislation or in collective bargaining agreements. ICMM principle 3
MM4	Strikes and lock-outs exceeding one week's duration	A strike at our iron ore operations in Labrador, Canada lasted for 2 months from 27 March 2018 to 28 May 2018. Annual report – Directors' report (page 115)
Occupational health and safety		
403-1	Occupational health and safety management system	Rio Tinto management system ICMM principle 5
403-2	Hazard identification, risk assessment, and incident investigation	Rio Tinto management system Our approach to safety
403-3	Occupational health services	Rio Tinto management system Our approach to health management
403-5	Worker training on occupational health and safety	Rio Tinto management system Delivering safety and wellbeing (pages 13-16)
403-6	Promotion of worker health	Our approach to health management
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Product stewardship strategy H06 Radiation exposure control standard
403-8	Workers covered by an occupational health and safety management system	Rio Tinto management system
403-9	Work-related injuries	Delivering safety and wellbeing (pages 13-16) 2018 performance against targets (page 11) 2018 Performance data (pages 66-67)
403-10	Work-related ill health	Delivering safety and wellbeing (pages 13-16) 2018 performance against targets (page 11) 2018 Performance data (page 66)
Training and education		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72)
103-2	Management approach to training and education	Our values at work (pages 25-27) ICMM principle 3, 5
103-3	Evaluation of the management approach	2018 Performance data (page 67)

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Disclosure number	Disclosure title	Location or explanation
404-2	Programs for upgrading employee skills and transition assistance programme	A workforce that reflects our world (page 38) Regional economic development (page 43) Developing future skills (page 60) During 2018, 488,423 attendances were recorded for training in leadership, technical and operational skills, as well as health, safety and environment courses across the business.
404-3	Percentage of employees receiving regular performance and career development reviews	2018 Performance data (page 67)
Diversity and equal opportunity		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72)
103-2	Management approach on diversity and equal opportunity	The way we work Employment Policy Inclusion and diversity policy Why gender matters
103-3	Evaluation of the management approach	2018 performance against targets (page 11) Gender diversity & Pay Equity (page 26)
405-1	Diversity of governance bodies and employees	Annual report – Directors’ report (pages 76-80) 2018 Performance data (pages 66-67)
405-2	Ratio of basic salary and remuneration of women to men	Annual report – Directors’ report (page 102) Pay Equity (page 26)
Freedom of association and collective bargaining		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Employee relations (pages 71-72)
103-2	Management approach on Freedom of association and collective bargaining	The way we work
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	We recognise the right of all employees to choose to belong to a union and seek to bargain collectively. During 2018, we successfully negotiated: <ul style="list-style-type: none"> – Official Collective Labour Agreement (CLA) at our Alma Smelter in Quebec – Collective Bargain Agreements at Iron Ore Company of Canada, Escondida (non-managed), Richards Bay Minerals in South Africa and Oyu Tolgoi in Mongolia The way we work Supplier Code of Conduct
Child, forced or compulsory labour		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Human rights (pages 71-72)
103-2	Management approach on Freedom of association and collective bargaining	The way we work Our values at work (page 25)
103-3	Evaluation of the management approach	No child, forced or compulsory labour in our operations
408-1	Operations and suppliers at significant risk for incidents of child labor	Annual report – Sustainable development (page 26)
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Annual report – Sustainable development (page 26)

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Disclosure number	Disclosure title	Location or explanation
Security practices		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Human rights (pages 71-72)
103-2	Management approach on security practices	The way we work VPSHR report Our values at work – Human rights (page 27)
103-3	Evaluation of the management approach	Our values at work – Human rights (page 27)
410-1	Security personnel trained in human rights policies or procedures	Our values at work – Human rights (page 27) ICMM principle 3
Indigenous rights		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Human rights & communities (pages 71-72)
103-2	Management approach on security practices	The way we work Why agreements matter Working with shared purpose (pages 36-41)
103-3	Evaluation of the management approach	CSP grievance mechanism
411-1	Incidents of violations involving rights of Indigenous peoples	Rio Tinto business units have mechanisms in place for managing complaints, disputes and grievances. These efforts are supported by Group-level detailed guidance, which is consistent with the requirements set out in the UNGPs. Where an Indigenous agreement is in place, all such agreements have detailed requirements for the management of complaints and disputes, including external facilitation, if required. We have also made changes to our incident reporting procedures so that employees will be asked if a health, safety, environment, communities or security incident had human rights implications. This includes specific prompts relating to Land Access and Religion and Culture which include reference to various rights of Indigenous peoples. This should enable us to better capture any incidents of violations relating to these rights. In 2018 we reported 10 significant community incidents through our CSP complaints and incidents management system, none of which related to cultural heritage impacts of Indigenous communities. Our approach to communities and social performance Human rights policy Why human rights matter Why agreements matter ICMM principle 3
MM5	Operations taking place in or adjacent to Indigenous peoples' territories, and number and percentage of operations or sites where there are formal agreements with Indigenous peoples' communities	Indigenous peoples are impacted by 20 Rio Tinto business units (excluding exploration and evaluation projects). Of these, 13 business units have reached agreements with the affected Indigenous peoples. As a number of business units have more than one agreement, there are a total of 30 Indigenous agreements in place across Rio Tinto. Working with shared purpose – Communities (page 37) ICMM principle 3, 10

APPENDIX 1

Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
Human rights assessments		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Human rights (pages 71-72)
103-2	Management approach on Human rights assessments	Our values at work – Human rights (page 27) Human rights policy Why human rights matter Annual slavery and human trafficking statement United Nations Global Compact: Communication on Progress
103-3	Evaluation of the management approach	Our values at work – Human rights (page 27)
412-2	Employee training on human rights policies or procedures	Our values at work – Human rights (page 27)
Local communities		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Communities (pages 71-72)
103-2	Management approach on communities	Working with shared purpose (pages 35-37) Our approach to communities and social performance ICMM principle 9, 10
103-3	Evaluation of the management approach	2018 performance against targets (page 11)
413-1	Operations with local community engagement, impact assessments, and development programmes	Working with shared purpose (pages 34-41) 2018 performance against targets (page 11)
MM6	Significant disputes relating to land use, customary rights of local communities and Indigenous peoples	During 2018, two significant disputes in respect of land, resources use and communities formally moved to monitoring status following the signing of a joint resolution agreement in 2017. Engagement is ongoing as agreed joint actions are tracked and monitored.
MM7	Grievance mechanisms used to resolve disputes relating to land use, customary rights of local communities and Indigenous peoples	All of our sites must have a complaints, disputes and grievance mechanism in line with the UNGPs Criteria of Effectiveness for Non-Judicial Grievance Mechanisms. Working with shared purpose – Communities (page 37)
Supplier social assessment		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Value chain (pages 71-72)
103-2	Management approach on Supplier social assessment	Supplier Code of Conduct
103-3	Evaluation of the management approach	Committed to transparency (page 32)
414-1	New suppliers that were screened using social criteria	Committed to transparency (pages 30-32)
Public policy		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Business integrity (pages 71-72)
103-2	Management approach on Public policy	The way we work
103-3	Evaluation of the management approach	Annual report – Directors’ report (page 140)
415-1	Political contributions	The Group made no political donations (as defined by the UK Companies Act 2006) in the EU, Australia or elsewhere during 2018. Annual report – Directors’ report (page 140)

APPENDIX 1

Global Reporting Initiative index continued

Disclosure number	Disclosure title	Location or explanation
Socio-economic compliance		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Operational environment (pages 71-72)
103-2	Management approach on Socio-economic compliance	The way we work
103-3	Evaluation of the management approach	Annual report – Directors’ report (pages 97-100)
419-1	Non-compliance with laws and regulations in the social and economic area	Annual report – Directors’ report (pages 97-100) ICMM principle 4
Artisanal and small-scale mining		
MM8	Number (and percentage) of company operating sites where artisanal and small-scale mining takes place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks	Nil
Resettlement		
MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process	There were no new resettlement sites in 2018. We are currently monitoring the outcomes from the resettlement of communities at our Oyu Tolgoi operations and resettling community members at our Richards Bay operation. Communities (page 37) ICMM principle 3, 10
Closure planning		
103-1	Explanation of the material topic and Boundary	Appendix 1 – Reporting what matters: Closure (pages 71-72)
103-2	Management approach on closure	Closure: ending production (page 62) ICMM principle 6, 9
103-3	Evaluation of the management approach	Closure: ending production (page 62)
MM10	Number and percentage of operations with closure plans	Closure: ending production (page 62)
Other material topics		
103-2	Management approach on non-managed operations	Annual report – Sustainable development (page 57) Working with non-managed assets (page 23)
103-2	Management approach on Business resilience	Annual report – Strategic report (pages 4-73)

Basis of reporting glossary

Term	Definition
All injuries	All injuries refers to the combination of lost time injuries and medical treatment cases.
Biodiversity	Biodiversity is the variety of life on Earth – the different animals, plants and micro-organisms, their genes and the ecosystems in which they live.
Brownfield exploration	Brownfield exploration is directed at sustaining or growing our existing businesses. With processing infrastructure already in place, the cost of developing brownfield orebodies is usually lower than in a greenfield setting.
Contractor	Contractor is a person or organisation providing services to an employer at the employer's workplace in line with agreed specifications, terms and conditions. In the context of our Rio Tinto's health, safety and environmental standards, we classify contractors in three categories: <ul style="list-style-type: none"> – Category 1: Individuals working on temporary contracts within existing operations – Category 2: Companies or individuals hired for a discrete project which will be carried out in a designated area separate from existing operations – Category 3: Companies or individuals contracted to carry out specific tasks or provide specified services within existing operations.
Direct economic contribution	Direct economic contribution is the total value of all sales made to third parties during the year.
Emission (air) incident	Emission (air) incident refers to an environmental incident in which material and/or energy is released in an uncontrolled way into the atmosphere, or to emissions that are not compliant with agreed licences, including dust, noise, vibration and blasting incidents.
Employee	Employee is a person in full or part-time employment at a Rio Tinto business and listed on the payroll.
Energy use	Energy use includes energy associated with the combustion of fuels, as well as energy from electricity and other sources such as steam and hydropower. Energy use for anodes and reductants is evaluated from a carbon balance used to evaluate the resultant carbon dioxide emissions. Under our reporting guidelines, any operation not expected to consume 40,000 gigajoules (GJ) of energy in any year over the next three years can be excluded from our data collection processes. Reporting trivial quantities of fuels and emissions may result in a significant workload, so operations can omit or estimate individual emission or energy sources from their inventories subject to these rules: <ul style="list-style-type: none"> – For non-Australian operations: individual sources that can be excluded should be less than 10,000 GJ. The total of these excluded sources should be less than 5% of the operation's complete inventory. – For Australian operations: the National Greenhouse and Energy Reporting (NGER) Act 2007 requires all sources to be included, but some incidental sources can be estimated. An incidental source is any source that is less than 30,000 GJ of the facility's energy use or energy produced. The total of these incidental sources must be less than 120,000 GJ. – Energy conversion factors must be consistent with Australian National Greenhouse and Energy Reporting Measurement Determination 2008. For non-Australian operations, we use default factors from the Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA), unless there is a more suitable factor available from local suppliers or government.
Environment	Environment means the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and the interrelation of all of these.
Fatal injury or occupational illness	Fatal injury or occupational illness means when one or more people die as a result of a work-related injury or occupational illness occurring during their employment. Lost and restricted days are not calculated for fatalities.

BASIS OF REPORTING GLOSSARY

Term	Definition
Freshwater withdrawn	<p>Freshwater withdrawn includes:</p> <ul style="list-style-type: none"> – imported surface water (water provided by a third party for our use) – on-site impounded water used in process applications – imported and on-site groundwater – freshwater withdrawn for use as cooling water that’s chemically, physically or biologically modified at the final point of discharge and/or returned to the environment with a temperature change of more than five degrees. <p>Freshwater withdrawn does not include:</p> <ul style="list-style-type: none"> – poor quality water – overflow of water in heavy rain conditions from impoundments which has not had its quality significantly changed by inputs and seepage – water diverted to avoid contamination, but not subsequently withdrawn or intercepted for use – water withdrawn and directly supplied to others, such as for use in agricultural or pastoral properties, for export to third parties or for town use – freshwater withdrawn and used for hydropower generation.
Freshwater withdrawn and not used	Freshwater withdrawn and not used includes on-site groundwater extracted for ground control (dewatering) and discharged without being used.
Freshwater withdrawn and used	<p>Freshwater withdrawn and used includes:</p> <ul style="list-style-type: none"> – imported surface water (water provided by a third party for our use) – on-site impounded water used in process applications – imported groundwater – on-site groundwater, except that extracted for ground control (dewatering) and discharged without use – freshwater withdrawn for use as cooling water that’s chemically, physically or biologically modified at the final point of discharge and/or returned to the environment with a temperature change of more than 5°C.
Frequency rates	<p>Frequency rates measure performance for each of the metrics of injury or illness, for example:</p> <ul style="list-style-type: none"> – All injury frequency rate (AIFR) = number of all injuries x 200,000/hours of exposure – Lost time injury frequency rate (LTIFR) = number of lost time injuries x 200,000/hours of exposure – Rate of new cases of occupational illness (NCOI) = number of all new cases of occupational illnesses x 10,000/number of employees (based on average monthly statistics) <p>We use AIFR to assess performance against our goal of zero safety injuries and zero safety fatalities for all employees and all categories of contractors.</p> <p>We evaluate our health target (rate of new cases of occupational illness) using employee data only, as relevant. While we record diagnosed occupational illnesses for contractors, we don’t use this data when evaluating performance against our health targets. Developing operations and acquisitions after 31 December in the previous reporting year are also excluded when assessing performance against these targets. Divested and closed operations are removed from the baseline when assessing performance against these targets.</p>
Freshwater	Freshwater refers to drinkable or good-quality water with total dissolved solids less than 1,500 milligrams per litre, pH 5-9, and individual dissolved constituents (metals, anions) at concentrations suitable for agricultural, livestock or irrigation use based on local, regional or national guidelines.
Greenfield	Greenfield exploration aims to establish completely new operating business units, involving geographic or commodity diversification away from our existing operations.

BASIS OF REPORTING GLOSSARY

Term	Definition
Greenhouse gas emissions	<p>Greenhouse gas emissions are the six groups of gases we report against as included in the Kyoto Protocol: carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorinated carbon compounds and sulphur hexafluoride.</p> <p>Under our reporting guidelines, individual operations not expected to exceed 3,000 tonnes of carbon dioxide equivalent (t-CO₂-e) emissions in any year over the next three years can be excluded from our data collection processes. Reporting trivial quantities of fuels and emissions can result in a significant workload.</p> <p>Operations can omit or estimate individual emission sources from their inventories subject to these rules:</p> <ul style="list-style-type: none"> – For non-Australian operations: individual sources that can be excluded should be less than 1,000 tCO₂-e. The total of these excluded sources should be less than 5% of the operation's complete inventory. – For Australian operations: the Australian National Greenhouse and Energy Reporting Act 2007 requires all sources to be included, but some incidental sources can be estimated. An incidental source is any source less than 3,000 tCO₂-e of scope 1 emissions and less than 3,000 tCO₂-e of scope 2 emissions for the facility. The total of these incidental sources must be less than 12,000 tCO₂-e of scope 1 emissions and less than 12,000 tCO₂-e of scope 2 emissions for the facility. The global warming potential (GWP) emission factors for all greenhouse gases are consistent with the IPCC Fourth Assessment Report (AR4 – 100 year).
GRI	<p>GRI is the Global Reporting Initiative, an independent organisation with an international framework and standards for sustainability reporting on an organisation's economic, environmental and social performance. The GRI Standards include mandatory requirements for disclosure. An organisation preparing a report in accordance with the GRI Standards can choose one of two options (Core or Comprehensive), depending on the degree to which the GRI Standards have been applied.</p>
HIV/AIDS	<p>HIV/AIDS refers to a disease of the human immune system (acquired immune deficiency syndrome, or AIDS) caused by the human immunodeficiency virus (HIV).</p>
Hours of exposure	<p>Hours of exposure is the total number of actual hours worked by employees and contractors at a facility where one or more employees/contractors are working or are present as a condition of their employment and are carrying out activities related to their employment duties.</p> <ul style="list-style-type: none"> – For employees: this can be calculated either as "planned time + overtime - all absences" or actual time (collected by gate pass or timesheet systems) or through reasonable estimates made by a Rio Tinto supervisor. – For contractors: hours worked are either provided by the vendor or through reasonable estimates made by a Rio Tinto supervisor. These hours are recorded by month, vendor, work area and organisation unit to reflect the total time spent by contractors on our sites.
Incident	<p>Incident is a single event or continuous/repetitive series of events that results in, or could have resulted in, one or more of the following:</p> <ul style="list-style-type: none"> – an occupational injury or illness – damage to physical assets (plants or equipment), the environment, process, product or reputation – disruption to a community – exposure to legal liability – a security threat <p>We evaluate an incident both by its actual consequence and the maximum reasonable outcome for each of these potential impacts.</p>
Injury	<p>Injury refers to any injury such as a cut, fracture, sprain or amputation resulting from a work-related event during a single shift. All occupational injuries are reported as safety incidents with safety impact. All occupational injuries must be recorded for employees and contractors regardless of contractor category.</p>
Key products	<p>Key products are products from which major business revenue is obtained (>10% of revenue per product). This includes major products sold by businesses from which >10% net revenue is gained and waste or by-products bringing major revenue. Examples of key products include iron lump, iron fines, copper cathode, gold, borates, uranium oxide, steel powder and molybdenum oxide.</p>
Life cycle assessment	<p>Life cycle assessment is a technical analytical procedure that involves collating the environmental inputs and outputs related to a production process (life cycle inventory), followed by a scientific assessment of the potential environmental impacts of a product (life cycle impact assessment). Described by ISO 14040 series.</p>

BASIS OF REPORTING GLOSSARY

Term	Definition
Lost day injury (LDI) or occupational illness	Lost day injury (LDI) or occupational illness is an injury or occupational illness that results in one or more days/shifts away from work, excluding the day of the incident. The number of lost or restricted calendar days and shifts reported for lost day injuries/illness must be counted until the person is cleared by a medical practitioner and either returns in a full-time unrestricted capacity to their pre-injury/illness role or (in the case of a recordable work injury) is permanently moved to another role.
Lost time injury or occupational illness	Lost time injury or occupational illness is the total of fatal, lost day and restricted work day injuries or illnesses.
Land footprint	Land footprint is land that has been disturbed for mining, processing and related activities including infrastructure (whether currently disturbed or rehabilitated), as at 31 December of the current reporting period.
Local water performance targets	<p>Local water performance targets are targets set by managed operations with water risk and approved by the operation's managing director or general manager. These local targets reflect specific operational circumstances and aim to improve site-specific water performance under three areas: water supply, ecological impacts and water surplus management. We established overall targets for the 2014-18 period and also annual water target trajectories to assess yearly performance. Changes to targets and/or internal water target trajectories used for water target performance tracking can be considered in the circumstances described below. Local water performance targets can be changed to make sure they stay relevant within the context of the local water risk and to drive performance in managing water risk.</p> <p>A change is one that alters the level of performance necessary to meet a local water performance target or internal water target trajectory. We consider changes to local targets or trajectories only when there's a substantial change in production, conformance/compliance, reputation, community or environment circumstances that was not planned at the start of the target period and that makes the current target inappropriate for an operation. Each change must be approved by the product group chief executive and the head of Environment and Legacy Management before being used.</p> <p>An administrative change is one that adjusts the way a local target or trajectory is worded or premised without changing the level of performance necessary to meet the target or trajectory. These are only considered when needed to add clarity to the target or to correct the calculation of baseline or trajectory. An administrative change to a target and/or trajectory must be approved by the head of Environment and Legacy Management.</p>
Managed operation	<p>Managed operation is an operation where:</p> <ul style="list-style-type: none"> – Rio Tinto wholly owns the operation – A management agreement is in place naming Rio Tinto as the manager, or – Rio Tinto management systems and processes are fully implemented
Managed operations with water risk	<p>We initially identified managed operations with water risks for the 2014-2018 performance target period based on a 2011 Group-wide water risk assessment. This risk assessment assigned managed operations a priority ranking from 1 to 4 based on a number of objective criteria. Priority 1 operations were ones needing urgent actions to focus on critical water risks, and priority 2 operations were ones needing to focus on high water risk. All managed operations assessed as priority 1 or priority 2 were defined as having a water risk unless, at the start of the target performance period on 1 January 2014:</p> <ul style="list-style-type: none"> – the operation was a project that had not reached operation stage – the operation had been sold – the operation was included within an active divestment or closure process – the operation had not been managed by Rio Tinto for at least three years. <p>Managed operations initially categorised as priority 1 or priority 2 that had, to the satisfaction of Rio Tinto Group Environment, sufficiently reduced the water risk exposure that led to this categorisation before the start of the target performance period were excluded from managed operations with water risks.</p>
Materiality	<p>Materiality is the threshold at which an issue or topic becomes important enough to be reported. Not all material topics are of equal importance, and the emphasis should reflect the relative priority of material topics and indicators.</p>

BASIS OF REPORTING GLOSSARY

Term	Definition
Medical treatment case injury or occupational illness	<p>Medical treatment case injury or occupational illness is a work-related injury or occupational illness not classified as lost time resulting in loss of consciousness or medical treatment other than first aid.</p> <p>Medical treatment includes, but is not limited to:</p> <ul style="list-style-type: none"> – Administering prescription medication – Using wound closing devices such as sutures, staples, or wound adhesives (glue). Where glue is used to protect a wound (not requiring sutures) as a precaution against infection in wet environments and in place of an adhesive dressing, this can be considered first aid treatment if supported in writing by a doctor or registered nurse. – Using devices with rigid stays or other systems designed to immobilise parts of the body – Using eye patches (except as a precautionary measure, and not extending into the next shift) <p>Medical treatment does not include:</p> <ul style="list-style-type: none"> – Visits to a physician or other licensed health care professional solely for observation or counselling, or diagnostic procedures, such as x-rays, blood tests and the administration of prescription medications solely for diagnostic purposes (eye drops to dilate pupils) or as a single dose administered on first visit for a minor injury or discomfort. – Injuries where the original or first treating doctor used sutures but is prepared to document that this was not necessary to treat the injury. This might happen, for instance, if steri-strips or butterfly bandages were not available.
Mineral waste	<p>Mineral waste includes waste rock, tailings and slag.</p> <ul style="list-style-type: none"> – Waste rock is composed of soils or bedrock that are removed to uncover or access ore during mining. – Tailings is the ground-up rock mixed with process water remaining after the minerals of economic interest have been removed from the ore. – Slag is generated by smelting operations and is the glassy material that remains after metals, such as copper, have been removed from the ore concentrate. <p>Mineral waste is typically produced in very large volumes, and its handling and storage can directly impact the land. Mineral waste is usually permanently stored on site where it's used as in pit backfill or held in engineered repositories. Most mineral waste is inert, but some is chemically reactive and must be appropriately handled to protect people, wildlife and water quality.</p>
Musculo-skeletal illness	<p>Musculo-skeletal illness is a condition of the musculo-skeletal system associated with repetitive work-related trauma and/or exposure over time, lasting more than one shift (see also occupational illness).</p> <p>A case is reportable where a medical practitioner diagnoses musculo-skeletal disease which meets defined diagnostic criteria, is due to repeated workplace exposure (other than vibration) and results in medical treatment, restricted work days, lost days or permanent damage. This includes recurring musculo-skeletal conditions counted as a new case and reported only if the medical practitioner thinks the worker had fully recovered from the previous condition. This can include repetitive strain injuries, also known as occupational overuse syndrome.</p>
New case/recurrence	<p>New case/recurrence is an injury or illness classed as new because the employee hasn't previously experienced an injury or illness of the same type, or when the employee has completely recovered from the previous case and a new incident has caused the condition to reappear. If not then additional time lost is linked back to the original injury or illness and is considered a recurrence of the original injury or illness.</p>

BASIS OF REPORTING GLOSSARY

Term	Definition
Noise-induced hearing loss (NIHL)	<p>Noise-induced hearing loss (NIHL) is hearing loss related noise exposure as assessed by an occupational physician, an audiologist or other equivalent qualified professional. Audiometric tests must be pure tone, air conduction, hearing threshold examinations, including the test frequencies 0.5, 1, 2, 3, 4, 6 kHz and 8 kHz as a minimum. A loss without recovery plus a history of noise exposure should also be regarded as NIHL.</p> <p>For cases meeting the above criteria, the following are considered to determine whether or not a case of NIHL meets our reporting criteria:</p> <ol style="list-style-type: none"> 1. Has the person been occupationally exposed to noise (eg > 85 dB(A) TWA)? 2. Have they also sustained a standard threshold shift (see definition)? 3. Is there also non-age corrected average hearing loss over 2, 3 and 4 KHz of the audiogram, in one or both ears, of more than or equal to 25 dB as compared with audiometric zero? <p>If the case meets these criteria it should be recorded as a Permanent Damage Operational Illness (PDOI). If the hearing loss is due to age factors alone, this is not work related and should be excluded. Hearing loss due to a one-time high exposure is considered an injury. This excludes category 2 and 3 contractors.</p>
Non-mineral waste	<p>Non-mineral waste is primarily composed of the auxiliary materials that support our mining and mineral processing operations. This includes familiar materials such as used oil, tyres, old batteries and office waste, as well as more specialised waste such as spent pot liners from aluminium smelters. Non-mineral waste is produced in much smaller volumes than mineral waste, and is most commonly managed through recycling, off-site treatment and disposal, or placement in on-site engineered landfills.</p>
Occupational illness	<p>Occupational illness is an illness or disease, as distinct from an injury. One event cannot be both. An illness or disease results from a workplace-related exposure of more than one shift, such as noise-induced hearing loss (NIHL) or carpal tunnel syndrome. A person can only be diagnosed once with the same occupational illness or disease, unless they have completely recovered from the original case. All occupational illnesses are reported as health incidents with health impact.</p>
Occupied building	<p>Occupied building refers to a building, whether permanent or temporary (portable), that's intended to be occupied. This is typically a building where at least two people do a significant portion of their work or where people may gather, even for a short time (such as crib rooms). Buildings that employees visit infrequently to do brief tasks or monitor a process are not typically defined as occupied buildings.</p>
On-site greenhouse gas emissions	<p>On-site greenhouse gas emissions refers to scope 1 greenhouse gas emissions, such as direct greenhouse gas emissions owned or controlled by Rio Tinto. They include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock.</p>
Operational land holdings	<p>Operational land holdings are split into two categories:</p> <ol style="list-style-type: none"> 1. Land disturbed for mining, processing and related activities, including rehabilitated land. This is known as our operational footprint. 2. Land outside our operational footprint area, which may be used in the future for mining, processing and related activities, as well as other land uses. This is known as our land holding balance.
Permanent damage injury or illness	<p>Permanent damage injury or illness refers to more than 30% body impairment, as per the American Medical Association Guidelines (5th edition), likely to last one year or more.</p>
Plague	<p>Plague is an infectious disease caused by the bacteria <i>Yersinia pestis</i>, usually found in small mammals and their fleas. It is transmitted between animals through fleas. Humans can be infected through:</p> <ul style="list-style-type: none"> – The bite of infected fleas – Unprotected contact with infectious bodily fluids or contaminated materials – The inhalation of respiratory droplets/small particles from a patient with pneumonic plague.

BASIS OF REPORTING GLOSSARY

Term	Definition
Process safety incidents with a major or catastrophic consequence	<p>Process safety incidents with a major or catastrophic consequence are process safety incidents involving actual or potential unplanned or uncontrolled loss of primary containment of hazardous process material or process energy that could result in:</p> <ul style="list-style-type: none"> – Chemical and physical explosions – Fires involving process material – Loss of containment of toxic, asphyxiant, corrosive, reactive, hot materials in bulk – Engulfment or physical impact from failure of bulk storage and process tankage <p>These types of incident resulting in a single fatality or severe permanent impairment to a person (>30%), such as loss of hand or lower limb (at knee), paraplegia or multiple fatalities or severe permanent impairment to multiple people (<5 people) are seen as process safety incidents with a major or catastrophic consequence respectively.</p>
Process	Process means the activities associated with the process of mining or refining. These include mining, milling, slurring, washing ore, suppressing dust, treating wastewater/sewerage, generating power, operating ancillary services (such as camp, canteen, offices), irrigating rehabilitated land and wash down.
Restricted work day injury or occupational illness	Restricted work day injury or occupational illness occurs when the employee, because of the job-related injury/illness, is physically or mentally unable to perform all or any part of his or her normal assignment during all or any part of the normal workday or shift, after which the injury/illness occurs.
Rio Tinto management system	Rio Tinto management system supports standardisation of corporate and business health, safety, environment and communities management processes. The system is designed on the principles of leadership and planning, management of risk through operational control and continuous improvement through performance review as is the intent of common international standards such as ISO14001:2004, ISO9001:2001.
Scope 1 greenhouse gas (GHG) emissions	<p>Scope 1 greenhouse gas (GHG) emissions are direct greenhouse gas emissions owned or controlled by Rio Tinto. They include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock (on-site emissions). This is one of the three scopes of greenhouse gas emissions for reporting purposes defined by the World Resource Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol: A Carbon Reporting and Accounting Standard, March 2004.</p> <p>Scope 1 emission factors are consistent with the Australian National Greenhouse and Energy Reporting Measurement Determination 2008 and for non-Australian operations from the IPCC Guidelines for National Greenhouse Gas Inventories (2006). Scope 1 emissions are presented for managed operations.</p>
Scope 2 greenhouse gas (GHG) emissions	Scope 2 greenhouse gas (GHG) emissions are greenhouse gas emissions from the electricity, heat or steam brought in from third parties (indirect emissions). Scope 2 emission factors are consistent with the Australian National Greenhouse and Energy Reporting Measurement Determination 2008. For non-Australian operations, where possible, factors sourced from electricity retailers are used. Scope 2 emissions are presented for managed operations.
Scope 3 greenhouse gas (GHG) emissions	Scope 3 greenhouse gas (GHG) emissions are other indirect greenhouse gas emissions. Scope 3 emission factors are derived from life cycle analysis and various research studies which have systematically assessed scope 3 emissions and their materiality to Rio Tinto. Based on this assessment, scope 3 emissions deemed to be material at Group level are reported as part of our disclosures in the Annual report, sustainable development report and our submission to CDP. All other sources are immaterial to the Group inventory.
Senior management	Senior management are general managers, Group advisers and chief advisers, as well as employees in business units or in functional leadership roles who are direct reports of Executive Committee members.
Significant environmental incident	Significant environmental incident is an incident with an actual consequence rating of major or catastrophic. We measure and rate incidents according to their actual environmental and compliance impacts using five severity categories: minor, medium, serious, major, or catastrophic. Major and catastrophic environmental incidents are usually reported to the relevant product group head and Rio Tinto chief executive as soon as possible.

BASIS OF REPORTING GLOSSARY

Term	Definition
Sustainable development	Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. (<i>Our Common Future, Report of the World Commission on Environment and Development, World Commission on Environment and Development, 1987. Published as Annex to General Assembly document A/42/427, Development and International Co-operation: Environment August 2, 1987. Available at: www.undocuments.net/wced-ocf.htm</i>)
Tier 1 resources	Tier 1 resources are low-cost, expandable resources that are profitable at all phases of the natural price cycle and bring a sustainable competitive advantage.
Total greenhouse gas (GHG) emissions	Total greenhouse gas (GHG) emissions are scope 1 emissions plus Scope 2 emissions minus emissions associated with electricity and steam exported to others minus net carbon credits voluntarily purchased from, or sold to, recognised sources.
Total greenhouse gas emissions (GHG) intensity index	<p>Total greenhouse gas emissions (GHG) intensity index is a measure of the change in emissions per unit of product compared with a baseline intensity, evaluated for each of our commodities. Commodities are products sold to the market from operations of comparable scope. Examples include mined bauxite, smelter grade alumina refined from bauxite, primary aluminium smelted from alumina, copper concentrate from mine to concentrator, and copper cathode from mine to refinery.</p> <p>Our total greenhouse gas emissions intensity target is evaluated as the percentage difference between actual total greenhouse gas emissions in the target year and the equivalent emissions expected from the target year production at the baseline year emissions intensity for each commodity.</p> <p>Any business or operation, such as Rio Tinto Exploration, that does not produce a saleable product is excluded from the target assessment. Developing operations are included in the assessment once production exceeds 60% of nameplate production in a reporting year. We index our performance relative to 2008 as a baseline year.</p>
Use-of-force (UOF)	Use-of-force (UOF) refers to the lawful and proportional amount of force (effort) required by authorised security personnel to make an unwilling suspect or person comply to achieve a legitimate security objective. It involves the use of various means and techniques of force that are applied starting with the least to the most force. The UOF is governed by country laws and is usually authorised in a progressive series of actions, referred to as a “use of force continuum”, that make provision for the use of a lesser, non-lethal and graduated force options.
Value add	Value add refers to the value that a business adds to the materials and services it has bought. It is equivalent to the sum of all labour payments, payables to governments, returns on capital invested in operations – including interest payments, profits paid out to shareholders, and money held in the business for future investment and to replace depreciated assets – and non-government payments. This figure includes the community contribution total for the calendar year.
Water risk	Water risk is one with the potential to have a high or critical impact on a managed operation with consequences on production, conformance/compliance, reputation, community or environment. Water risks require proactive management by the specific managed operation.
Wellbeing/wellness programme	Wellbeing/wellness programme is a proactive, preventive approach to help people change their lifestyle to move toward a state of optimal health: a balance of physical, emotional, social, spiritual, and intellectual health. It’s an active process of enhancing awareness and skills, changing behaviour and values, and creating an environment that supports good health practices and increases people’s abilities to enjoy a balanced and fulfilling life.

We have prepared this report in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards (Core option), the GRI Mining and Metals Sector Supplement and the International Council on Mining & Metals Sustainable Development Framework.

An independent external assurance organisation, PricewaterhouseCoopers LLP, provided our board with assurance on selected sustainable development subjects, as explained in the independent limited assurance report available in our Annual report.

The scope we use to define how we report data at Group level is on page 66 and the definitions of the subjects are in the Basis of reporting glossary in the appendix.

We welcome thoughts, comments and questions about this report – please email sustainability@riotinto.com to share yours.



Image: Rehabilitation superintendent, Richards Bay Minerals, South Africa

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