



RioTinto

Partnering for progress

2016 Sustainable development report

riotinto.com/sd2016

About this report



Image: Iron Ore operations, Cape Lambert, Pilbara, Western Australia

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This Sustainable development report forms part of Rio Tinto's 2016 corporate reporting suite. It offers a fuller account of our contributions to sustainable development to that in the *2016 Annual report*. In this report there is expanded commentary and additional data about our performance during 2016.

This report has been prepared in accordance with the [Global Reporting Initiative \(GRI\) G4 Sustainability Reporting Guidelines](#) and the [International Council on Mining & Metals \(ICMM\) Sustainable Development Framework](#).

We engaged an independent external assurance organisation, PricewaterhouseCoopers, to provide the directors of Rio Tinto with assurance on selected sustainable development subject matter, as explained in the independent limited assurance report available [online](#).

The rules we use to define how we report data at the Group level can be found on page 17 and the definitions of the subject matter selected for assurance can be found in our Glossary.

We welcome your [feedback](#) on this report.

Overview



Image: Boron Operations, California, US

Chief executive's message



Image: Jean-Sébastien Jacques, chief executive

Dear stakeholders,

Let me begin by describing what our contribution to sustainable development means to me, and for Rio Tinto as a whole.

Put simply, it is what enables us to run our operations, while maintaining the right connections with our many stakeholders. The contribution we make also gives us the ability to look to the long term, and be able to plan and run what will be our future operations. It helps us secure new deposits and then to convert those deposits into new mines, and other facilities, that drive value for our business and our stakeholders.

It's about engagement and partnership, it's about safety, it's about the environment, it's about community, and it's about profitability.

Our contribution in action

As I look around the Group, and visit our operations, there are many great examples of our contribution to sustainable development in action, from our oldest to our newest sites. Let me tell you about just a few of them.

I'll start with one of our longest-running assets. Rio Tinto Kennecott operates our large copper and gold mine in Salt Lake City, in the US. This mine has been running for more than 100 years and has generated great value not only for shareholders, but also for the community. Throughout the mine's history, no other single private sector operation has generated more production, exports, income and employment for as many years in Utah.

2016 marked 50 years since our first shipment of iron ore from the Pilbara in Western Australia to Japan. Over the past half century, we have invested more than US\$37 billion to grow our operations in the region. We are employing thousands of people; we have developed local procurement; we have created new communities and contributed to development of the region.

And in terms of a more recently established operation, there is Oyu Tolgoi in Mongolia, our newest mine. This copper and gold operation is expected to make a significant contribution to Mongolia's development and the prosperity of its people over its lifetime. Between 2010 and 2016, we spent US\$6.1 billion

in the country in the form of salaries, payments to Mongolian suppliers, taxes and other payments to the Government.

Our safety culture

Safety is our priority number one. Rio Tinto has been in existence for more than 140 years and our ambition is very clear. We want to create an environment which is fatality-free, and where everyone goes home safely after every day and every shift.

But we are not there yet. We still have fatalities every year and tragically in 2016 we had a fatality at our Pilbara operations. We are working hard to eliminate fatalities from our business. Our safety culture is strong within Rio Tinto. Wherever I go, I can tell you that safety is shared as a core value by our employees and contractors, across all the operations, and all the geographies where we work.

Our latest initiative is called critical risk management, or CRM, and we believe that it will be a game changer in creating a fatality-free environment. CRM is about making sure that every one of our colleagues, before they start a new task, fully understands what the risks are and takes the right actions to make sure that they are protected.

I believe CRM will make a difference. We started to implement it across the business in 2015, and by the end of 2016 it had been rolled out across more than 60 operational sites. In October we reached an important milestone when we recorded our one millionth CRM verification, helping make sure that all our colleagues, every day, come home safely.

In 2016 there were six fatalities at operations not managed by us. The way we engage with our non-managed joint ventures is very important. We work closely with the operators of those joint ventures to make sure they have access to all the best practices we have within Rio Tinto. And we work in partnership with them, sharing our knowledge and learning from them as well.

Working in partnership to find solutions

Partnership is make or break for our industry and for Rio Tinto. We have only one licence to operate and therefore we have to make sure we have the right relationship and the right level of trust between ourselves, our communities, our governments, our employees and suppliers, wherever we work. This allows us to manage risk in the short term, in relation to our existing operations, and gives us the ability to secure new deposits in the medium and the long term.

Partnerships help us and our industry work through the challenges we face. After the Samarco tailings disaster, for example, we further strengthened our controls to prevent such a tragedy from happening at one of our operations. Firstly we checked the integrity of all our tailings facilities across the Group. Secondly, we critically reviewed our tailings standard to make sure that it is up to date and world class. And last but not least we worked very closely with our peer companies through the International Council on Mining & Metals to make sure that we have a common platform and a common way forward in relation to tailings, across the industry.

Climate change is one of the longer-term challenges we face as an industry, and we are taking a number of steps to respond. We're improving our carbon footprint with a clear focus on energy efficiency. We're building a series of carbon pricing scenarios to inform our decisions, including around capital expenditure. And following a shareholder resolution at our AGM in 2016, we have developed [a specific report in relation to climate change](#), where the resilience of our business case is explained.



As I look around the Group, and visit our operations, there are many great examples of our contribution to sustainable development in action, from our oldest to our newest sites.”

Our people

Wherever I go, I try to spend as much time as I can at our sites. I meet people who are passionate and proud of working for Rio Tinto. It's a very capable and professional workforce. The culture is strong, the set of values is absolutely the same everywhere you go, and safety is priority number one.

Not only are our people proud to work for Rio Tinto, but they're also proud to supply the critical metals and minerals that are required by modern society. That's what Rio Tinto is about.

Diversity and inclusion are absolutely essential for Rio Tinto's future. Included amongst the many aspects of diversity, it's about gender, it's about nationality and it's about the so-called millennials. But not only is diversity important, it's about inclusion. It's ensuring you make the most of this broad group of people in order to find solutions to complicated problems.

Let me make the link between diversity and partnerships. We need to find a way to develop people from the local communities where we operate in order to make sure that we secure a sustainable licence to operate in those regions. That's one reason why diversity and inclusion are so important for us.

Another reason why these issues are so important is in relation to productivity. I truly believe that by having diverse points of view you build better solutions, and I'll give you one very simple example. Today, the most diverse operation we have in the Group is Oyu Tolgoi, where more than 93 per cent of our colleagues are Mongolian nationals and just over a quarter are women. Today Oyu Tolgoi is one of our safest operations, it is the most productive in terms of utilisation of our mining equipment, and it has the most engaged employee workforce.

I am proud to be leading a global team of people who are committed to making a difference, in their local communities, and for our modern society. I encourage you to explore our *2016 Sustainable development report* and find out more about the contribution our people and our products are making.

Jean-Sébastien Jacques

Chief executive

Message from the chair of the Sustainability Committee



Image: Megan Clark AC, chair of the Rio Tinto Sustainability Committee

Dear stakeholders,

As a company, we are committed to operating our business responsibly, with respect for the safety and health of our people, our communities and the risks and responsibilities associated with the local and global environment. For example, at the local level we manage issues such as water supply, and balance the requirements of our operations with the needs of our local communities. And like many other organisations, we face broader, global issues such as the transition to low carbon energy systems and climate change.

The Sustainability Committee reviews and advises on the effectiveness of the company's policies, programmes and practices with respect to safety, security, health, communities, environment and sustainability. We have oversight of the key sustainability risks and uncertainties, and make sure that we are being transparent with our stakeholders on the areas we are responsible for as a Committee (see sidebar page 07).

The Committee completes in-depth reviews of key risks and exposures on a rotating basis. This year our reviews included water and tailings management, process safety and underground safety. We also review the broader global issues of climate change, energy, water and biodiversity as we play our part in the global response to these issues.

In 2016, tragically we had a fatality at our Pilbara operations. Our thoughts are with the family, friends and colleagues who lost a loved one. I believe that as an industry and as a company we can eliminate fatalities, and as a Committee we are committed to supporting Rio Tinto's management in achieving that goal.

On hand and on site

My fellow Committee members, Anne Lauvergeon, Simon Thompson and Michael L'Estrange bring a depth of experience in the operational and technical aspects of mining and heavy industry, and in the broader issues of sustainability. We meet as a Committee at least four times a year and visit our sites. We take site visits seriously and when we are out on site, we have a hands-on role in verifying the operations' sustainability performance and in providing advice and encouragement to the local teams.

The Committee recently visited the Oyu Tolgoi copper-gold mine in Mongolia. With its open pit and its underground development, and its location in the Gobi desert where water is a precious resource, it's an operation that illustrates some of the risks and opportunities that we face as a company. We spent time reviewing our geotechnical practices, and learning about the vital cultural value of water to the local herder community and how our teams are improving water supply. We saw first-hand how safety verifications are carried out with operators at the frontline as part of our critical risk management programme.

Local efforts, global difference

Within Rio Tinto there are many thousands of women and men working hard every day to produce the metals and minerals that are essential for human progress. I have seen first-hand the positive difference they are making, both at the global level, and in their local communities.

I also see the deep understanding this business has of the operational risks our people face, and as a Sustainability Committee we provide our support to management in mitigating those risks. And finally, we have a responsibility to be an agent of positive change, helping our industry to eliminate fatalities, and demonstrating leadership with the standards we set.



Megan Clark AC

Chair of the Rio Tinto Sustainability Committee



I believe that as an industry and as a company we can eliminate fatalities, and as a Committee we are committed to supporting Rio Tinto's management in achieving that goal."

About Rio Tinto's Sustainability Committee

Rio Tinto's Sustainability Committee oversees, on behalf of the board, the management processes, standards and strategies that are designed to manage health, safety, security, environment, community and social performance risks, and achieve compliance with the Group's responsibilities and commitments in these areas. The Committee ensures our approach is consistent with Rio Tinto's vision and values.

Among its areas of focus, the Committee:

- Monitors the commitment management makes to the behaviours, systems and processes required by the policies and standards within its scope.
- Ensures local and global sustainability-related risks are appropriately captured and considered in Rio Tinto's risk profile.
- Reviews sustainability targets annually and the metrics used to evaluate them.
- Reviews the Group's performance against those targets.

In 2016, its members were:

- Megan Clark AC, chair
- Anne Lauvergeon
- Michael L'Estrange AO
- Simon Thompson

Our business

Rio Tinto is a leading international mining group, combining 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 called the Rio Tinto Group.

Our interests are diverse both in geography and product. Most of our assets are in Australia and North America. We also operate in Europe, Asia and Africa. Our businesses include open pit and underground mines, mills, refineries and smelters as well as exploration, technology and service facilities.

Rio Tinto's products help fulfil vital consumer needs and improve living standards. We operate and close our operations safely, responsibly and sustainably. We take a long-term approach to our business. This means developing first-class orebodies into large, long-life and efficient operations and developing and applying new technology at our mines, refineries and smelters.

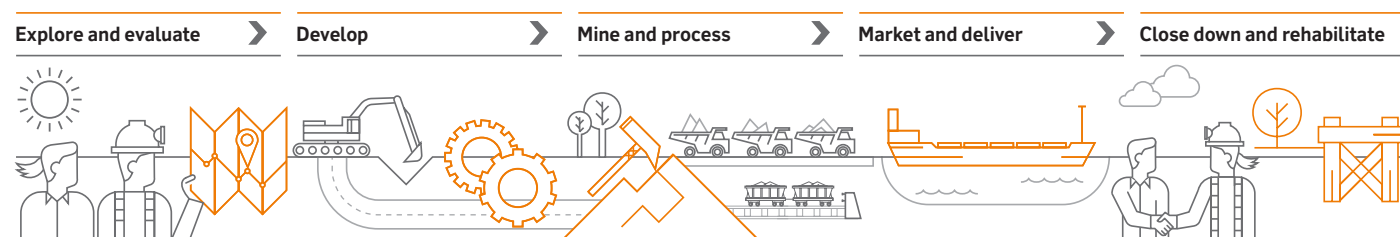
As a result, our operations are capable of sustaining competitive advantage through business cycles. We pursue opportunities for productivity improvements, cost reductions and prudent growth.

Our values of safety, teamwork, respect, integrity and excellence are expressed through our business principles, policies and standards. We set these out in our global code of business conduct, *The way we work*. Our values underpin the way we manage the economic, social and environmental effects of our operations, and how we govern our business.



Business life cycle

Rio Tinto's business life cycle extends through the exploration, development, operation and closure of our assets, how we market minerals and metals products, and the legacy we leave at the end of an asset's economic life. Coupled with our framework for managing risk, sustainable development considerations form part of every phase.



Explore and evaluate



We look for new opportunities around the world to develop orebodies in both greenfield and brownfield settings. Our in-house exploration teams and partners are often the first contact with people we may work alongside for many years – we explore respectfully and engage with local communities early.

Potential resources are evaluated to ensure the resource supports the Group's vision and investment decision-making, and the future product is positioned in the marketplace in ways that add value.

Develop



Rigorous assessments and review processes aim to ensure we only approve investments that offer attractive returns above our capital costs over the long term, whilst ensuring there are minimal negative impacts associated with our activities on people, communities and the environment.

We plan for the most efficient configuration for mining and processing of minerals and getting the products to market. We engage local communities and work with regulators and local suppliers to identify ways to deliver mutual benefits from the development of our operations and associated assets. Working closely with our customers during this phase helps to maximise the value of the deposit over its lifetime and ensures the products will meet their requirements.

Mine and process



Operating our assets safely and efficiently is essential to our business approach. Our global operating model allows us to apply standard processes and systems across the Group for business management, safety, health, communities, environment, human resources, finance, procurement, information technology, operations and maintenance areas. We aim to maximise the value of our assets, to increase production and reduce operating costs by extending equipment life and optimising ore extraction. This operating phase brings direct and indirect benefits to local economies through the payment of taxes and royalties, employment and procurement opportunities.

Market and deliver



Our business is based on the supply of high-quality products that meet our customers' needs. The minerals and metals we supply – mostly to industrial companies that process them further – are the main materials in infrastructure, transport, machinery, construction, energy and consumer items.

Rio Tinto's marketing teams work with our operations to align resource management with market needs, and to improve products and services to maximise value to customers. Our diverse portfolio also allows us to respond to customer demand throughout countries' economic development cycles and refine our investment decisions.

Close down and rehabilitate



Closure is part of every asset's life cycle. We start planning for the closure of our operations from the early development phases to minimise risk and optimise outcomes. Closure planning aims to minimise financial, social and environmental liabilities and costs by finding sustainable and beneficial future land uses. We identify post-closure options that take into account stakeholder concerns whilst fulfilling regulatory requirements. We progressively rehabilitate where it is possible to do so.

2016 at a glance



Image: Dampier Salt operations, Western Australia

**Metals & Mining
Sustainability Leaders
group**

2017 Dow Jones Sustainability Index

34%

decrease in our all injury frequency
rate* over last 5 years

*per 200,000 hours worked

US\$166m

spent on community programmes

25.9%

reduction in our greenhouse gas
emissions intensity since 2008

US\$35.1bn

direct economic contribution globally

**3 new
community agreements**

signed in Australia, Madagascar and the US

Message from the Group executive of HSE



Image: Joanne Farrell, Group executive, Health, Safety & Environment

Dear readers,

2016 was a good – but not a great – year for Rio Tinto in terms of our contribution to sustainable development. Until we are fatality free, we can never claim to have had a great year, and unfortunately, in June, we lost a colleague at our Paraburdoo operations in Western Australia.

Every fatality has an impact – on the family and friends of the person who has died, on the business and on the way we do things. We focus on what we can learn from a fatality, as well as on how we support everyone who is affected.

In June, when our colleague lost his life, our chief executive J-S and I were on planes to Paraburdoo almost immediately. We arrived to find a team devastated by losing a workmate. They were asking lots of questions – they were wanting to understand. We needed to find answers to those questions, and then turn those answers into ways to make the business safer, globally.

The aim of our fatality prevention programme, critical risk management (CRM), is to have every employee, before they begin every task, ask: “What could kill me today, while I am doing this task? What’s in place to stop that happening? And is what is in place working?”

These are the three fundamental questions of CRM and we need everyone at our sites to be asking them. When someone loses their life, people are impacted for days, weeks, months, years and decades afterwards, and we need to make sure that it does not happen again.

In 2016 we made some great progress in implementing CRM – and that work still needs to continue.

2016 progress

We did make good progress in other areas in 2016. Among these successes, our all injury frequency rate was the lowest in our company history for the second consecutive year. Our operations also made improvements towards meeting their local water performance targets.

We reduced our greenhouse gas emissions intensity, and developed a more substantive statement on our climate change risks and resilience. We also prepared our [first modern slavery statement](#), in compliance with the UK Modern Slavery Act, and both these reports are now available on our website.

We formed new agreements with local communities in Australia, Madagascar and the US – these can take a long time to complete, but they form the basis of a beneficial and trusting relationship with our neighbours. We also reviewed all the work we have done building partnerships over many years and produced a best practice guide called [Why agreements matter](#). It’s a public document, readily available for those who are also seeking to reach partnership agreements – so it’s enabling us to share the lessons that we have learned with others.

We’re making advances in areas of health, and in 2016 we progressed mental health awareness training and our controls on vector-borne diseases such as malaria.

Our employee engagement score was also lower than we would have liked. However, this has given us valuable data and insights so that we can improve our leadership, and increase engagement among our people.

You can find out more about our performance in 2016 in our [Annual report](#) and elsewhere in our *Sustainable development report*.

Focus for 2017

For 2017, we will be pushing hard so we can have our first fatality-free year. We continue to implement CRM, and our catastrophic risk work to prevent and contain disasters.

We have further partnership agreements to negotiate, and we'll further strengthen our focus on mental and occupational health.

We'll continue our work to achieve a truly inclusive culture and diverse workforce – working towards our inclusion and diversity vision and goals. We'll also be extending our training on human rights obligations, and working closer with our suppliers on human rights matters.

The challenges we face

Rio Tinto faces a number of challenges and opportunities. Many people see all mining companies as the same, so one challenge – but an opportunity too – is for us to set ourselves apart, and have a performance record that clearly distinguishes us from other mining companies. We need to show that we are focusing on the “critical few” – those things that will really make a difference in terms of human progress.

Like the rest of the industry, we face the challenge of closure – with a number of mines and plants expected to end their natural lives over the coming years. So we will be progressing our plans for responsible closure.

Society, and industry at large, faces the challenge of climate change – and the minerals and metals industry is one sector that needs to understand its contribution to both climate change cause and effect. We are studying how different climate change outcomes might impact our operations and the work we need to do to be resilient to those outcomes.

Our pioneering people

Our employees want to work for a company that's contributing to human progress. They're keen, as they produce the metals and minerals the world needs, to work on the right things, thinking about critical risks and working to the best of their ability – all in a responsible and sustainable way.

They're excited about how we use technology – and not just in the technical space, but that we're pioneers in other areas, such as commercial operations, how we partner with communities and the way we prevent fatalities. Other companies are seeking to use CRM, and our employees are proud that we're seen to be doing best practice in the industry.

An evolving company

I've been with Rio Tinto for almost 30 years, and a lot has happened in that time. Much has changed in terms of legislative and regulatory controls on our industry. Some things that were acceptable by law 30 years ago are no longer so. We've seen regulators respond to society's requests and we have responded to the challenge.

The company has changed over that period. One big change, which was announced in 2016, was the elevation of health, safety and environment to the Executive Committee. It was a very clear statement from the board and executive on the importance of health, safety and environment outcomes in the running of the company.

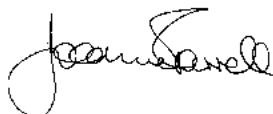
I welcome all of this change for the good.

The importance of good performance

We are proud of our contribution to sustainable development. We know we can do even better, and have plans to go there. We have the assurance processes to make sure that we are doing what we say we are.

Our performance is important for our continuing existence. Good performance allows regulators to grant us the permission and the licences to do the mining or the processing that we want to do. It gives local communities the confidence that we will be a good long-term neighbour, providing them with opportunities and managing our assets well.

Increasingly, we see investors and analysts wanting to know about our contribution to sustainable development. There is a very strong premise that if we are making a strong contribution, then we are managing the company correctly. Ultimately, good sustainability performance means we are in control of our processes, and that means good company performance.



Joanne Farrell

Group executive, Health, Safety & Environment

“

We are proud of our contribution to sustainable development. We know we can do even better, and have plans to go there.”

Metal for good

Working towards sustainable aluminium in the Saguenay



Can aluminium contribute towards a sustainable society? On the one hand, it's perfectly suited to the challenge. Aluminium is infinitely recyclable and long lasting. It helps manufacturers produce lighter vehicles, which use less energy, and its unique barrier properties help it to preserve food and medicines. The industry is also a major employer, at the heart of many communities.

On the other hand, producing aluminium from the Earth's minerals is a highly energy-intensive process. It takes 14-16,000 kWh of electricity to produce one tonne of aluminium from two tonnes of alumina. That's about one and a half times the average yearly electricity consumption of a household in the US. It's estimated that globally the production and use of the metal creates 11 tonnes of CO₂ emissions per tonne of aluminium¹.

Production can also have other environmental impacts – from atmospheric emissions to the land required for refining, smelting and hydropower. There are further challenges for this kind of large-scale industry too, in how it addresses socioeconomic and product stewardship issues.

However, these factors also present opportunities for the responsible producer. In the Saguenay region in Quebec, Canada, Rio Tinto's operations demonstrate how the company rises to the challenges of sustainable aluminium production. Our operations play an important role in the Saguenay region – contributing to a strong and vibrant economy while caring for the environment and producing a sought-after responsible product.

In all of these three areas we harness innovation, operate as proficiently as possible, and engage with our stakeholders to deliver mutual value.

The Saguenay region: Home of the grey metal

The Saguenay is a vibrant region located in the vast wilderness of northern Quebec, Canada.

Characterised by spruce-covered mountains and majestic rivers, lakes and fjords, the Saguenay is a major tourism hub. It's also home to diverse industries, including timber, agriculture, energy, and medical research.

The aluminium industry has been at the heart of the Saguenay region since World War II. Aluminium's light weight and durability made it a critical material in the construction of airplanes, and demand for the metal boomed during the war. It proved a turning point in the region's economy, driving the expansion and modernisation of factories, and the development of hydropower facilities which made the most of the region's vast waterways.

Today, "Aluminium Valley" – as the region is known – is one of the world's leading producers of the grey metal and Rio Tinto is the region's largest private employer.

The Saguenay is an important part of Rio Tinto's business too. More than half of the Group's annual aluminium output is produced here, and it's home to our industry-leading R&D facilities and partnerships.

Image: Employee at the extrusion laboratory of Arvida Research & Development Centre, Jonquière, Quebec, Canada

(1) Based on a life-cycle analysis approach, which takes into account the entire production process, electricity generation, and the product's use and end-of-life.

Metal for good

Saguenay at a glance

Port and rail facilities

Imported

4.9

million tonnes

of raw materials in 2015 (120 ships)

6 hydropower facilities

3,125

MW capacity

Vaudreuil alumina refinery

1.6

million tonnes

of alumina per year

R&D industry partnerships

– Quebec aluminium research chair, Université du Québec à Chicoutimi

– Aluminium research and development centre of Quebec (CQRDA)

– Aluminium Valley Society (SVA)

Aluminium smelters

Alma

471,000

tonnes per year

Arvida

176,000

tonnes per year

Arvida AP60 Technology Centre

60,000

tonnes per year

Grande-Baie

227,000

tonnes per year

Laterrière

247,000

tonnes per year

Petits Lingots Saguenay

5,000

tonnes per year

Dubuc

4,000

tonnes per year

Beauharnois

40,000

tonnes per year

Metal for good

Certified low carbon

One of the challenges facing any aluminium producer today is how to meet the rising customer demand for aluminium that is produced with the lowest possible environmental impact. In the Saguenay, the response starts with the energy needed to power the electricity-hungry smelters. The operation's hydropower facilities are part of a network of assets that take advantage of Quebec's climate and geography to ensure that 100 per cent of the electricity used in smelting comes from renewable sources.

However, even with a low-carbon energy source, aluminium production remains energy intensive. Saguenay is also home to a process that Rio Tinto has developed to further reduce its footprint. **AP Technology™**, which was developed at the Arvida R&D centre, makes it possible to use efficient, high-amperage smelting techniques with low energy consumption. Together with largely carbon-free energy, this has made it possible for Rio Tinto to launch the world's first low CO₂ aluminium. **RenewAl™** is certified to create no more than four tonnes of CO₂ per tonne of aluminium produced, nearly one-third the industry average.

Being able to trace raw materials from the mine to the end product offers additional reassurance to customers. For manufacturers, this means that aluminium can become part of a "responsible sourcing" strategy. Car manufacturers, for example, can use certified low-carbon aluminium to reduce the footprint of their supply chain, as well as improving vehicle fuel economy.

We've also played a leading role in the global industry's product stewardship initiatives. Rio Tinto was a founding member of the **Aluminium Stewardship Initiative** (ASI), a global certification programme for the responsible production, sourcing and stewardship of aluminium. We were also an active participant in creating the ASI Performance Standard, which in 2014 set out governance, environmental and social standards for aluminium production.



Image: Shipshaw power plant, Quebec, Canada

C\$85m

spent on
Lac-Saint-Jean
environmental
projects

Perfect 5

achieved
"Perfect 5" Green
Alliance score for
port operations

9

electric vehicle
charging stations
to date

RenewAl™: lighter, lower

20%

reduction in
life-cycle CO₂
emissions from
vehicles with high
aluminium content

65%

lower CO₂ footprint
than the industry
average

39%

reduction in
greenhouse
intensity from
aluminium
production
since 2008

Protecting the environment

Given their scale, operations like Rio Tinto's in the Saguenay inevitably impact the local environment.

While hydropower plays a key role in creating low-carbon aluminium, it too has impacts. Over the years, our team has been working closely with the local community to minimise the impacts of our hydropower operations on Lac-Saint-Jean, a 1,035km² lake used for hydro storage. In 1986, following an in-depth environmental and social impact study, Rio Tinto and the Quebec government signed an agreement to protect its banks from erosion caused by changing water levels. To date, C\$85 million has been spent in a 30-year programme aimed at countering erosion. Rio Tinto also invests in the protection of wetlands near its facilities, providing financial support for wildlife organisations and the Conseil régional de l'environnement et du développement durable (a regional environmental NGO).

Around the Lac-Saint-Jean, we have partnered with public charging network Electric Circuit and AddEnergie technologies to install five new electric vehicle charging stations. Joining the four stations already in place at several of our facilities, they are helping to promote cleaner road transportation in the region.

The Saguenay operations have also seen consistent success in minimising the impact of waterborne transportation. In 2015, the Green Alliance rated Rio Tinto's port operations in the region a five out of five for the fifth year running. The categories covered by this accreditation include greenhouse gas emissions, leaks and spills, handling and storage of bulk materials.

Metal for good

Contributing to a strong and vibrant region

The Saguenay operations are embedded in the region's economy in a way that extends far beyond direct employment at the different facilities. More than 900 local suppliers work with our operations. When the Shipshaw hydropower plant added a 13th turbine, which was completed in 2012, more than 90 per cent of the businesses involved were Quebec-based. It's also been estimated that phase one of the Arvida AP60 smelter's construction, completed in 2011, contributed C\$607 million to the Saguenay-Lac-Saint-Jean region alone.

Rio Tinto also takes an active role in the future of Quebec, through its Regional Economic Development office (RED), which was founded in 2004. Set up to support the long-term growth and economic diversification of the Aluminium group's host communities, between 2004 and 2014 it invested C\$75 million in the region, creating 2,500 jobs and supporting 162 separate projects and businesses. RED support has, for example, helped repurpose the former smelter site at Beauharnois and launched a centre aimed at commercialising innovative energy-efficiency technologies in Shawinigan. The nationwide Rio Tinto Aluminium Canada fund has also benefited the Saguenay region, contributing, for example, C\$2.5 million to Quebec University at Chicoutimi for a pavilion dedicated to First Nation culture, and supporting lifestyle and education initiatives.

A lasting legacy

Any large-scale manufacturing operation has a major impact on the community in and around where it is sited. It creates jobs, business opportunities for local companies and new infrastructure. But when facilities come to the end of their lives, communities can be left without an economic engine to drive them. In the Saguenay we work tirelessly to extend the life of our investments, promote broader investment in the community and where there is no other option, close down our facilities to create the best legacy possible.

At the Vaudreuil alumina refinery, Rio Tinto has engaged with the community to secure a longer-term future for a facility that is an important local employer and supplier. Because of its efficiency, Vaudreuil is one of the last alumina refineries in the world not to be located next to a bauxite mine. However, it will reach its capacity for storing bauxite residues by 2022, putting the facility's future in doubt. Vaudreuil's closure would mean the loss of more than 1,000 jobs and C\$135 million per year in value injected into the local economy. Following public consultation, Rio Tinto has put in place a two-phase project – "Vaudreuil beyond 2022" – to overcome technical, environmental and social challenges and ensure the refinery can continue to operate in the future. In the first phase, a new facility will be built to filter, and hence to reduce, the volume of waste at the existing storage site. Then a nearby site will be developed: this will be used and rehabilitated one section at a time to minimise disruption. The second phase will extend the working life of the refinery to 2047.

Not all facilities have a long-term future, though. In these cases it's important to ensure that decommissioning happens in the best possible way. After outdated process technology led to the closure of the Shawinigan smelter in Quebec, Rio Tinto spent more than C\$50 million demolishing buildings, decontaminating the soil and rehabilitating the site. The site was then handed to the town of Shawinigan for a symbolic C\$1. Today it's zoned for businesses and already hosts specialist casting company Shawinigan Aluminium, which employs 80 people.

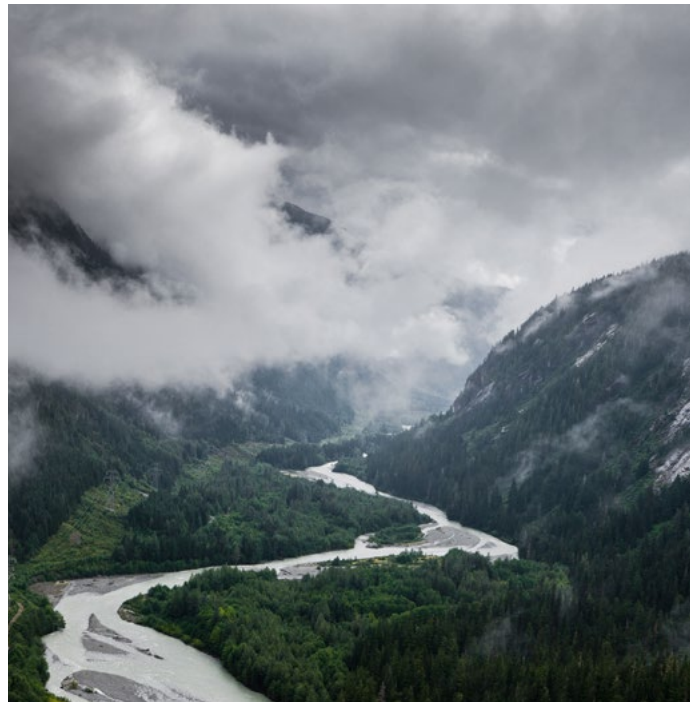


Image: Our team works closely with the local community to minimise the impacts of our hydropower operations



There's no hiding the fact that it's sad when a closure like this happens. However, Rio Tinto has done things the right way: it's rare that a corporate citizen goes as far as it has done."

Michel Angers

Mayor of Shawinigan

Committed to long-lasting, positive change

In the past few years our business has faced a number of challenges including volatile aluminium prices and increased competition from new market players from the Middle East, Russia and China. Despite these challenges, our Saguenay operations remain a strategic asset for the Group. In 2016 we invested close to C\$300 million in our assets, demonstrating our commitment to the region.

Our operations give us the opportunity to bring long-lasting positive change to the Saguenay, and we take pride in the fact that our aluminium is transformed into end products that contribute to higher living standards and a lower carbon footprint for people the world over.

Reporting what matters



Image: Energy Resources of Australia's Ranger mine, Northern Territory, Australia

Reporting what matters

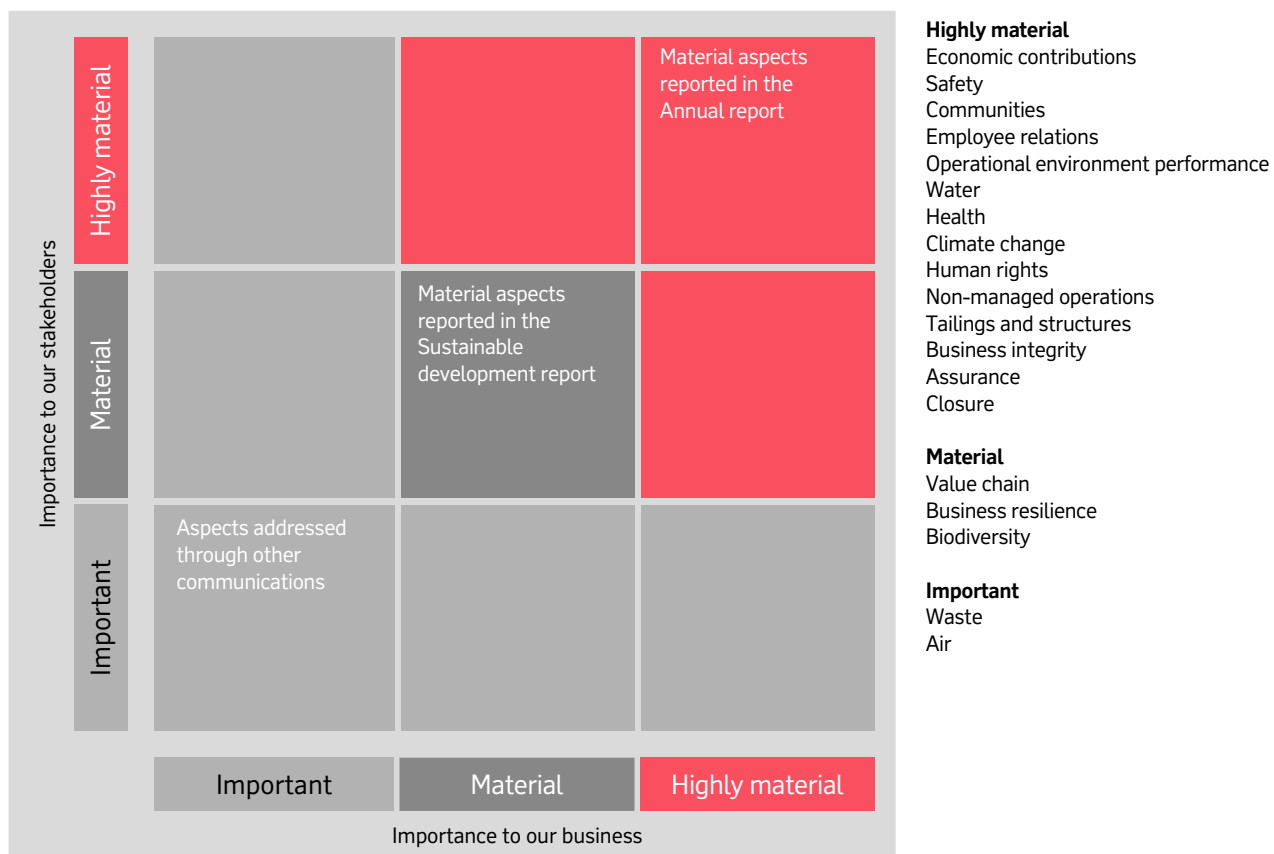
Every year we rank the sustainability issues that matter most to our business and stakeholders. This helps focus our response and aligns our report with the Global Reporting Initiative (GRI) G4 Guidelines.

In 2016, to compile this ranking, we combined feedback from our internal subject matter experts and discipline leaders, stakeholder expectations and analysis of the external environment. The Sustainability Committee reviewed and approved the assessment. Our material issues are listed below, and a description of each, together with the location of our responses in this report, is contained on the following pages.

Our materiality ranking scheme comprises three tiers:

- Highly material aspects that are core to our sustainability performance, to our business and stakeholders. These aspects are described in the *Annual report*.
- Material aspects that could have localised or moderate impacts on our overall sustainability performance and to stakeholders. These aspects are described in our Sustainable development report.
- Other aspects considered important across Rio Tinto and to specific stakeholders.

Our material issues



Reporting what matters

Economic contributions

This includes the direct and indirect economic value generated and distributed from our activities.

Natural resources are an important source of value for us and the countries that have them. It is important we share the benefits in a fair and equitable manner.

Read how we are responding in our Annual report and this report in “Community relationships” (page 30), “Our value chain” (page 60) and “Data and reporting” (page 77).

- Economic performance, Indirect economic impacts, Procurement practices
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities, Suppliers, Customers, Governments, Regulators

Safety

Safety is our number one priority, and stakeholders are increasingly interested in our safety performance.

Read how we are responding in our Annual report and this report in “Our people” (page 22), “Governance integrity” (page 52) and “Data and reporting” (page 77).

- Occupational health and safety
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities

Communities

This includes aspects relating to our operations such as regional development, agreements, and managing cultural and heritage impacts.

Developing strong and lasting relationships is critical to our licence to operate.

Read how we are responding in our Annual report and this report in “Community relationships” (page 30), “Governance integrity” (page 52), “Our value chain” (page 60), “Engaging with our stakeholders” (page 71) and “Data and reporting” (page 77).

- Procurement practices, Indigenous rights, Local communities, Grievance mechanisms
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities, Governments, Regulators, Special interest groups

Employee relations

This includes employment opportunities, training and development, and employment conditions.

Maintaining an engaged, diverse and inclusive workforce is essential to maximising the value of our contributions to stakeholders.

Read how we are responding in our Annual report and this report in “Our people” (page 22), “Engaging with our stakeholders” (page 71) and “Data and reporting” (page 77).

- Employment, Labour/Management relations, Training and education, Diversity and equal opportunity, Equal remuneration, Labour practices, Non-discrimination, Freedom of association and collective bargaining
- ▲ ● Employees, Contractors, Shareholders, Investors, Governments, Regulators, Special interest groups

Operational environment performance

This includes mineral and non-mineral waste, air emissions and environmental regulations.

Preventing and minimising impacts from our operations on surrounding environments and communities is essential to our licence to operate.

Read how we are responding in our Annual report and this report in “Our people” (page 22), “Community relationships” (page 30), “Protecting the environment” (page 39), “Governance integrity” (page 52) and “Data and reporting” (page 77).

- Effluents and waste, Emissions, Compliance, Environmental grievance mechanisms
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities, Governments, Regulators, Special interest groups

Water

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

Read how we are responding in our Annual report and this report in “Protecting the environment” (page 39) and “Data and reporting” (page 77).

- Water
- ▲ ● Shareholders, Investors, Host communities, Governments, Regulators, Special interest groups

Health

Like safety, the health and wellbeing of our employees and contractors is important to us. A healthy and engaged workforce contributes to productivity.

Read how we are responding in our Annual report and this report in “Our people” (page 22) and “Data and reporting” (page 77).

- Occupational health and safety
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities

Climate change

The mining sector is energy intensive. The way we manage our energy use and the impacts of climate change are important as we move towards a low-carbon future. Our products need to be part of the solution.

Read how we are responding in our Annual report and this report in “Protecting the environment” (page 39) and “Data and reporting” (page 77).

- Economic performance, Energy, Emissions
- ▲ ● Shareholders, Investors, Suppliers, Customers, Governments, Regulators, Special interest groups

Human rights

The rights of all people along our value chain are protected. We operate in developing countries where human rights issues are prevalent.

Read how we are responding in our Annual report and this report in “Community relationships” (page 30), “Governance integrity” (page 52) and “Our value chain” (page 60).

- Investment, Non-discrimination, Freedom of association and collective bargaining, Child labor, Forced or compulsory labor, Security practices, Indigenous rights, Assessment, Supplier human rights assessment, Human rights grievance mechanisms, Public policy
- ▲ ● Employees, Contractors, Shareholders, Investors, Host communities, Suppliers, Customers, Governments, Regulators, Special interest groups

KEY

■ GRI Aspect is the subject area covered by the GRI G4 Guidelines.

GRI Boundary describes where each material aspect impacts in relation to Rio Tinto's business.

▲ GRI Boundary: Within - Employees, contractors, shareholders, investors.

● GRI Boundary: Outside - Host communities, suppliers, customers, special interest groups, governments, regulators.

Reporting what matters

Non-managed operations

This includes Rio Tinto's non-managed operations and joint arrangements.

Our reputation is influenced by the reputation of our partners, therefore it is important that we work with our partners to deliver high performance outcomes.

Read how we are responding in our Annual report and this report in "Governance integrity" (page 52).

- Economic performance, Occupational health and safety, Environment
- ▲ ● Shareholders, Investors, Host communities, Governments, Regulators, Special interest groups

Tailings and structures

This includes tailings and water storage facilities.

The mining and metals industry produces large volumes of tailings which need to be permanently and safely stored. Stakeholders are looking for reassurance that our standards and performance are of the highest quality.

Read how we are responding in our Annual report and this report in "Protecting the environment" (page 39) and "Governance integrity" (page 52).

- Effluents and waste
- ▲ ● Shareholders, Investors, Governments, Regulators, Host communities, Special interest groups

Business integrity

The trust of all shareholders can only be maintained if we adhere to the highest level of honesty, integrity and transparency. It is also important that we communicate our processes and performance.

Read how we are responding in our Annual report and this report in "Governance integrity" (page 52).

- Compliance, Labor practices grievance mechanisms, Anti-corruption, Anti-competitive behaviour
- ▲ ● Employees, Contractors, Shareholders, Investors, Governments, Regulators, Special interest groups

Assurance

Independent third party assurance adds to stakeholder confidence that what we say is what we do, and that our own internal control processes are working.

Read how we are responding in our Annual report and this report in "Governance integrity" (page 52).

- Reporting profile
- ▲ ● Employees, Shareholders, Investors, Governments, Regulators, Host communities

Closure

It is inevitable that all our operations will close at some stage in the future. The way in which we plan and execute this is key to leaving a lasting, positive legacy.

Read how we are responding in our Annual report and this report in "Community relationships" (page 30), "Governance integrity" (page 52) and "Our value chain" (page 60).

- Closure planning
- ▲ ● Employees, Contractors, Shareholders, Investors, Governments, Regulators, Host communities, Special interest groups

Value chain

This includes supply chain management.

The way in which our products are used and consumed, as well as the way in which we partner with suppliers, is core to our contribution to sustainable development and the broader development of society.

Read how we are responding in our Annual report and this report in "Community relationships" (page 30), "Governance integrity" (page 52), "Our value chain" (page 60) and "Data and reporting" (page 77).

- Procurement practices, Supplier assessment of labour practices, Supplier human rights assessment, Supplier assessment for impacts on society
- ▲ ● Shareholders, Investors, Governments, Regulators, Host communities, Special interest groups

Business resilience

All businesses face disruptive risks that can impact operations, assets, the workforce and host communities. Our preparedness for emergencies provides confidence we can minimise impacts.

Read how we are responding in our Annual report and this report in "Governance integrity" (page 52).

- Emergency preparedness
- ▲ ● Employees, Contractors, Shareholders, Investors, Suppliers, Customers, Host communities

Biodiversity

Mining disturbs land. With considered approaches, we can add to the biodiversity database to conserve sensitive areas and contribute to regional biodiversity efforts.

Read how we are responding in our Annual report and this report in "Protecting the environment" (page 39).

- Environment
- Governments, Regulators, Special interest groups

KEY

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Reporting what matters

ICMM

International Council
on Mining & Metals

Message from Tom Butler, chief executive officer, International Council on Mining & Metals

Rio Tinto is a founding member of the International Council on Mining & Metals (ICMM), which was set up 15 years ago to improve environmental and social performance in the mining industry, thereby helping preserve members' social licence to operate. In 2016, Rio Tinto continued to play a leading role through its participation in ICMM forums, sharing information to increase peer learning on priority issues such as safety and health, product stewardship and water management.

On safety, Rio Tinto has proactively engaged in the risk management working group providing and sharing safety data that enable ICMM to publicly present an aggregated view of member performance. Enhanced transparency on safety is an important differentiator for ICMM and its members. Similarly on health, Rio Tinto has provided expertise, contributed to peer learning and is driving the next phase of performance improvement on occupational health and safety.

Rio Tinto's leadership of our chemicals management working group has raised standards for risk assessment and risk management of minerals and metals. A recent highlight was a partnership that resulted in official OECD guidance on how countries should develop their environmental risk assessment systems. The working group has also led our engagement with the International Maritime Organization around the issue of safe and environmentally sound transport of ores and concentrates.

The voluntary code for water management developed at Oyu Tolgoi in Mongolia is a third area where Rio Tinto has demonstrated a collaborative approach, showcasing its experience to other members at ICMM's Biannual Members Meeting in November.

“

In 2016, Rio Tinto continued to play a leading role through its participation in ICMM forums, sharing information to increase peer learning on priority issues such as safety and health, product stewardship and water management.”

Tom Butler

Chief executive officer, International Council on Mining & Metals

Our people



Image: Mount Thorley Warkworth, New South Wales, Australia

Our people



Image: Employees at Kitimat aluminium smelter, British Columbia, Canada

Our people are the most important aspect of our business. We need a safe, healthy and engaged workforce to expand and sustain our operations, and to contribute positively to local host communities.

We want to be a preferred employer. We invest in our people throughout their careers, offering diverse and inclusive employment prospects, development opportunities and competitive benefits clearly linked to performance.

Our stakeholders pay particular attention to our safety record, our progress towards our inclusion and diversity goals and how we are achieving local employment requirements particularly in developing countries.

0.44

all injury
frequency rate*

*per 200,000 hours worked

8.3%

of our permanent
Australian workforce
is Indigenous

0

process safety
incidents with a
major or catastrophic
consequence

18.2%

of our workforce
are women

36.2%

of our graduate
intake are nationals
from regions where
we are developing
new businesses

Safe operations

Our vision is for everyone to go home safe at the end of each shift. We believe all safety incidents are preventable. We maintain strong safety systems, standards and tools, and verify that critical controls are in place. We foster a culture that stops work if it is not safe through visible and caring leadership.

Our approach to safety focuses on three core areas of: fatality elimination, injury reduction, and catastrophic risk prevention including process safety.

Critical risk management (CRM) is crucial to achieving our fatality prevention goal. It is a dedicated fatality prevention programme for all jobs with a fatality risk. At all our managed projects and operational sites every person must check that critical controls are in place and working effectively before the job can begin. Managers, superintendents, supervisors, maintainers and operators are all involved.

We continue to work on reducing injuries and injury severity. Preventing injuries requires better analysis of risks prior to starting tasks. We are also addressing the specific causes of injuries (especially hand injuries and slips, trips and falls) and cultural and behavioural norms that maintain a safety mindset in everything we do – no matter how large or small the task.

Our contractors have a higher injury rate than our employees. To address this, we are using pilots and adopting industry best practice to improve the selection, induction and management of contractors. We are also making sure contractor management focuses on safety performance.

We learn from our safety incidents – fatal and near fatal – to stop them happening at other sites. This is achieved through a structured programme where lessons from an incident are shared across all our sites, translated into the local context and then shared within the sites by senior site leaders.

Process safety requires designing, operating and maintaining our processes to prevent a catastrophic release of hazardous materials or energy through explosions, fires and toxic releases. Process safety is an important risk for us. Through applying our Process safety standard, we are targeting a 50 per cent reduction in actual process safety incidents by 2020. Key to this will be eliminating, as far as is reasonably practicable, the exposure of people in permanent occupied buildings to catastrophic process safety risk. We also engage with industry organisations to understand how they manage process safety and share lessons.

We recognise that process safety events are high consequence, low probability events and have a different set of causes, solutions and potential indicators to personal safety events; our focus and management of the risks reflect this difference.



Image: Working at height, Oyu Tolgoi, Mongolia



The aim of our fatality prevention programme, critical risk management, is to have every employee, before they begin every task, ask: ‘What could kill me today, while I’m doing this task? What’s in place to stop that happening? And is what is in place working?’

Joanne Farrell

Group executive, Health, Safety & Environment

Safe operations

2016 performance

By the end of 2016, CRM was in place at every Rio Tinto managed operation and over 1.3 million critical control verifications were completed.

We are yet to achieve a fatality free year. In June we experienced one fatality within our managed operations when an employee was killed while undertaking maintenance on a drill at the Paraburdoo iron ore operation in the Pilbara, Western Australia. This tragedy continues to impact family, friends, workmates and the local community. The business provided immediate support and counselling services and continues to do so. A full investigation has been completed and the learnings from the fatality have been shared across Rio Tinto to try and prevent an incident like this being repeated.

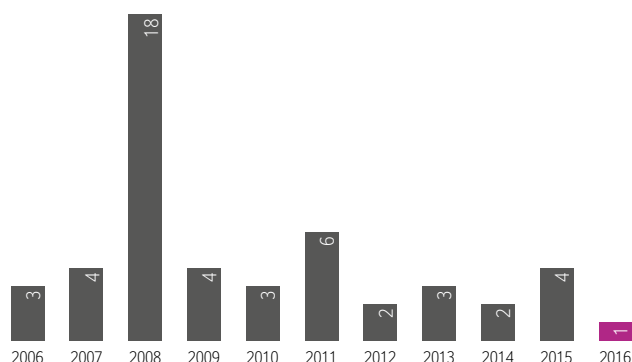
The all injury frequency rate (AIFR), which includes data for employees and contractors, was 0.44 per 200,000 hours worked. This was the same as 2015. Over the last five years, we have reduced our AIFR by 34 per cent.

Although we had 14 fewer lost time injuries in 2016 when compared with 2015, due to a reduction in our workforce hours, our lost time injury frequency rate (LTIFR) was 0.26 per 200,000 hours worked in 2016 – a four per cent increase compared with 2015.

There were no process safety incidents with a major or catastrophic consequence in 2016.

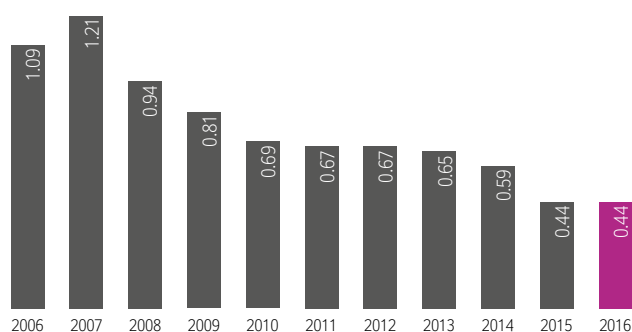
Fatal incidents (number)

1



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

0.44



Healthy workforce

We aim to eliminate occupational illness and to create workplaces that protect health and promote wellbeing. Guided by our health standards, our global health professionals identify potential trends, emerging health issues and key occupational health risks and apply controls.

Our health strategy, revised during 2016, focuses on occupational illness, managing health risk, wellness and mental health, and controlling vector-borne and infectious diseases.

To achieve our target of a year-on-year reduction in the rate of new cases of occupational illness, we are adding to our health programmes, increasing the application of medical surveillance across our businesses and applying tighter reporting requirements of health incidents. These additional activities are providing a more robust health baseline for progressing our work.

Prevention is essential to our approach. Our health programme helps us manage material health risks by verifying that critical controls are reducing employees' and contractors' exposure to potentially harmful substances, physical energies and vector-borne diseases such as malaria. We consider the local factors affecting our workforce, such as type of resource, location and type of work, to ensure that effort is directed to the more important risks. Our target is for all our businesses to have identified and consolidated critical control management plans by the end of 2018.

Fatigue is a critical risk and we are addressing both individual and organisational risk factors. For example, we are working with the Central Queensland University in Australia and the University of Witwatersrand in South Africa to study management attitudes to fatigue across sites in Africa and Australia. We are also working alongside technology providers using new and proven tools to monitor fatigue in our heavy mobile equipment operators and to respond when fatigue is identified.

We are working to better measure the effectiveness of our wellness and mental health programmes. For example, we are reviewing and joining the leadership awareness training, facilities and services provided by Group Property and elements of the benefits package to provide an integrated package for employees to manage their health effectively. Information on this is available on the internal Rio Tinto myWellness website. We also benchmark with peers to identify the most effective packages and share the most effective mental health programmes across the entire business.

We work with local governments and health organisations to educate employees, contractors and communities surrounding our operations about vector-borne and infectious diseases such as tuberculosis, Ebola, malaria and HIV/AIDS and Zika. Where needed, we ensure adequate treatment is provided.

We also work with authorities to control the spread of disease. We contributed to the international response to the Zika virus by preparing our business resilience teams and sharing information with our workforce and travellers who could be potentially exposed.

2016 performance

In 2016 the rate of new cases of occupational illness increased 36 per cent from 2015 – from 31 to 44 per 10,000 employees. This increase is attributable to increased reporting of noise-induced hearing loss (NIHL) with a number of previously unreported historic NIHLs being identified and reported in 2016. A greater focus on medical surveillance and tighter reporting requirements also contributed to the year's result.

The main types of occupational illnesses in 2016 were noise-induced hearing loss at 60 per cent, stress at 23 per cent and musculoskeletal disorders at 11 per cent.

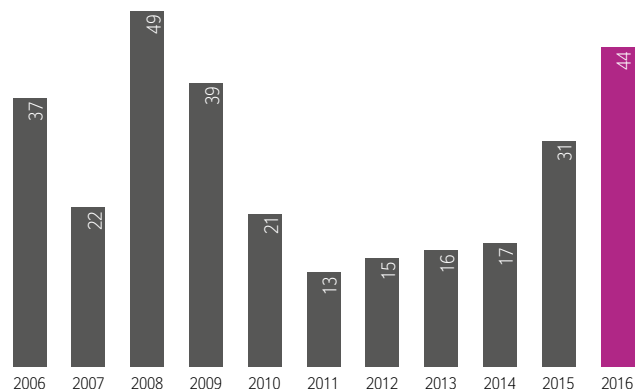
During 2016 businesses identified and consolidated their critical control management plans for their material health risks.

In 2016 there were no cases of malaria reported for our expatriate employees travelling to our sites where malaria has been identified to have a presence.

We also continued to collect data for the epidemiological study in relation to the long-term health impacts of radiation on the workforce at the Rössing uranium mine in Namibia. The study gained approval by the Ethics Committees of the University of Manchester and the University of Witwatersrand.

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

44



Note: Data includes Rio Tinto managed operations. Number for 2015 has been restated from those originally published to ensure comparability over time.

Capability and development

Our people strategy guides how we attract, develop, engage and retain talented people. It is focused on fostering inclusion and diversity, offering exciting work and development opportunities, rewarding good performance and providing quality leadership at every level.

Our approach is consistent with our code of conduct, *The way we work*, local laws and International Labour Organization standards. We value the strength that an inclusive culture and diverse workforce bring.

We employ people on the basis of job requirements and do not discriminate on grounds of age, ethnic or social origin, gender, sexual orientation, politics, religion, disability or any other status. We do not employ forced, bonded or child labour. We recognise the right of all employees to choose to belong to a union and to seek to bargain collectively. We employ people with disabilities and make considerable efforts to offer suitable alternative employment and retraining to employees who become disabled and can no longer perform their regular duties.

We are focused on increasing the representation of women in our business, in addition to achieving a better balance of nationalities. We aim for our workforce to be representative of the communities in which we operate and for our leaders to come from diverse backgrounds, who can excel in a variety of international and cultural environments.

We prefer to employ local candidates. Where local capacity does not meet our requirements we work in partnership with local communities and government on programmes to develop skills and work readiness.

We help Indigenous people participate in the local economy through employment and learning programmes along with our local supplier and procurement programmes. Rio Tinto is proud to be one of the largest private sector employers of Indigenous Australians. Our local employment commitments are often managed through directly negotiated agreements with Traditional Owners. We also welcome Indigenous contractors and suppliers working with our Australian operations.

The relationship between employee engagement and the productivity of our business is essential to our success. We are increasing engagement with all employees and their representatives. We promote open, honest dialogue with our people. Leader-led communication and engagement is supported by a variety of communication tools, including the myRioTinto portal dedicated to employment needs. We periodically conduct global employee surveys to understand the current and emerging issues affecting employees.

Our Group-wide performance systems support the consistent and transparent assessment of people across the company. They also drive a performance-focused culture by making clear linkages between performance and reward, and enable employees to articulate their career aspirations. We offer our employees a rounded reward package – the principles of which are consistent across the Group. The package is designed to be competitive, in compliance with applicable laws and regulations, and balance fixed pay with variable pay that is linked to performance.



We focus on building talent from within our business to meet future skill requirements. Learning and development opportunities are broadly available to all employees via the virtual Rio Tinto College. All employees are encouraged to participate in annual development planning to identify and support development for their current role and their future aspirations. Our graduate development framework provides the foundation for the development of our graduates during their two-year programme through a combination of on-the-job experience and blended learning approaches.

Our long-term partnerships with educational institutions focus on growing the future capabilities and diversity we need to meet our long-term business strategy. They are specifically targeted at attracting students to capability areas key to our industry such as science, technology, engineering and mathematics.

2016 performance

In 2016 we employed 51,000 people, including the Group's share of joint ventures and associates in around 35 countries.

Women represented:

- 46.4 per cent (female: 32; male: 37) of our graduate intake, exceeding our target of 40 per cent.
- 27.3 per cent (female: 3; male: 8) of the Rio Tinto board of directors.
- 18.2 per cent (female: 7,933; male: 35,701)⁽¹⁾ of our total workforce.
- 19.2 per cent (female: 100; male: 420) of our senior management, falling short of our target for 20 per cent.

We employed 1,467 full-time Indigenous employees representing approximately 8.3 per cent of our permanent Australian workforce. In Mongolia, 93.5 per cent of Oyu Tolgoi's workforce were Mongolian nationals.

The results from our 2016 global employment survey indicated that our leaders have more to do in addressing the impacts of past organisational change and employee reductions. We are focusing on the key messages from the survey to improve employee engagement. We were pleased with the level of engagement at our newest large project, Oyu Tolgoi, and with strong recognition across the Group on our approach to safety.

During 2016, 859,782 attendances were recorded for training in leadership, technical and operational skills, as well as health, safety and environment courses across the business.

Image: Our people strategy guides how we attract, develop, engage and retain talented people

(1) Gender distribution for our total workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016. Less than one per cent of the workforce gender is undeclared.

Keeping our people safe

Checking lifesaving critical controls



Rio Tinto continues to reduce injury rates, but the death in 2016 of a colleague during maintenance of a drill rig at our Paraburdoo mine in Australia is a tragic reminder of the risks faced every day in mining environments.

To strengthen our approach to fatality elimination, during 2016 we continued to implement critical risk management (CRM) at every operational site.

CRM takes a layered approach to the verification of fatality critical controls. While operators and maintainers, line leaders and managers have slightly different roles, ultimately every person plays a part in checking controls are implemented and working as designed. If gaps are identified, the job is stopped until it's fixed and safe to continue. CRM verifications are completed at the job site. If the critical controls aren't there, the job doesn't start.

Improving critical controls every day

During 2016, leaders checked critical controls on 1.3 million occasions across the business – resulting in safer work conditions.

One example of how verifications are improving work practices comes from the Cape Lambert iron ore port in Western Australia. While checking the controls on a mobile work platform, a supervisor found a cover was missing from the equipment's control panel. It meant the controls could have been inadvertently operated by someone leaning on them – a known fatality risk. The equipment was taken out of service, and pre-hire inspection checks were reviewed to ensure the covers are checked before the equipment is accepted on site in the future. Importantly, this issue was shared and then identified at another site. In this way, CRM is helping us rapidly replicate solutions to common problems – improving safety risk management across the business more effectively than ever before.

Each time a critical control is found to be missing or ineffective, it is fixed, with the verifications recorded in a central database. This enables Group-wide trends and learnings to be shared quickly, and for improvements to be driven by facts. On more than 110,000 occasions, verification by an employee has led to a critical control being improved.

Effective deployment

CRM is being implemented at every Rio Tinto site at the same time, following the same design and implementation process. In less than two years, CRM has progressed from a small number of pilots to every site in the Group checking fatality critical controls every day.

Collaboration, sharing and learning are central features. CRM has provided everyone with clear accountabilities and expectations in relation to fatality elimination. It has made work planning and execution more efficient, as the structure of checking controls is reinforced every time a task with a fatality risk is completed. Dedicated resources in every part of the business have helped with problem-solving, and the rapid sharing of good practice has helped progress towards full implementation.

Our teams' new mindset – of finding and fixing controls – has been as important to CRM's success as its standardised approach. By having the whole business committed to CRM, and the strong safety systems, processes and tools that underpin it, we will improve even further.

Continuing to deliver

In 2017, we will continue to deploy CRM to ensure critical controls have been checked before every task with a fatality risk is completed. We will simplify our in-field safety tools further to improve efficiency, standardise other safety tools and processes and improve the way we're using our verification data, so we are focusing our efforts on the right areas.

Image: Employees reviewing CRM checklist at Dampier port operations, Western Australia

2016 Sustainable development report

riotinto.com/sd2016

Our people: 28

Keeping our people safe



Image: Critical risk management is crucial to achieving our fatality prevention goal

2016 CRM achievements

60+ sites

implemented CRM

1.3 million +

critical control verifications completed by leaders

6,500

supervisors, superintendents and managers doing control verifications

80%

of leaders have found at least one “red” or non-compliance every month

30% +

of superintendent and manager verifications have found gaps in critical control design, implementation or training

70% +

of issues have been fixed in the field at the time of discovery

Community relationships



Image: Working with Traditional Owners, Weipa, Queensland, Australia

Community relationships



Developing strong, trusting and lasting relationships with our host communities and recognising and respecting people's human rights and cultural heritage are principles embedded in our business values, policies and standards. We aim to be a good neighbour across all our operations and build relationships that share benefits and secure community support for our work.

We have strong processes for managing human rights risks. We pay particular attention to human rights issues – such as water resources, land access, resettlement and security – that may be commonly associated with mining activities. Read more about our approach to human rights in the “Governance integrity” section (page 56).

Our Communities and Social Performance (CSP) standard guides how we maintain our community relationships. It covers how we monitor and manage day-to-day impacts and concerns, identify and manage social risks, form long-term community agreements and close operational sites.

The CSP standard is supported by guidance notes which describe our site procedures. These are aligned with international guidelines, such as the [International Finance Corporation's \(IFC\) Performance Standards on Environmental and Social Sustainability](#) and [ICMM's Position Statement on Indigenous peoples and mining](#).

All our sites must have a complaints, disputes and grievance mechanism that meets the UN Guiding Principles on Business and Human Rights criteria. Our businesses also measure and report on their performance against their CSP targets.

We undertake social and economic impact assessments to understand the implications of our activities and reduce any negative impacts. We collaborate with local communities to develop clear and transparent agreements, which are essential to providing access to land we require and for directing benefits to those affected by our activities.

Image: Working with local communities, QIT Madagascar Minerals, Mandena, Madagascar

650 +

Australian companies, including 58 local Cape York businesses and 10 Indigenous businesses, engaged at the Amrun bauxite project

100%

of sites have established local employment and procurement targets

1st

resources company to obtain an Elevate Reconciliation Action Plan

Contributing to strong and prosperous communities

We seek to use the natural resources we have access to responsibly, and to share the benefits with host communities. Through our investments in, for example, health and education services our business makes significant, positive contributions to the growth of local economies and the improvement of living conditions.

Regional economic development is a key part of the community and stakeholder engagement plans that every operation has. These plans describe opportunities and regional priorities. We also help our stakeholders to develop their own plans and we set up investment funds, trusts and foundations to help them achieve their goals and to deliver long-term benefits.

We employ local people and engage local businesses. We also build the skills of local workforces and work on employment-related programmes to help youth, women and Indigenous people benefit from employment and procurement opportunities. For example, our Amrun bauxite project in Australia has engaged more than 650 Australian companies, including 58 local Cape York businesses and ten Indigenous businesses, since the project gained approval in 2015 as part of its local and Indigenous participation strategy. At Richards Bay Minerals, primary contractors play a key role in forming joint ventures with community enterprises to increase participation in procurement.

Resettlement of people or communities can be required as a result of acquisition of, or restriction of community access to, land needed for our operations. We only resettle people or move existing economic activity where it is unavoidable. When resettlement is necessary, we work hard to ensure resettled people maintain their social harmony and have their standard of living and livelihood sustainably restored or improved over the long term. This is undertaken in accordance with the IFC's Land Acquisition and Involuntary Resettlement Performance Standard and our CSP standard. We are currently monitoring the outcomes from the resettlement of communities at our Oyu Tolgoi operations and are resettling community members at our Richards Bay Minerals operation.

The closure of our operations can have a significant impact on the surrounding local community. As part of our planning for closure we work with stakeholders to understand the community's priorities, set closure objectives, manage risks and identify sustainable, beneficial future land uses.



Image: Community food stall, Mandena, Madagascar

Contributing to strong and prosperous communities

2016 performance

In 2016 we contributed to 1,294 programmes covering health, education, environmental protection, housing, agricultural and business development areas. In total we spent US\$166 million on community programmes. This was a decrease of ten per cent compared with 2015 due to lower agreement-related payments flowing from lower commodity prices.

We introduced a new CSP target for 2016-2020. As a result, all operations need to report annually on progress against locally tailored employment, procurement and complaint management targets. At the end of 2016 all our sites had established their locally tailored targets.

During the year we managed ongoing community issues at our Mount Thorley Warkworth coal mine, Resolution Copper project and Canadian aluminium operations. Also, our Richards Bay Minerals operation faced protests and unrest from a small number of community groups seeking greater employment and procurement opportunities. This was against the backdrop of Richards Bay Minerals awarding contracts to 12 local community enterprises and five joint ventures during the year, thereby it reaching its 20 per cent target of total annual contestable spend to be awarded to local and host community vendors.

In Gladstone we launched our “Here for business” programme to help generate new business and employment opportunities following an economic downturn in the region. The programme offers business coaching and interest-free loans to new businesses and to existing businesses seeking to expand into new markets.

Our partnership with the Northern Territory Government, [Developing East Arnhem Limited](#) (DEAL), won a National Economic Development Excellence Award for best rural and remote initiative. We created DEAL to generate new economic activity in the East Arnhem region following curtailment of the Gove Alumina Refinery. DEAL's housing programme allows businesses to rent properties to accommodate employees and their families, and has helped support more than 200 jobs in the region. The revenue DEAL derives from the housing assets is reinvested in local economic development initiatives.

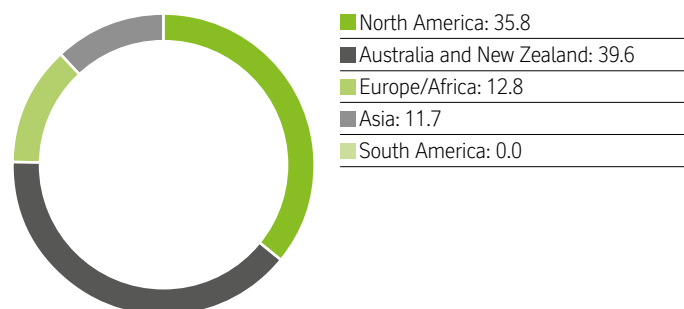
About the United Nations' Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of 17 goals and 169 targets endorsed by the United Nations in 2015. The SDGs lay out an ambitious path to end extreme poverty, fight inequality and injustice, and protect our planet over the next 15 years.

During 2016, Rio Tinto chief executive J-S Jacques signed a public statement of support for the SDGs. The SDGs provide an important framework that helps us show how our work with communities and other stakeholders produces tangible, long-term benefits on the ground.

Community contributions by region

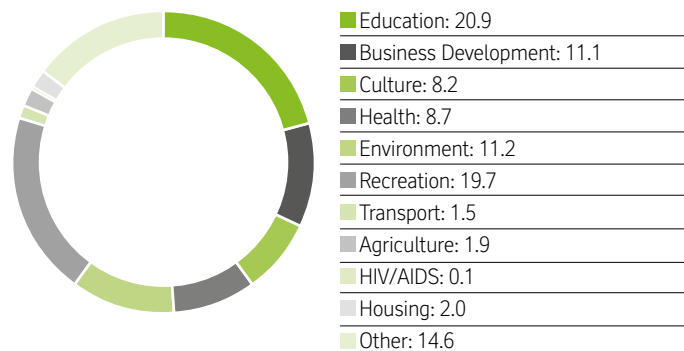
(percentage of annual total)



Note: Excludes Rio Tinto management costs and direct payments. Due to rounding the sum may not total 100 per cent.

Community contributions by programme type

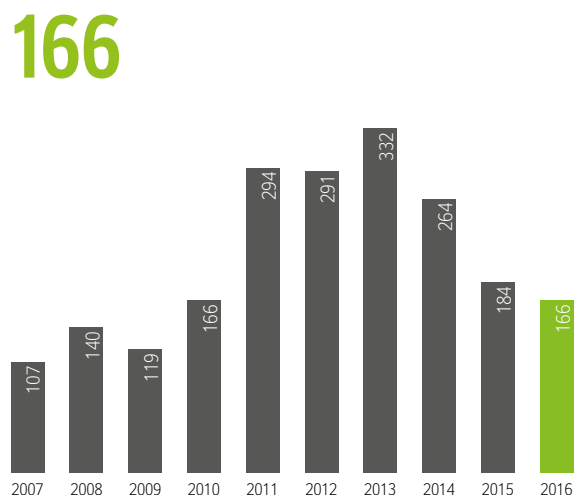
(percentage of annual total)



Note: Due to rounding the sum may not total 100 per cent.

Community contributions

(US\$ million)



Negotiating long-term, mutually beneficial partnerships

Stable, life-of-mine access to land is fundamental to the success of our business. However, many of our operations are located on land that holds particular significance for local communities and land-connected peoples, including Indigenous peoples. To manage these issues and to help with approvals and permits, we form community agreements. Agreements form an essential part of the planning, operation and closure actions of every project and operational site.

Our agreements are based on finding common ground, where both parties benefit. They provide transparent and measurable commitments on how we will share the benefits. It takes time to negotiate mutual agreements and the process can be as important as the final agreement itself.

Across the business, we have negotiated more than 40 participation agreements and more than 120 global exploration access agreements. A whole-of-business approach is applied. In recognising and respecting what land means to the people who occupy it, agreements typically include commitments on land use, cultural heritage, environment, employment and procurement. As each agreement is developed, we refine and improve our practice.

Most of our community agreements are with local Indigenous communities. In forming these, we strive to achieve 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.

2016 performance

In 2016, we formed new community agreements in Australia (Iron Ore), Africa (QIT Madagascar Minerals) and the Americas (Resolution Copper project).

Our Pilbara Iron Ore business signed an agreement with the Banjima Traditional Owners – a successful conclusion to more than ten years of formal negotiations. The agreement covers 67,000km² and includes the Hope Downs 1

mine, rail lines and supporting infrastructure. We have now signed agreements with all Native Title Claim groups who hold interests in those areas of the Pilbara where we operate.

QIT Madagascar Minerals (QMM) forged a tripartite agreement with the Government of Madagascar and the Traditional Owners of the land on which its Mandena mining concession lies. This is the first agreement of its kind in Madagascar and took more than two years to finalise. As part of the process, QMM helped create associations of Traditional Land Owners and arranged for civil society groups to provide the land users independent training in mining legislation, land tenure and forestry.

Resolution Copper's (Rio Tinto 55 per cent) Memorandum of Understanding with the town of Superior, was signed in 2016. It includes a five-year US\$1.6 million Emergency Services Agreement. Benefits from the agreement include training of local fire and police departments and upgrade and maintenance of emergency services vehicles and equipment.

We launched our second [Reconciliation Action Plan](#) (RAP). RAP outlines how we will build deeper engagement between Indigenous communities and our Australian operations during the next three years. We were the first resources company to obtain an Elevate RAP through Reconciliation Australia's RAP programme – the highest possible phase achievable. Our 2016-2019 RAP raises the bar on the Group's previous commitments and sets stretch targets across Indigenous employment, education, training and business development areas.

During the year we also published our [Why agreements matter](#) guide. This supports good practice and ongoing learning across the wider resources industry and is a resource for communities and governments. The guide draws on our history of more than 150 community agreements and describes our learnings over more than 20 years of agreement-making.



Image: Tony Kerindun, Wik-Waya Traditional Owner, and Alf Barrios, chief executive of Rio Tinto's Aluminium product group, Western Cape Cultural Centre, Cape York, Queensland, Australia

Respecting culture and heritage

Mining activities can impact local cultures and heritage. Protecting and managing cultural heritage assets jointly with communities contributes to the quality of our relationships and avoids delays, legal action and compliance costs.

Wherever we operate, and particularly in less-industrialised areas, we respect the diverse cultures, lifestyles, heritage and preferences of our neighbours. We work with all communities to understand and protect cultural places, objects and practices.

All our operations maintain and implement a cultural heritage management system. This requires undertaking cultural heritage risk assessments to identify and understand cultural heritage values, their significance and management plan options. Our CSP standard, Cultural heritage management guidance and [Why cultural heritage matters](#) document provide practical guidance for our teams.

2016 performance

In 2016 we continued to work with the Wik-Waya Traditional Owners to understand and manage cultural impacts of the Amrun project in Queensland, including cultural camps to undertake cultural site mapping.

We donated C\$2.5 million to build a new First Nations Culture Pavilion at the Université de Québec à Chicoutimi campus in Canada, dedicated to the conservation and transmission of First Nations culture.

Our Iron Ore business is partnering with Murujuga Aboriginal Corporation and The University of Western Australia to map and document ancient Indigenous engraved rock art, located throughout Western Australia's Pilbara coastline. The project benefits the local Aboriginal groups managing this area, and improves our knowledge of more than 600 significant cultural heritage sites on our Dampier Archipelago leases. In the 2016 field season, we documented 9,379 new petroglyphs, 439 other cultural features including stone arrangements and artefact scatters, and conducted archaeological excavations at nine sites.



Image: Recording rock carvings, Burrup Peninsula, Pilbara, Western Australia

Changing perspectives: Understanding connection to land

How land use agreements
have become central to the
way we work in partnership
with land-connected people

At times it may seem difficult for a resources company – with its scientific, engineering and operational focus – to understand different people’s spiritual and cultural relationships with land.

To Indigenous peoples, it is home. But it’s also something much more profound: a place of deep physical, spiritual and cultural connection. Indigenous peoples do not own the land in the traditional European sense – the land is part of them. In the words of Aboriginal Elder Loyla Chevathen, “Our country is who we are. It is our culture and our past and future”.

Rio Tinto’s understanding of people’s connection to land, and how land can be used for both economic and social benefit, has evolved significantly in recent decades.

It hasn’t always been smooth sailing. In the late 1980s, for example, production at our Panguna copper mine (operated by Rio Tinto subsidiary Bougainville Copper Limited) in Papua New Guinea was brought to a complete halt and personnel were subsequently evacuated following heightened militant activity against the mine and personnel by factions from within the local communities. During the same period, Aboriginal Traditional Owner groups used heritage and environmental legislation to delay expansion plans in the Pilbara region of Western Australia.

Why agreements matter

In the early 1990s, a pivotal High Court decision in Australia reshaped our approach to engagement with Indigenous peoples. In response to a claim by Torres Strait Islander Eddie Mabo, the court ruled that the land was not “terra nullius” (belonging to no one). Shortly afterwards, the Native Title Act came into force, recognising native title to land. Breaking with the rest of the industry, which feared the implications of this new law, Rio Tinto instead welcomed it. Leon Davis, the company’s chief executive at the time, saw “major opportunities for growth in outback Australia which will only be realised with the full cooperation of all interested parties”.

In recognising that successful progress depended on active partnership with communities and Indigenous people, Davis was setting the vision for how Rio Tinto would operate in the future. Today, nearly 20 years after our first land use agreement was signed with Traditional Owner groups in Yandicoogina, Australia, we have negotiated more than 40 land use agreements around the world.



Janina Gawler, Rio Tinto’s global practice leader, Communities and Social Performance, underlines that agreements like the groundbreaking Argyle Participation Agreement are not “nice to haves” but essential to realising land access and mining opportunities today.

“At the time of the Native Title Act in Australia, we saw that agreements needed to be part of the way we do business. This has proven to be the case,” she said.

“At many sites, agreements have made it possible to secure a decision to invest and avoid a lengthy process of approval seeking.

“If you ask me why agreements matter I’d say it’s simple: they pay off both for Rio Tinto and the communities where we operate.”

In our publication *Why agreements matter*, Glen Camille, Eastern Guruma Elder, said that respecting culture and connection to land were important to building strong relationships between companies and Traditional Owner groups.

“If I look back at a saying from a great man, someone I respect and look up to as a great leader, Uncle Slim Parker he says: ‘Our culture is our culture, our law is our law, our land is our land and still is our land today,’” Glen said.

“If companies looked at building their relationships based on these principles, I think it would certainly build stronger relationships between the Traditional Owner groups and mining companies today.”



If you ask me why agreements matter I’d say it’s simple: they pay off both for Rio Tinto and the communities where we operate.”

Janina Gawler

Global practice leader, Communities and Social Performance

Image: Rio Tinto Gove Traditional Owner agreements ready for signature, June 2011

Changing perspectives: Understanding connection to land

Hard-won lessons

The idea that land use agreements are essential today is echoed by Rob Atkinson, head of Productivity and Technical Support, Growth & Innovation at Rio Tinto. Having worked on agreements at Rio Tinto operations in Australia and Mongolia, Rob has seen their impact first hand.

"Agreements are critical in all cases today. No matter how hard the challenges involved in creating an agreement, if you lose the local community, the task becomes impossible," Rob said.

Rob also notes the importance of resolving legacy issues.

"Only by sorting out the past can you get into a position to think about the future. Reconciliation is essential," he said.

From its beginnings in Australia, our approach spread around the world. By 2003, ten years on from the Native Title Act, agreements had been signed in Canada, Indonesia and Zimbabwe. As Janina Gawler points out, the company's experience has positioned it well in a world where the concept of building and maintaining "social licence to operate" is the norm.

"With more regulations and greater expectations of miners today, Rio Tinto is ahead of the curve thanks to the hard-won lessons of Australia."

Agreements aren't easy, says Rob Atkinson, pointing out the difficulty of "distilling a 1,000 page legal document into 20 key themes and ensuring nothing is 'lost in translation'." But he is convinced of their value.

"The risk-reward balance is massively favourable. Agreements are a catalyst for Indigenous employment and for strong partnerships," Rob said.

"They build local business capability and improve corporate reputation. There are so many 'wins' to be had from a good agreement backed by strong community relations. Creating agreements is not without risk – but it's intelligent risk-taking".

In *Why agreements matter*, Cyril Lockyer, Kuruma Marthudenera Elder, says that the agreement process gave his people the opportunity to better plan for the future.

"The funny thing about it [the mining boom and the agreements] is that it gave a lot more people a chance to get out on country [to do survey work] but it also gave us an opportunity to do better planning: How could we use that compensation money? How could we set up more programmes?," he said.

"It was sort of a good thing for us because the companies upped the ante; they took more land but it also involved signing more contracts, so it put us in a pretty good position."

Today, our experience in land use agreements has made it possible to set down and codify the behaviours and steps that are needed to earn and maintain trust and reciprocity with communities. And in doing so, the company as a whole is learning to see land from the perspectives of all the people whose lives are linked to it.

Mending a legacy

The lesson of the Argyle Diamond Mine in Western Australia illustrates the need for agreements to be formulated with both sensitivity and fairness. When Aboriginal people first expressed the grievance that mining had destroyed a sacred site, we responded with a Good Neighbour Agreement. However, this accorded only minimal benefits to Traditional Owners and did not manage cultural heritage respectfully.

When in 2001 it sought to extend the mine's life, Argyle signed a Memorandum of Understanding for negotiations towards a new agreement under the Native Title Act. General manager Brendan Hammond wrote an apology to Traditional Owners and offered a reconciliation payment. And in 2004, the Argyle Participation Agreement (APA) formally acknowledged that Traditional Owners are the custodians for the mining lease. At the time it was thought to be unique in stating that its plans for an underground mine would not proceed unless Traditional Owners agreed. The APA covers land rights, employment and training commitments, heritage site protection and income sharing.



Image: Richards Bay Minerals representatives meet with local community members, South Africa

Changing perspectives: Understanding connection to land

Securing a better future

At Weipa in Australia's Cape York Peninsula, [partnership agreements](#) are making progress possible while respecting culture and sharing the benefits of mine growth. The site of this major bauxite mine has had a troubled past. Today, three community agreements underpin our activities at Weipa: the Western Cape Communities Co-existence Agreement (WCCCA), the Ely Bauxite Mining Project Agreement, and the Weipa Township Agreement. As at December 2016, Weipa's Indigenous employee participation rate was 27 per cent¹ compared with a national industry average of six per cent². The recent US\$1.9 billion Amrun bauxite project, close to Weipa, was in part made possible by a management plan agreed with Wik-Waya Traditional Owners.

Wik-Waya Elder Loyla Chevathan explains what this plan means.

"We understand that the mine will change our country," Loyla said.

"These changes mean that some cultural heritage places need to be moved and disturbed to allow the mine to be built.

"We accept that this is necessary but at the same time we want to make sure that the places that are left behind are properly looked after for future generations."

Investing for the long term

In Mongolia, the Oyu Tolgoi copper-gold operation (see page 65) has the potential to make a significant contribution to the country's development and prosperity. Since 2010, Oyu Tolgoi has injected US\$6.1 billion into the Mongolian economy through salaries, payments to Mongolian suppliers, taxes and other payments to the Government. Here, a Cooperation Agreement with the mine's partnership communities aims to ensure that the mine promotes sustainable socioeconomic development. The agreement, which took four years to finalise, encompasses employment and training, environmental management, cultural protection and local business development. It formalises how the mine will contribute to local communities in the coming years, and allocates US\$5 million per year for community development.

Like many mining operations, Oyu Tolgoi is a project with a long life cycle. It underlines the fact that community agreements need to be for the long term – some have horizons beyond 50 years – and also "embedded" into the way of working at Rio Tinto. In 2014, this was formalised: the company mandated that agreement-making be part of the communities and social performance standards for Indigenous and traditional land-connected peoples where long-term projects are planned.



Image: Supporting education programmes at local schools, Wickham, Pilbara, Western Australia

Supporting good practice across the industry

Rio Tinto's *Why agreements matter* guide, published in 2016, draws on the Group's rich history of more than 150 community agreements, and sets out our journey and learnings in agreement-making to date.

Janina Gawler, the Group's global practice leader, Communities and Social Performance, said the guide was designed to support good practice and ongoing learning across the wider mining industry, and act as a resource for communities and governments.

"This guide will assist our employees as well as other industry colleagues to manage the development and implementation of agreements more efficiently and effectively," Janina said.

"The case research and process documentation in this guide demonstrate the knowledge gained by Rio Tinto throughout years of negotiating and implementing agreements."

Why agreements matter is the fourth in the series of Rio Tinto's good practice guides: *Why human rights matter*, *Why gender matters*, and *Why cultural heritage matters*.

(1) Figure includes all Rio Tinto Weipa-based entities.

(2) Source: Minerals Council of Australia.

Protecting the environment

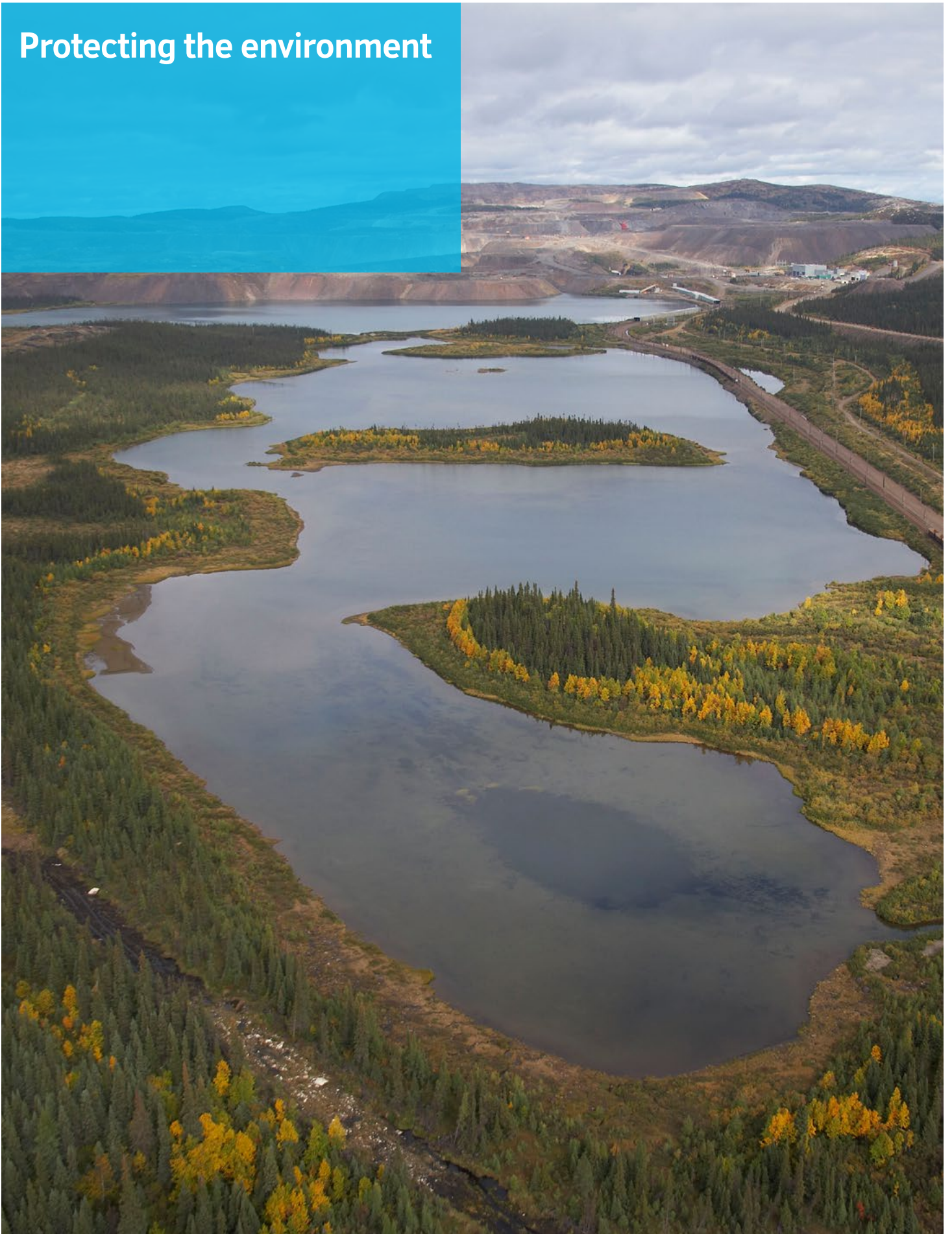


Image: Iron Ore Company of Canada, Labrador City, Quebec, Canada

Protecting the environment



Environmental stewardship is essential to our relationships with host communities, regulators and others. We recognise that our environmental performance is important to our host communities and that we are responsible for managing impacts associated with our operations.

Where our impacts add to those from multiple operators, we seek to work with others to understand and manage cumulative impacts in a region.

In planning and operating our assets, we seek to avoid, prevent, mitigate and remediate the environmental impacts of our activities. We work with our host communities and regulators to manage and monitor these and to comply with relevant regulations.

We work in accordance with the Rio Tinto management system standard as well as Group-wide and business-specific environmental standards and processes. We participate in industry reviews covering issues such as tailings management and water stewardship to share knowledge, learn from others and improve our management approaches.

68%

of our electricity is sourced from renewable energy

7%

decrease in our greenhouse gas emissions intensity since 2015

Image: Environmental monitoring, Dampier Salt operations, Western Australia

2016 Sustainable development report

riotinto.com/sd2016

Protecting the environment: 40

Preparing for a low-carbon future

Our business is energy intensive and we release greenhouse gas (GHG) emissions through the energy used to power our operations and in the chemical processes used to produce metals. We also contribute to GHG emissions indirectly through the transportation and use of our products, such as the use of coal in steel production and electricity generation.

We acknowledge the changing global climate and support the intent and aspirations of the Paris Agreement to limit global warming to less than 2°C above pre-industrial levels. We are aiming for a substantial decarbonisation of our business by 2050 and are taking steps to manage risk, build resilience to climate change and develop our role in a low-carbon future. Our work is supported by our [climate change position statement](#).

In 2015 we extended our GHG emissions intensity target to a 24 per cent reduction, from our 2008 baseline, by 2020. We report our progress to the Group's Executive Committee and Sustainability Committee throughout the year.

Our energy use, including use of reductants, contributes more than 90 per cent of our GHG emissions and provides our largest opportunity to reduce our footprint. The challenge, however, is great. Our underlying demand for energy is increasing due to the additional energy required to mine ore at greater depths, move more waste rock and transport materials over greater distances.

Using more renewables is one way to reduce emissions and we are learning how to integrate renewable energy sources with small and remote power grids through the 1.7MW Weipa solar farm project in Australia.

Engagement with stakeholders is important for understanding the broader risks and opportunities of climate change, policy proposals and expectations for additional information about our work. It also allows us to contribute to policy development. For example, our Group executive for Health, Safety and Environment is a co-chair of the B20 taskforce on Energy, Climate and Resource Efficiency which provides recommendations for action by G20 governments to address climate change. We also participate with the International Emissions Trading Association, ICMM, the Minerals Council of Australia and the US-based Center for Climate and Energy Solutions (C2ES).

We monitor national and international policy developments to assess new carbon and climate change regulation and policy. We use carbon price projections to assess possible impact on costs and product prices. These price projections are calculated, with input from internal and external technical experts, using existing short-term market data and alternative price forecasts.

Rio Tinto takes a long-term approach to strategy development. Our use of scenarios allows us to explore uncertainties and to understand business implications across possible future outcomes. We conduct climate change risk assessments for proposed new investments. Climate-related risk analysis is also used at our operations, for example, to strengthen business resilience and recovery in the event of extreme weather events.



We believe our mineral and metal products have a role in a low-carbon future. For example, aluminium makes lighter vehicles that use less fuel per kilometre. The primary market for our borates is insulation, a cost-effective way to reduce energy use, and copper is the best non-precious conductor of heat and electricity, so copper-containing items tend to be more efficient.

Coal remains essential in the creation of steel and the generation of electricity – albeit it is a significant contributor of greenhouse gas emissions. We support research into carbon capture and storage and low emissions technologies for coal by contributing to the Cooperative Research Centre for Greenhouse Gas Technology and the Australian COAL21 Fund. We also contribute to the Australian Coal Association Research Program which conducts research into the production and use of black coal, including low-emissions coal use.

We work with our supply chain partners on life cycle assessments of our products to reduce GHG emissions and improve processing efficiencies. We were the first company to introduce a low CO₂ aluminium brand, RenewAL™, to capitalise on growing demand for low impact, renewable aluminium.

Our Iron Ore team is researching, with partners, the emissions intensity of steel-making using different iron ore blends. The aim is to produce metallic iron with near net zero carbon emissions. This work is investigating low-carbon fuel options such as liquid natural gas and improved reductants.

Preparing for a low-carbon future

2016 performance

In 2016 we achieved a seven per cent reduction in our greenhouse gas emissions intensity. This furthered our emissions intensity reduction, from our 2008 baseline, to 25.9 per cent. However, our total GHG emissions grew by 0.3 million tonnes, to 32 million tonnes of carbon dioxide equivalent (CO₂-e). Renewable energy represented 68 per cent of our electricity sources.

The three largest sources of indirect (scope 3) emissions associated with our products were:

- 524 million tonnes of CO₂-e associated with customers using our iron ore to produce steel. These emissions are not all in addition to the coal-use emissions presented below, as some customers use both our iron ore and our coal to produce steel. This was a three per cent increase from 2015.
- 102 million tonnes of CO₂-e associated with customers using our coal in electricity generation and steel production, a 13 per cent decrease from 2015.
- Six million tonnes of CO₂-e associated with third-party transport of our products and raw materials, a 10 per cent increase from 2015.

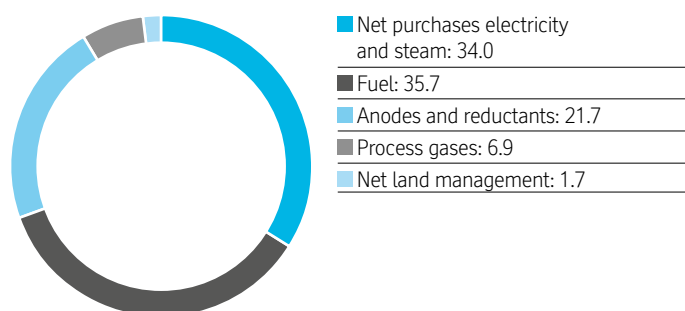
We prepared a new annual climate change report that describes our climate changes risks and how we are preparing our business for a low-carbon future.

We extended our programme with equipment manufacturer Komatsu to change the software in haul trucks to other parts of the Group. This extension follows a five per cent diesel saving, between 2014 and 2016, at our Australian Coal business through earlier work. We also improved fuel use by two per cent across our global shipping fleet by introducing a fuel consumption monitoring system, propeller improvements and hull-fouling prevention activities. We expect to achieve a further three per cent reduction from these activities in 2017.

We received recognition for some of our work. In Canada, our aluminium operations achieved a Distinction status in Hydro Quebec's Energy Savers Circle in recognition of our work in implementing policies and projects to reduce electricity usage. Our Diavik Diamond mine was recognised for its innovative use of wind power at Toronto's 2016 Energy and Mines Renewables in Mining Awards.

Sources of total greenhouse gas emissions

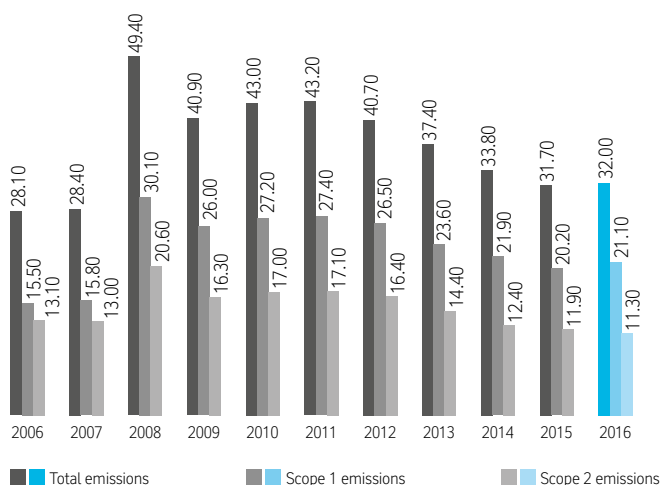
(percentage)



Total greenhouse gas emissions

(million tonnes carbon dioxide equivalent)

32.0

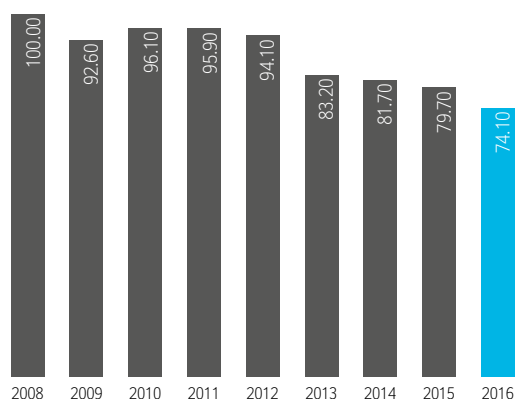


Note: Total GHG emissions includes the sum of scope 1 emissions and scope 2 emissions minus the scope 1 emissions resulting from the supply of electricity and steam to third parties minus net carbon credits voluntarily purchased from, or sold to, recognised sources. 2015 figure restated following application from 1 January 2015 of updated global warming potentials from the IPCC's fourth assessment report.

Greenhouse gas emissions intensity

(Indexed relative to 2008)

74.1

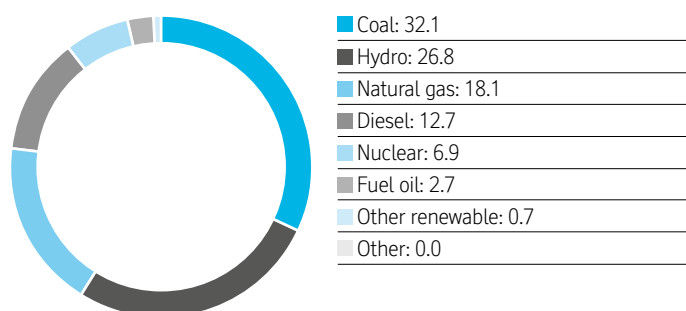


Note: 2015 figure restated following application from 1 January 2015 of updated global warming potentials from the IPCC's fourth assessment report.

Preparing for a low-carbon future

Primary sources of energy used

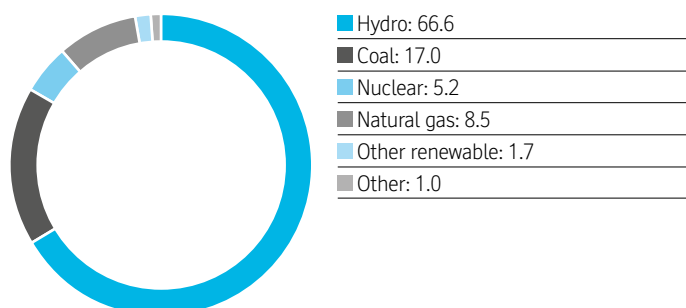
(percentage)



Note: Due to rounding, the sum may not total 100 per cent.

Sources of electricity used

(percentage)

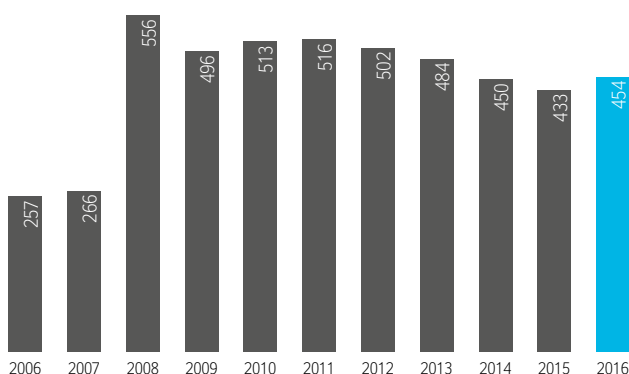


Note: Due to rounding, the sum may not total 100 per cent.

Total energy use

(petajoules)

454



“

Climate change is a global challenge. Our company has operations that use a lot of energy and produce their own emissions, and some of our products have emissions when they are used. However, our metals and minerals can also be beneficial in terms of reducing emissions globally. This means we're very engaged in the climate change debate, and we have a role to play in that.”

Matthew Bateson,

Head of Environment and Legacy Management for Rio Tinto

Talking about climate change

It takes a significant amount of energy to mine and process materials. The way we manage our energy use and the impacts of climate change on our business will become increasingly important as the world moves towards a low-carbon future.

As a member of the global community we have a responsibility to reduce our carbon footprint and play our part in the global climate change goal agreed in Paris in 2015. As a business we have a responsibility to our employees, investors and regulators to ensure we are prepared for the challenges.

Many of these challenges are complex and some are yet unknown, so it's important we are open and honest with our stakeholders about the challenges and the work we're doing to prepare.

At our 2016 annual general meetings, our board supported a resolution put forward by the shareholder group “Aiming for A” to include more information about our climate change approach in our annual reporting. In 2017 we've included more information about our programme. Our *Climate change report*, which is available on our website, includes information on:

- The actions we're taking to manage emissions at our operations.
- How we engage with our stakeholders about climate change challenges.
- Our business's resilience to future climate change scenarios.

The *Climate change report* builds on the information we provide to the CDP and our annual and sustainable development reports. There is still more we can do and in future reports we will include more about our resilience to a 2°C climate change scenario.

Read our [Climate change report](#).

Responsible water management

Water is a valuable global resource and is crucial to many of our operations. We use water to process ore, manage dust emissions, supply drinking water and wastewater services, and generate hydroelectric power. Many of our sites are experiencing changes in their local water regimes due to climate change.

For Rio Tinto, water is not solely about constrained supply and each of our operations has its own water context – while some operations are located in water-scarce environments; others must manage intense rainfall. At some sites, mining below the water table brings challenges as to how we manage dewatering and water disposal. Most sites must manage the quality of water returned to the environment during operations and at closure. Our water management programme focuses on these site-specific risks and how we balance operational needs with those of local communities, Traditional Owners and regulatory requirements.

To ensure we have appropriate focus on the issues that are relevant to water management at each site, in 2014 we replaced the Group-wide freshwater use target with site-specific targets at more than 30 sites where water is a material risk. The targets address water supply, ecological impacts or surplus water management issues. We assess our performance against these targets annually to help focus effort to where water management improvements are required.

2016 performance

At the end of the year, 67 per cent of our managed operations were on track to meet their local water performance targets by 2018.

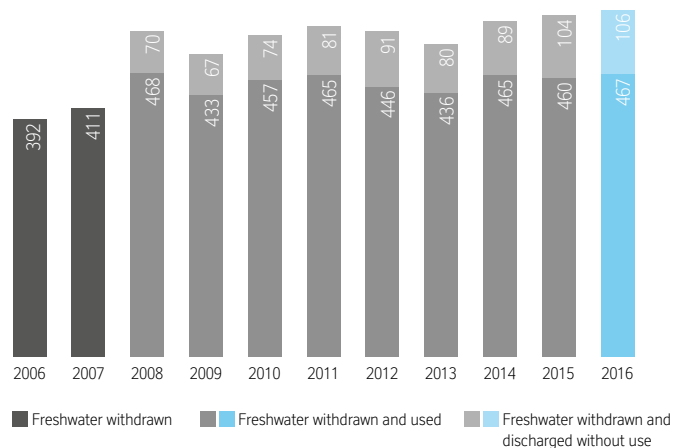
During 2016 we further improved our water governance and planning processes following a detailed analysis of the water-related risks. For those sites not on target, management activities are in place to bring the forecast performance back on track.

During the year we supported the development of the new [ICMM position statement on water stewardship](#). This requires ICMM members to apply strong and transparent water governance, apply robust public reporting, manage water at operations effectively and collaborate to achieve responsible and sustainable water use.



Freshwater withdrawn (billion litres)

573



Note: The sum of the categories may be slightly different to the Rio Tinto total due to rounding. Totals are provided on the Performance data page.
Numbers for 2015 restated from those originally published to ensure comparability over time.

Image: Measuring water quality, Argyle Diamond Mine, Western Australia

2016 Sustainable development report

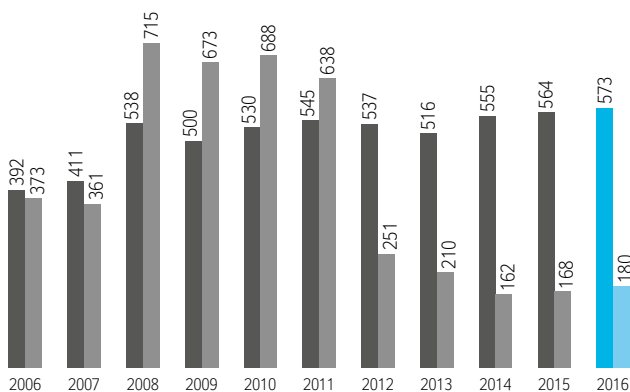
riotinto.com/sd2016

Protecting the environment: 44

Responsible water management

Sources of water withdrawn (billion litres)

753

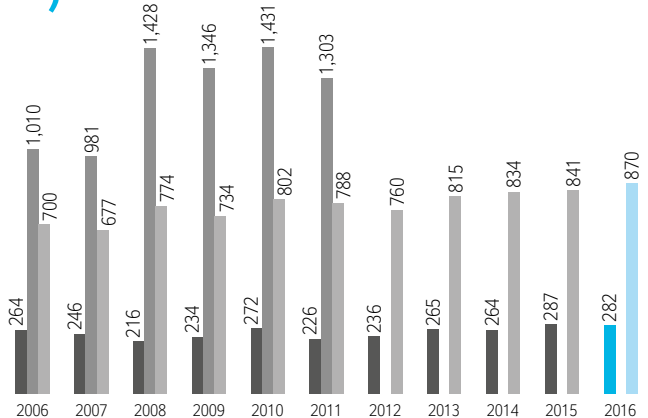


■ Fresh ■ Poor

Note: The decrease in poor quality withdrawn in 2012, compared with previous years, is due to divestment of operations.
Numbers for 2015 restated from those originally published to ensure comparability over time.
The sum of the categories may be slightly different to the Rio Tinto total due to rounding.

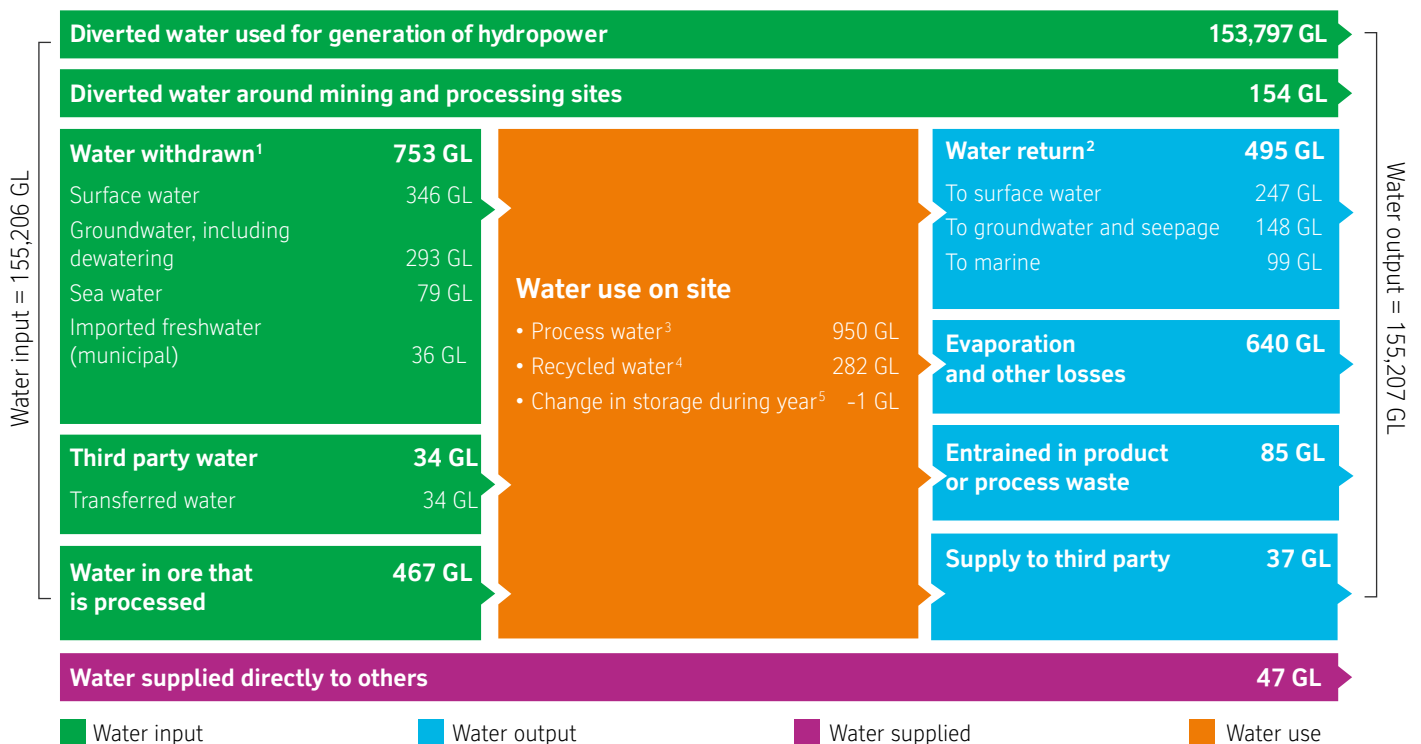
Water used and recycled (billion litres)

1,152



■ Water recycled in process ■ Water use including marine water ■ Water use

Note: The definition of "water use" was changed in 2009 to exclude marine water.
Numbers for 2015 restated from those originally published to ensure comparability over time.
The sum of the categories may be slightly different to the Rio Tinto total due to rounding.



(1) Including on site impounded/imported surface, onsite/impounded ground water (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".

Managing tailings and structures

Tailings are residues created as part of mining, refining, smelting and water treatment processes. We operate tailings and large water storage facilities at 33 operations and also have closed impoundments that we continue to monitor at five sites. We review and audit operations to ensure that our practices comply with our Management of tailings and water storage facilities standard and are consistent with the principles in the ICMM's Tailings Governance Framework.

Assurance over these storage facilities by internal and independent third-party reviews remains a focus.

2016 performance

During the year we participated in the ICMM's review of tailings dam management. An outcome of this review was the development of an ICMM position statement on preventing catastrophic failure of tailings storage facilities. This statement is a commitment for members to implement practices consistent with [ICMM's Tailings Governance Framework](#), which focuses on critical organisational elements of management and governance essential for the consistent and effective implementation of existing guidance and in delivering a corresponding reduction in risk. Since the principles for risk control for planning, designing, implementation, operation, monitoring, inspection and disaster management identified in ICMM's position statement are already incorporated in our standard, it has not been necessary for the Rio Tinto standard to be updated.



Image: Tailings at the Iron Ore Company of Canada operation, Labrador City, Canada

Minimising our biodiversity impacts

We work to avoid and minimise biodiversity loss and land disturbance, while improving our biodiversity management practices. Our approach, which has been well established over many years, is consistent with the [Cross-sector Biodiversity Initiative's \(CSBI\) guide](#) for implementing the mitigation hierarchy of avoidance, minimisation, restoration, and offsets where appropriate.

We use the Integrated Biodiversity Assessment Tool before seeking tenure for exploration. The tool, accessed through the Proteus industry partnership, lists land that is protected or that has specific restrictions.

In a project's development phase we avoid significant or lasting impacts by seeking sympathetic mine and infrastructure designs, such as re-routing infrastructure or applying exclusion zones around significant ecological communities. For example, at our Zulti South project in South Africa the infrastructure corridor was redesigned to avoid impacts on sensitive grassland and wetland habitats. At other sites, conservation priority areas are excluded from the mine plan area.

Our approach during the active mining phase includes rehabilitation and restoration and working with stakeholders to compensate for residual impacts through offsets. For example, our mineral sands mines in Africa, QIT Madagascar Minerals and Richards Bay Minerals (RBM), conduct afforestation, agricultural projects and forest restoration on mined lands to balance the economic needs of host communities with the conservation of biologically diverse habitats.

Our sites contribute to the survival of species or the management of sensitive areas:

- Independent monitoring programmes have confirmed multiple [sightings of two critically endangered bird species](#) – the swift parrot and regent honeyeater – across offset areas owned and managed by Rio Tinto's Mount Thorley Warkworth coal mine in the Hunter Valley, Australia.
- At the Oyu Tolgoi copper mine in Mongolia we're collaborating with local herders and border military guards on an anti-poaching offset programme.
- A fencing project funded by Rössing uranium mine in Namibia is protecting a nesting site of the vulnerable Damara tern from off-road vehicles.
- The Yandicoogina iron ore mine in Australia conducts wide-scale baiting programmes on the Yarraloola land management area to reduce feral cat populations that threaten native fauna.

2016 performance

Our sites are recognised locally and globally for their efforts in managing biodiversity. In 2016 RBM received a Certificate of Merit from the Enviropaedia Eco-Logic Awards in South Africa for its efforts in restoration and biodiversity conservation of coastal dune forest vegetation during the past 40 years.

During 2016 we shifted our aim from achieving a net positive impact (NPI) on biodiversity to effectively minimising our impacts by applying the mitigation hierarchy. This will include taking a more integrated site-level approach that considers the specific environmental and regulatory context, and the needs of local communities within the wider landscape. The change was based on over a decade of work during which we learned that achieving NPI was not always possible. Despite substantial progress in biodiversity management by our sites, there continue to be significant challenges to a net gain aspiration, including: limited opportunities for offsetting in certain areas, and the significant time required to restore the ecological integrity of natural habitats.

In 2017 our new approach will be incorporated into our environmental standards and our environmental risk assurance processes (see "Our evolving approach to biodiversity", page 50, for more information).

In collaboration with the [International Union for Conservation of Nature \(IUCN\)](#) we documented and shared our NPI learnings with past partners, which we are now compiling as a publication for wider communication.

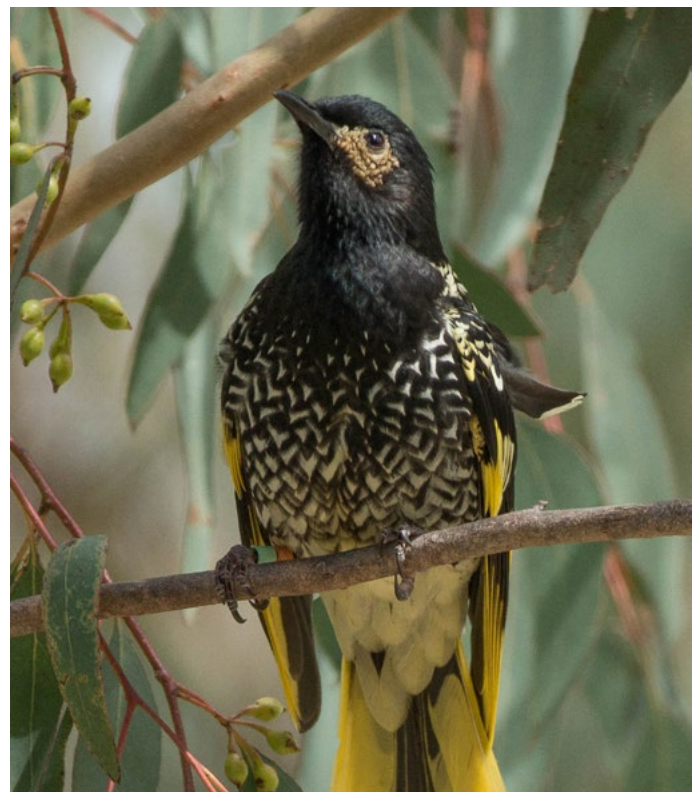


Image: The regent honeyeater (*Anthochaera phrygia*) was found breeding on a mine offset area, New South Wales, Australia

Managing our day-to-day responsibilities

Our other environmental responsibilities include managing risks and impacts from air emissions and non-mineral waste. In these areas we aim to protect human health and the environment. We work with neighbouring communities to understand any impacts and further improve our practices. Also, as required by our CSP standard, each site has mechanisms to record and respond to complaints, disputes and grievances about issues including noise and dust.

Use of fossil fuels, movement of ores and wastes and the smelting of metals release gases and particulates into the atmosphere. Our air quality protection standard is designed to prevent breaches under normal and worst-case weather conditions. It is focused on controlling and monitoring air emissions at their source and understanding any impacts on local airsheds. We also monitor particulate gas and vapour exposure in the workplace, in line with our internal standards and regulation.

The major air emissions from our operations are:

- Oxides of sulphur (SO_x) – mainly at our aluminium and copper smelters and our coal and fuel oil fired power stations.
- Oxides of nitrogen (NO_x) – 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.

We are committed to the ICMM's mercury risk management position statement and we report mercury air emissions at the Group level. Mercury is found in the environment from natural sources, industrial combustion and other industrial processes. Air emissions of mercury are released from alumina refining operations, other metal production processes and fossil fuel power generation. Since the curtailment of our Gove alumina refinery, our mercury emissions have decreased.

Our waste management approach involves characterising our waste type and predicting how it will behave over time. We try to reuse or recycle our waste. Where that is not possible, we manage it in facilities suited to its specific physical nature and risks whilst also minimising disposal costs and avoiding future liabilities.

About one-fifth of our mineral waste has the potential to react with air and water or break down to create potentially harmful contaminants, such as acidic and metalliferous drainage (AMD). Our controls are designed to prevent or minimise risks of AMD across all stages of the mining process. They include:

- Identifying reactive mineral potential during exploration and evaluating risk in project developments.
- Identifying mining areas containing reactive wastes and applying controls such as avoidance and segregation during mine operations.
- Selecting appropriate areas for permanent storage of reactive waste rock.
- Applying strategies during operation and at closure that isolate reactive waste to minimise AMD generation and collect drainage.
- Regularly monitoring the performance of our mineral waste disposal programmes, including post-closure monitoring to demonstrate conformance with closure criteria.

- Completing independent, external reviews of our site-level strategies and performance.
- Providing support to non-managed operations in the responsible management of mineral waste through participation in technical committees and sharing of good practice.

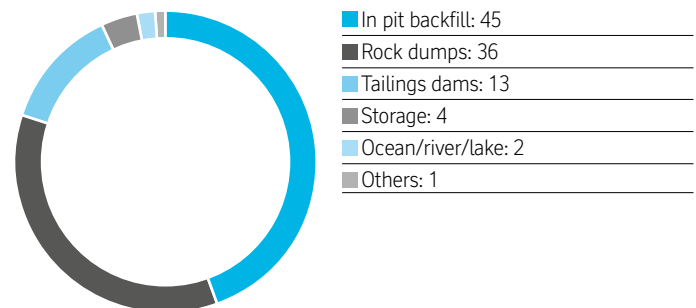
2016 performance

In 2016 we reported one significant environmental incident in relation to the partial failure of a sediment dam at the Mount Thorley Warkworth mine. The incident did not result in any environmental harm. In this incident the New South Wales Environment Protection Authority has alleged a breach of Warkworth Mining Limited's Environmental Protection Licence conditions that require the carrying out of licensed activities in a competent manner.

In 2016 we paid US\$57,618 in fines related to environmental compliance. These related to the late regulatory reporting in 2014 (Canada), incorrect emissions calculations in 2015 (Australia), two boiler stack test failures in 2015 (US), and exceedance of a water quality effluent limit in 2015 (Canada).

Mineral waste by disposal location

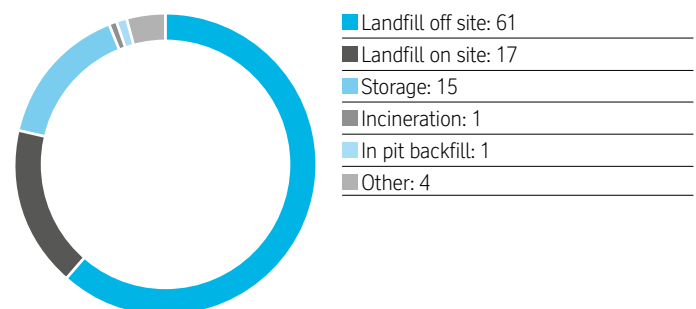
(percentage)



Note: Due to rounding, the sum may not total 100 per cent.

Non-mineral waste by disposal location

(percentage)

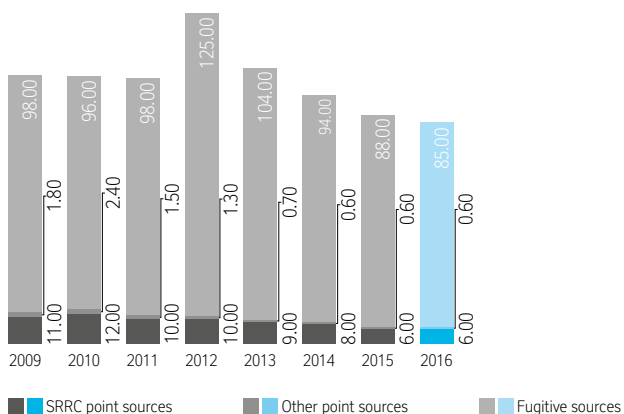


Note: Due to rounding, the sum may not total 100 per cent.

Managing our day-to-day responsibilities

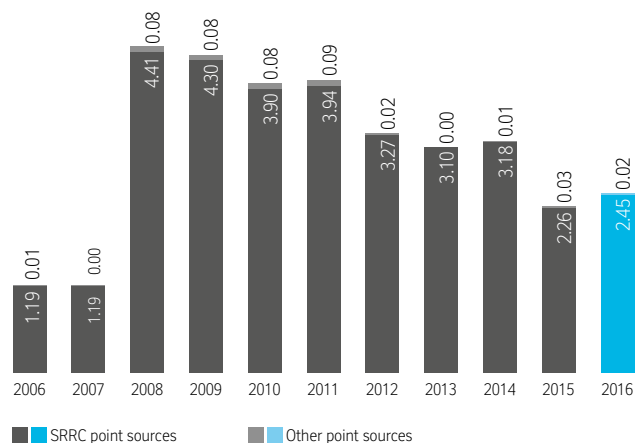
Particulate (PM₁₀) emissions
(thousand tonnes)

91.3

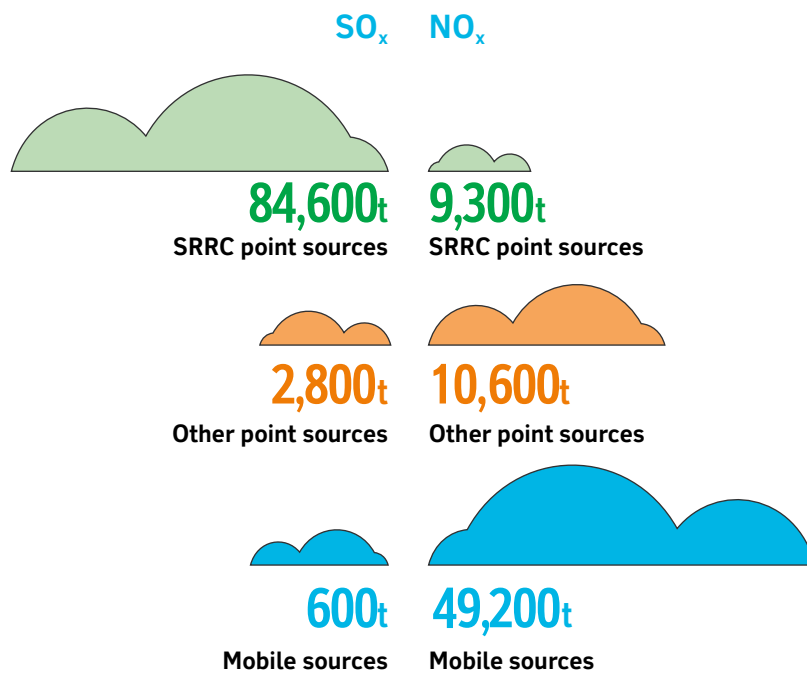


Fluoride emissions
(thousand tonnes)

2.47



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



Note: Numbers have been rounded to the nearest hundred.

Our evolving approach to biodiversity



It is not possible to extract mineral resources essential to modern life without impacting the natural world. But by adjusting the way we develop, build, operate and close our mines, mining companies can make a large difference to the ultimate impact we have on ecosystems and biodiversity.

A bold and idealistic plan

In 2004, Rio Tinto committed to achieving a “net positive impact” (NPI) on biodiversity across all our operations – meaning that our activities should ultimately affect a measurable, positive, change to biodiversity.

The commitment was ambitious and well-intentioned. However, it was made without a full understanding of the challenges we would face at our sites.

The next chapter in biodiversity management

Dr Theresia Ott, principal adviser, Environment at Rio Tinto said the Group had learned a lot about how it could contribute to biodiversity, and had concluded that a corporate-wide commitment to NPI was not practical.

“Rio Tinto may be moving away from a corporate-wide commitment to NPI, but we remain proud of the enormous contributions that have been made in trying to reach this goal and the momentum it has created within the mining sector and beyond,” Theresia said.

“We’ve learned that allowing sites to tackle their own contexts on a case-by-case basis, through an integrated approach to biodiversity management, is more practical and viable in the long run than applying a blanket NPI target across all of our operations.

“We remain committed to working with our stakeholders to overcome the challenges we faced in pursuing NPI and advancing improved integrated biodiversity management performance across all of our sites,” she said.

While this means we are moving away from our corporate-wide NPI commitment, we will continue to use the mitigation hierarchy to minimise our residual impacts and, at some sites, this may result in a net gain for biodiversity.

We’re now moving towards an integrated site-level approach that focuses on effectively applying the mitigation hierarchy (avoidance, minimisation, restoration, and offsets where appropriate) in a way that considers the specific environmental and regulatory context, and the needs of local communities within the wider landscape.

To help our teams on the ground, we’re improving our operating standards, guidance materials and procedures. And to provide an additional level of assurance, all new biodiversity management plans will be reviewed by external experts.

A pragmatic response

We’ve set a high bar for the industry with our approach to biodiversity. Since 2010, we’ve worked with IUCN and others to share our learnings with peers and partners who may be managing similar biodiversity challenges.

During 2016, we conducted joint presentations, webinars and discussions with our sites and NGOs, including past partners and other stakeholders, to outline these lessons and our new approach. As pioneers in applying NPI to mining operations, our experience has taught us about the challenges of NPI, but we have also had many successes. We are currently preparing a publication in collaboration with the IUCN to communicate these lessons.

These learnings are key to the next chapter in biodiversity management at Rio Tinto. We’ll use the lessons of the past 12 years to further help us minimise our biodiversity impacts in the future.

Biodiversity and why it matters

Much more than just a description of the variety of life on Earth, biodiversity is a pivotal characteristic of the environment on which the human world depends. It plays a role in providing us with the fresh air, water and fertile soils we need. Each feature of biodiversity adds stability to the system and builds resilience. As each of these is removed, the less capable the system is to withstand extreme events or disruptions.

Our evolving approach to biodiversity

Key features of Rio Tinto's approach to biodiversity

We're adopting a site-based approach that aims to overcome the challenges in conserving biodiversity while balancing social and business imperatives.

The eight sites that have regulatory or lender-based NPI (or similar net gain) performance requirements for offsets or similar goals will continue to implement them as agreed. The two sites with voluntary offsets will review management practices for these sites in collaboration with relevant stakeholders.

Existing requirements

- Assess biodiversity values, potential risks and impacts at existing and new operations.
- Those operations in high and very high biodiversity areas must develop biodiversity management plans in collaboration with local communities and conservation organisations.

Increased focus

- Diligently apply the mitigation hierarchy throughout the mine life cycle with a particular focus on avoidance, restoration and minimisation practices to minimise residual impacts on biodiversity.
- Incorporate biodiversity management requirements into environmental standards and audit protocols to monitor implementation and assure our performance.

New requirements

- Use external expertise and guidelines to guide our approach to the implementation of the mitigation hierarchy, especially where there are no regulatory framework or lender requirements.
- Continue to use biodiversity offsets when required by regulators, lenders and as otherwise stipulated by our soon-to-be revised management standards and procedures.
- Arrange for an independent review of practices and publicly report performance on sites that manage material risk to important biodiversity features.
- Protect biodiversity features and aid ecological processes on land that is outside of the planned mining area but under the operation's control.
- Involve local communities in the design and implementation of biodiversity management wherever possible.

The mitigation hierarchy

These four types of action are integral to Rio Tinto's approach to biodiversity:

- **Avoidance.** This fundamental principle of the mitigation hierarchy involves changing or stopping a normal course of action in the interest of biodiversity. For example, we might divert a haulage road around an area of conservation significance.
- **Minimisation.** This is about reducing biodiversity impacts when they cannot be completely avoided. For example, vehicular speed limits on haulage roads, insulation of high voltage overhead infrastructure and exotic species introduction control measures.
- **Restoration.** In this process, disturbed land is stabilised and revegetated with the aim of establishing a specific habitat type. For example, we might restore forest habitat, or create a biologically diverse area where there may previously have been land of low conservation significance.
- **Offset.** Conservation actions designed and implemented to address residual impacts with the goal to achieve at least a no net loss or net gain for biodiversity compared to a reference scenario which would likely have occurred in the absence of the project and offset. For example, securing the conservation of an area of similar or higher conservation value and habitat type, or similarly beneficial activities for additional conservation gains in the region in partnership with local stakeholders.

How we're implementing the mitigation hierarchy

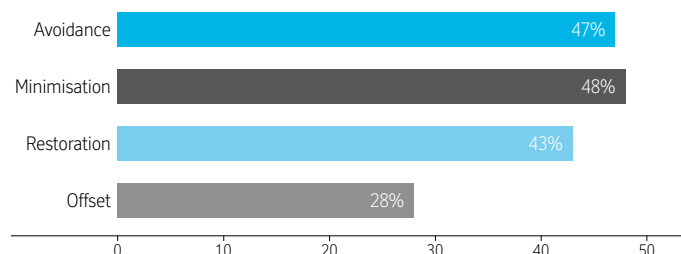


Figure 1. The percentage of the 28 sites in areas with "high" or "very high" biodiversity values that have implemented the various stages of the mitigation hierarchy. As the graph shows, our activities are currently skewed towards minimisation and restoration due to older sites (>20 years) that no longer have avoidance opportunities. Source: Rio Tinto Annual social and environmental survey 2015.

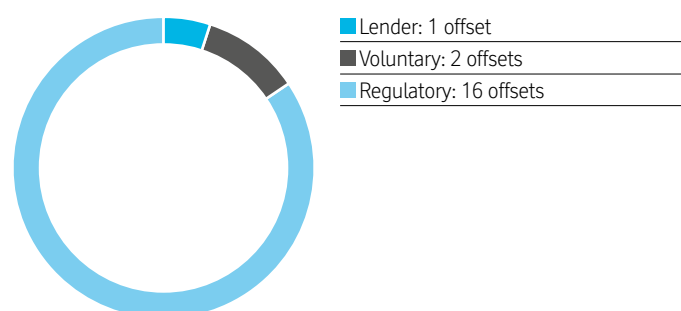


Figure 2. Across our 28 sites in areas of "high" or "very high" biodiversity value, Rio Tinto is implementing 19 offsets, of which 17 are required by lender organisations or regulators, and two are voluntary commitments.

Governance integrity



Image: Teams inspect a conveyor belt, Pilbara operations, Western Australia



The global nature of our operations and the inherent risks associated with our industry mean there are social, economic, political and cultural matters that we need to manage to maintain our licence to operate. We are closely watched as to how we deal with these and if matters go awry.

Our industry is also expected to improve practices relating to consultation with stakeholders and local communities, grievance mechanisms, human rights risks and legacy management.

We are committed to doing business with maximum integrity, transparency and accountability and with business partners who share our values. We actively adopt approaches to prevent and resolve specific and systematic incidents and constantly seek ways to improve. To help manage the risks and expectations, it's important we have good governance and integrity systems in place.

30

business resilience
exercises conducted
across the business

26%

of disturbed land* has
been rehabilitated

*Excluding hydroelectricity dams

Released our most detailed

tax transparency report

 to date

Maintaining integrity and compliance

The key principles that guide our behaviour in [The way we work](#) are supported by standards that cover antitrust, business integrity, conflicts of interest, data privacy, fraud and third party due diligence. All of these are supported by workforce training, which we continue to review to keep fresh and relevant.

We maintain a strict stance against bribery and corruption, which is prohibited in all forms. Any Rio Tinto employee not complying with anti-bribery and anti-corruption laws may face disciplinary action, up to and including termination.

Our Integrity and Compliance programme is aligned with the risk-based approach included in our business integrity standard. While we are aware there is increased regulatory and legislative activity in this area, our approach is driven by our corporate values. The programme meets Group-wide and business-specific requirements and aims to address concerns in our host communities. We conduct quarterly audit forums to monitor and oversee the implementation and effectiveness of the integrity and compliance programmes across our business.

Speak-OUT, the Group's confidential and independently-operated whistleblowing programme, enables employees, suppliers, contractors and community members to report anonymously, subject to local law, any significant concerns about the business or behaviour of individuals. This could include suspicion around safety violations, environmental procedures, human rights, financial reporting or business integrity issues in general.

We are committed to a culture of transparency and encourage employees to speak up about their issues and concerns, either through their line management, human resources or through *Speak-OUT*. Our case management tool for *Speak-OUT* is a single, secure repository for management of all cases and related investigations, including complete data analysis and reporting capabilities.

We remain dedicated to open and transparent dealings with our stakeholders. Information on the Group's operational, financial and sustainable development performance is issued on time through a number of channels, such as media releases and regulatory filings.

We participate in global initiatives such as the Extractive Industries Transparency Initiative, which aims to strengthen governance by improving transparency and accountability in the extractive sector. We also engage constructively with governments and the Organisation for Economic Co-operation and Development (OECD) on new and emerging tax reporting codes and policies to ensure consistency in our reporting procedures. Where appropriate, we provide submissions to government enquiries and take an active role in our industry associations on matters affecting our business interests.

2016 performance

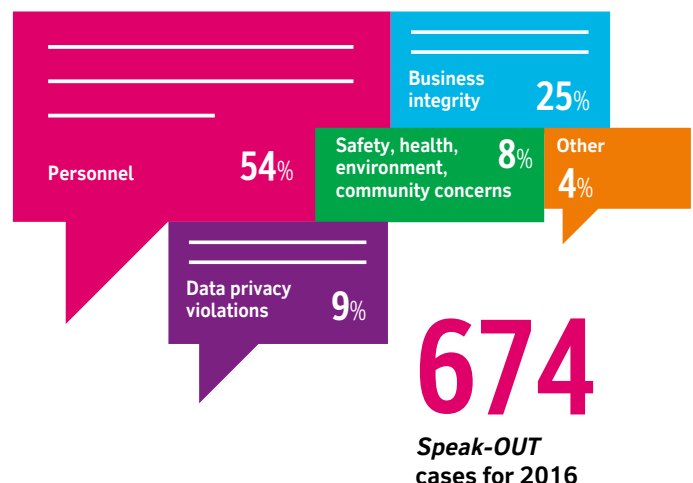
During 2016 we began a review of our company's purpose and vision in consultation with our employees. Safety and excellence were included into our stated values.

In 2016, 674 incidents were reported through *Speak-OUT*, compliance managers and/or management. This was a 12 per cent increase on last year, mainly due to a higher volume of incidents raised outside of the hotline. Twenty six per cent of cases were substantiated, resulting in corrective and preventative actions.

Details of litigation and other regulatory matters can be found in our *2016 Annual report*.

In response to media reports and a communication from the President of the Autonomous Region of Bougainville in July 2016 relating to Rio Tinto's share transfer of its Bougainville Copper Limited holding to the Autonomous Bougainville Government and the Government of Papua New Guinea, we sent a letter to the President of the Autonomous Region of Bougainville in August 2016 addressing legacy concerns and highlighting our efforts to find a mutually beneficial solution regarding future mining at Panguna.

We released our most detailed tax transparency report to date, including additional detail on our tax planning principles, effective tax rates and commentary on tax havens. The report adopts the new Australian Government Voluntary Tax Transparency Code guidelines earlier than required, in addition to meeting the new requirements of the EU Accounting Directive by including a project-by-project breakdown of payments. Our *Taxes paid in 2016* report will be published during 2017 and made available on [our website](#).



Maintaining assurance

Rio Tinto operates under three "tiers" of risk management and assurance.

The first tier is owned by the businesses and provides visibility to operational general managers on the monitoring and control of their critical risks on an ongoing basis.

The second tier verifies that the first line of assurance is working in compliance with controls. It provides information on compliance, risk mitigation, improvement, and learning opportunities to general managers and businesses. The frequency of the second tier is every two to five years based on risk and the site's control effectiveness profile.

The third tier is managed by Group Internal Audit to provide assurance that the systems of risk management, internal controls and governance are adequate and effective.

2016 performance

Over the past 18 months we have worked to improve the quality of Health, Safety and Environment (HSE) assurance and implement the following:

- Revised auditor training which focuses on risk, materiality and the skills required to present findings that will lead to effective corrective action and improvement.
- A control effectiveness profile methodology to determine the scope and frequency of audits on the basis of risk.
- Improved governance and reporting to ensure corrective actions are completed on time.
- Increased participation of operational leaders on audits.
- Redesigned first tier assurance framework with a greater use of risk and control metrics and more targeted self-auditing.

Building a resilient business

Our approach to business resilience and recovery aims to prevent or control risk and the consequences associated with events that could threaten our people, the environment, our assets and our reputation. Our approach is consistent with the Rio Tinto management system standard.

Our Business Resilience and Recovery Programme (BRRP) is aligned with good practice and well-established standards. It integrates emergency response, business continuity and information technology recovery. The key elements of our BRRP are:

- Management to ensure an appropriate level of commitment and resourcing is allocated including trained personnel, facilities and equipment.
- Business resilience to be embedded through strategies and programmes that support our day-to-day work.
- Analysis of business resilience plans and arrangements based on major or catastrophic risks that would have an unacceptable impact on safety and the business.
- Implementation and validation of fit-for-purpose plans and arrangements at every site.

Every Rio Tinto site has a BRRP plan and team to prepare for and respond to incidents. Every team is required to rehearse its plans on an annual basis using realistic, credible and sophisticated exercises. We rehearse exercises and manage real incidents in a consistent manner, share best practices, eliminate overlaps and clarify accountabilities.

We employ strong lockdown, evacuation and invacuation (where employees remain in the secure core of a building if the threat is outside) procedures and continue to develop communication tools to establish contact with our employees when needed. In recognising that acts of violence can be unpredictable, we continue to ensure our employees have a basic knowledge of the measures that will increase their survival in the unlikely event of terrorism.

2016 performance

During 2016 we conducted over 30 exercises across the business.

We completed an anti-terror programme at over 100 Rio Tinto facilities in metropolitan areas, including training to ensure security measures and emergency response procedures are in place and appropriate.

Respecting human rights

We recognise that we may positively or negatively affect the human rights of a variety of stakeholders including community members, our employees and contractors.

We respect and support all internationally recognised human rights consistent with the Universal Declaration of Human Rights. Our most salient human rights issues are those relating to security, land access and resettlement, Indigenous people's rights including cultural heritage, environment including access to water, labour rights including modern day slavery and in-migration-related impacts on local communities.

We have our own human rights policy and have made voluntary commitments to the [OECD Guidelines for Multinational Enterprises](#), the [UN Global Compact](#) and the [Voluntary Principles on Security and Human Rights \(VPSHR\)](#). Our human rights approach is consistent with the UN Guiding Principles on Business and Human Rights (UNGPs). We expect our policies and procedures to be applied consistently wherever we operate. Where our standards and procedures are stricter than local laws, we seek to apply our own standards.

We take an integrated, risk-based approach. For example, we include human rights considerations in our business processes such as social risk analysis, environmental and social impact assessments and incident reporting procedures. We conduct standalone human rights studies and programmes at high-risk sites when required. Our human rights working group helps us coordinate our approach.

To avoid and address any involvement in adverse human rights impacts through our business relationships, this year we progressed our work on third party due diligence in relation to suppliers. Consistent with our Communities and Social Performance standard, all sites must ensure that human rights awareness training appropriate to the local context is provided to all employees, contractors and visitors.

During the year we engaged with investors, civil society and community members on various human rights matters including land access, cultural heritage, environment and labour rights issues related to our, and our business partners', operations. We engaged externally to support policy development and benchmarking.

All sites are required to have a complaints, disputes and grievance mechanism consistent with the effectiveness criteria for operational-level grievance mechanisms in the UNGPs. In 2016, sites began implementation of our CSP global target. Sites are expected to locally report on an annual basis, and demonstrably achieve by 2020, the effective capture and management of community complaints with a year-on-year reduction in repeat and significant complaints. All sites are required to investigate and resolve all actual, suspected and alleged breaches of human rights that involve community members in accordance with our human rights policy.

We strive to achieve the free, prior and informed consent of Indigenous communities as defined in the 2012 IFC's Performance Standard 7 and the ICM position statement on Indigenous peoples and mining.

Our CSP standard provides that where unavoidable, physical and economic resettlement must only be undertaken in compliance with the IFC's Performance Standard 5 on Land Acquisition and Involuntary Resettlement. It also requires that resettled people have their standard of living and livelihood sustainably restored or improved over the long term.

Recognising risks relating to security and human rights, our security standard and supporting guidance notes, toolkit and assurance process require security management consistent with the VPSHR and the UN Basic Principles on the Use of Force and Firearms. Our security incident reporting system is used to record human rights-related incidents.

We provide training for security personnel and conduct security and human rights analysis in support of our security arrangements. Our implementation effort focuses on sites most exposed to the risk of force abuse by private and public security forces. Our online VPSHR training is mandatory for all security personnel at high risk sites and is strongly recommended for all our other businesses.

2016 performance

In 2016 we updated our human rights training. The introductory module will be compulsory for employees in 2017. Function-specific modules around communities, procurement, security and inclusion and diversity will also be made available.

We developed our first annual slavery and human trafficking statement in compliance with the UK Modern Slavery Act 2015.

During the year we conducted VPSHR and Use of Force training for security providers at three of our locations in Southern Africa and Guinea.

Our commitment to end modern slavery

Businesses need to be alert to the risks posed by slavery and human trafficking, regardless of their sector or where they operate. We expect our employees and suppliers to reject any form of slavery, and to evolve our approach to meet emerging risks.

In line with the UK's Modern Slavery Act, we have published the steps taken in 2016 to ensure slavery and human trafficking are not taking place in any of our managed operations or supply chains.

Read our [first annual modern slavery statement](#).

Mine closure

Planning and provisioning for closure of mines and facilities is important for maintaining a positive legacy after our operations cease. Our approach to closure planning and management is guided by our Closure standard and governed by our Closure Steering Committee.

Planning for closure starts during project development and extends through construction, operational and decommissioning phases. It includes long-term water management, post-closure land use and economic aspects. We work in collaboration with local communities and regulators to ensure post-closure outcomes are achievable and adverse risks are minimised cost effectively.

We progressively rehabilitate land as we operate our mines – to meet regulations, control dust and erosion, and confirm successful land rehabilitation practices.

Closure and restoration costs include infrastructure demolition, residual material removal and the remediation of disturbed areas. Provisions are based on the net present value of the estimated future costs of restoration. This is done after considering different remediation and closure scenarios and current restoration standards and techniques.

In addition to planning for closure of our own mines, we also manage and provide for a number of closed sites inherited during acquisitions and mergers. In some countries these need to be managed or monitored into the long term.

The mining and metals industry is entering a new stage in mine closure, with Rio Tinto and many of our peers planning to close large operations over the next decade. In many jurisdictions where we operate, regulatory frameworks for large mine closure remain undeveloped or untested. With our peers we are working on the challenges and engaging with governments on good closure policy and regulation.

2016 performance

We continued detailed closure planning for those large mines that are expected to close over the next ten years.

Ninety six per cent of the Group's operations now have closure plans. At the end of the year, total close-down, restoration and environmental obligations amounted to US\$8.7 billion. During 2016 work progressed at 11 of our non-operational sites so that we can now relinquish them. We have also rehabilitated 26 per cent of our disturbed land (excluding land disturbed for hydroelectricity dams).

Supporting non-managed operations and joint arrangements

We hold interests in companies and joint arrangements we do not manage. The two largest are the Escondida copper mine in Chile and the Grasberg copper-gold mine in Indonesia. We actively engage with our partners through formal governance structures and technical exchanges and promote adherence to the principles in *The way we work*. We encourage our partners to embed a strong safety, security and human rights culture in their workforces.

Escondida

Rio Tinto has a 30 per cent interest in Escondida, which is managed by BHP Billiton. Our seats on the Owners' Council enable us regular input on strategic and policy matters. Sadly, there was one fatality in 2016, whereby a maintainer was fatally injured when working on the mill.

Construction of the Escondida Water Supply desalination project progressed well in 2016. Initial start-up milestones have been met and the plant is on track to be fully operational in 2017. By utilising seawater, the plant will significantly reduce demand on fresh groundwater resources around the mine.

Grasberg

PT Freeport Indonesia (PTFI), a subsidiary of Freeport-McMoRan Copper & Gold, Inc., owns and operates the Grasberg mine in Papua, Indonesia. We have a joint venture interest attributable to the 1995 mine expansion, which entitles Rio Tinto to a 40 per cent share of production above specified levels until the end of 2021 and 40 per cent of all production after 2021 (this date is subject to extension under certain conditions). We engage with PTFI through four forums: the operating, technical and sustainable development committees and the tailings management board.

The largest of these, the multidisciplinary technical committee, enables discussion of joint venture activities such as environmental management, orebody knowledge, project execution, worker health and safety, communities, mine planning, processing and tailings management. Rio Tinto is represented by a senior environmental manager on the PTFI tailings management board, which meets twice a year at Grasberg and includes third-party experts. A Rio Tinto senior manager also works closely with PTFI on activities such as fatality prevention programmes.

Tragically, there were four fatalities at Grasberg in 2016: one electrician was fatally injured whilst performing routine maintenance on a transmission line; one worker was struck by a moving forklift; one worker fell approximately six metres when checking a power supply fault; and one mine operator who was not properly secured in a bulldozer was thrown from the machine when it slid down a bench slope. We worked with the PTFI team to share fatality prevention initiatives including CRM and learning critical lessons to try to ensure the circumstances leading to these incidents are not repeated.

A new future for an old industrial town

A lasting legacy: Decommissioning the Sabart aluminium plant



High in the French Pyrenees, the city of Tarascon-sur-Ariège has a long and proud industrial heritage.

Industry had been the lifeblood of the region since the late 1800s, when local engineers harnessed water flowing from the mountainous terrain to power factories and mills.

By the early 1900s the first aluminium smelters had appeared in the region, and in 1926 the Sabart aluminium plant opened. At its peak, the operation employed up to 600 people and included a smelter, cast house, anode-baking furnace and ferro-silicon plant.

But by the mid-1990s the operation's relatively small size and remote location meant it could no longer compete with larger smelters around the globe, and then-owners, Pechiney, closed it. Other plant closures followed in the region, hitting the community hard.

Looking at the bigger picture

Fast forward to 2016, and the Sabart aluminium plant site is once again a source of pride for the town.

During the past few years, Rio Tinto has been working with the local community to plan the site's future. The company inherited the closed smelter following its acquisition of Alcan in 2007, which in turn had acquired Pechiney in 2003. It was agreed the city of Tarascon-sur-Ariège would buy the site at a discounted price, and transform it into a multi-use precinct for both recreational and commercial use.

"While legacy sites could be regarded as liabilities, by working closely with local stakeholders we can create assets that bring value to the community and also enhance our reputation," said Amiel Boullemant, Sabart site manager, in Rio Tinto's Legacy Management team.

"At Sabart, as with all our legacy sites, we looked at the bigger picture. Our focus was not just on safely decommissioning the site, but also working with the community to create opportunities for the future."

The Tarascon-sur-Ariège council considered a number of options for the six-hectare site, deciding a mix of commercial and recreational uses would deliver the best long-term outcome. A new small business park will help drive employment, while the recreational area will allow the town to better capitalise on one of the region's most important cultural landmarks – the 12th century Notre-Dame de Sabart church.

Collaboration is key

Once the plans were finalised, Rio Tinto established a working group to ensure the decommissioning and rehabilitation work would align with the council's aims for the site. The group, which included representatives from two city councils, government agencies, and local businesses situated nearby, enabled smooth decision-making and ensured all parties shared a common vision.

Rio Tinto invested €3 million in the decommissioning and rehabilitation programme, which involved asbestos removal, soil decontamination, and the demolition and removal of large structures and foundations. More than 55,000 tonnes of soil was excavated, treated, sorted and crushed for use as backfill on the site.

A key challenge was removing asbestos materials, which must be carefully handled, from significant heights. All of this was undertaken just one hundred metres from the historic church and completed within ten months. Despite these challenges, the decommissioning team delivered the project with no significant safety incidents. Given many contractors were involved in the project, the team shared Rio Tinto's safety systems and procedures – such as critical risk management – to ensure high safety standards were consistently met.

The decommissioning programme was finished in October 2016, and the city council is now undertaking civil works to prepare the site for commercial use. Once opened, the business park will house up to ten small businesses.

A new future for an old industrial town

A new chapter

Notre-Dame de Sabart will be the focal point of the new recreational precinct. The church's history is steeped in legend. While the first recorded mention of the church was in 1104, it is believed that Charlemagne witnessed a miracle at the site centuries before. It's now an important site of religious pilgrimage, with thousands of people from near and far gathering at the church each September.

For many years it was hidden away among derelict buildings, and will now be given a chance to reclaim its former glory. It is hoped the new recreational amenities will help draw more tourists. Alain Sutra, Tarascon City Mayor, said it marked a new chapter for the city.

"I have mixed feelings. A lot of sadness, because it's the end of a story. But also a lot of happiness, because I feel like I'm helping write a new page. We are investing in our future and making our city more beautiful," Alain said in an interview with local TV station Franceinfo.

"Tarascon is not really the industrial city that it once was. Now, it is my job, it is our job, to write a new page. And this new page is much more based on tourism."

Managing what we leave behind

In 2016, Rio Tinto's legacy management team monitored and managed more than 100 old sites in five countries.

The team makes sure our former operating sites, including those we inherit through acquisitions, are made safe, that all problem areas are addressed cost-effectively, and that there is a sustainable future for the community. It can be challenging work: the team must often navigate conflicting stakeholder views, overcome environmental and technical issues, and comply with wide-ranging regulatory requirements.

Over the years we've learned from our successes and our mistakes. We continue to develop our approach, refining the methods and tools we use, and learning from our experiences.

Sabart decommissioning facts

274

days

0

significant safety incidents

15,000

working hours

1

near miss

10,000

tonnes of contaminated material removed

0

noise and dust complaints



Our value chain

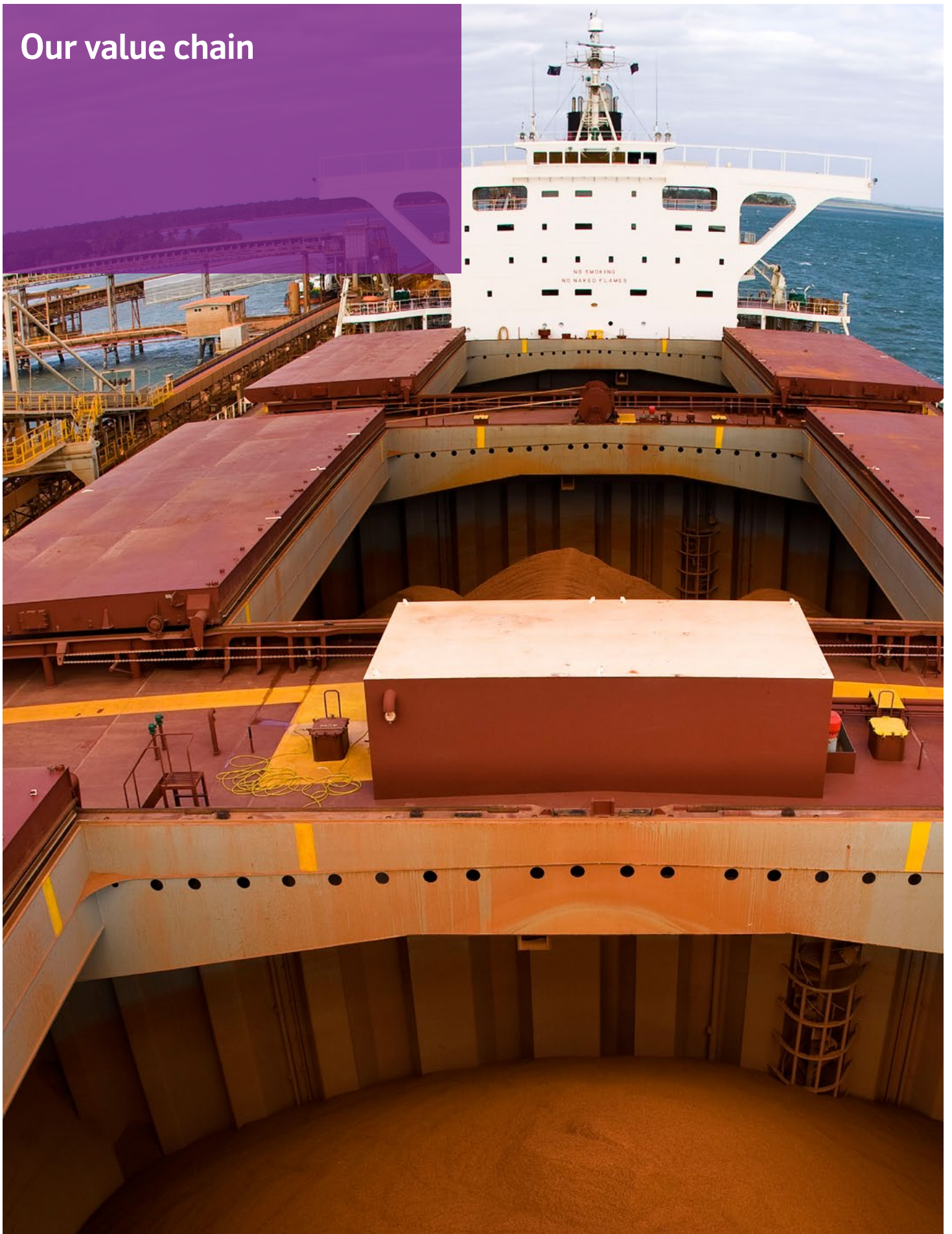


Image: Shiploading, Weipa, Australia

Our value chain



Image: Rough diamonds, Rio Tinto Diamonds, India

Governments and communities want assurance we are sharing the value we create through taxes, employment, procurement opportunities and local investments. Also, responsible supply chain practices are critical to our licence to operate and our customers seek greater transparency about the minerals and metals we supply. They want to know that our materials have been produced in responsible ways.

This section outlines how we're achieving a sustainable value chain – through supporting economic growth, working with our suppliers and customers and managing the impacts of our products across their life cycles.

Our commitment to sustainable development extends from the way we extract materials from the ground through to the way they are used by our customers. We seek to achieve high industry standards and expect this of our value chain partners too. We remain committed to delivering lasting benefits.

Australian Diamonds™
programme launched in

3 countries

US\$3.0bn

in capital invested in
new projects

1st

certified low-carbon
aluminium brand:
RenewAl™

Sharing the benefits of the world's natural resources

Natural resources are an important source of value for us and for the countries that have them. As a mining and metals company, accessing these resources brings responsibility and it's important we share the benefits with our host communities in a fair and equitable manner.

Our economic contributions are part of the lasting benefit we make to the countries and communities where we work.

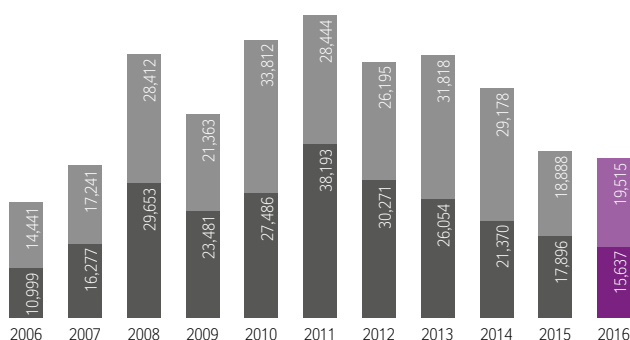
We create value in many ways. Our metals and minerals are transformed into end-products that contribute to higher living standards and human progress. We support economic growth as a major employer, taxpayer and buyer of goods and services where we operate. And we help build communities by investing in education and training initiatives, local services and infrastructure such as roads.

Our contribution to sustainable development is often made in partnership with stakeholders. These take different forms – from governments investing in our operations, such as at Oyu Tolgoi, to community agreements that clearly outline expectations in areas such as employment and local procurement. This approach helps us align our interests to the goals of our host communities.

Direct economic contribution

(US\$ million)

35,152



■ Payments to suppliers ■ Value add

Note: The sum of the categories may be different due to rounding.

Value add can be thought of as the value that a company has added to its inputs through its processes of production. It can be thought of as the sum of payments to labour (wages), the State (taxes and royalties), and to capital (interest payments to debt providers, dividends to shareholders, and retained earnings).

Where possible, we buy goods and services locally. However, often our operations are in remote regions and the skills, goods and standards we require may not be readily available. This means we must set up new supply chains. We offer training and development programmes to help local communities take advantage of employment and procurement opportunities.

2016 performance

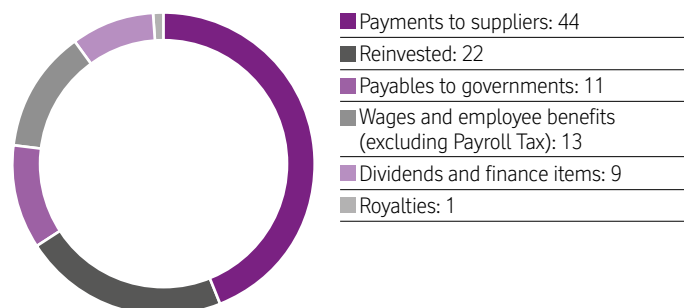
In 2016 the Group's direct economic contribution was US\$35.1 billion globally. This included:

- US\$19.5 billion in value add made up of payments to employees (wages), payments to governments (taxes and royalties) and returns on capital investment (interest payments, shareholder dividends and retained earnings).
- US\$15.6 billion of payments to suppliers.

During 2016 our capital investment was US\$3.0 billion, attributed to growth projects in Australia and Mongolia.

Distribution of economic contribution

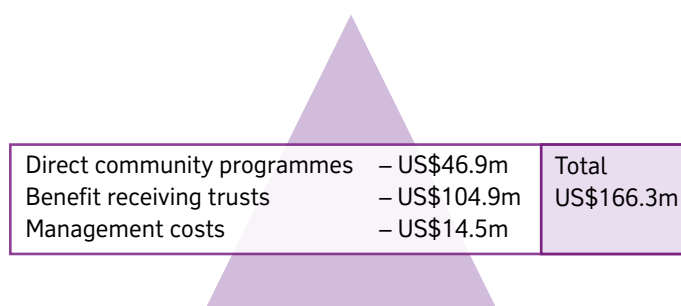
(percentage)



Note: The sum of the categories may be different due to rounding.

Sharing the benefits of the world's natural resources

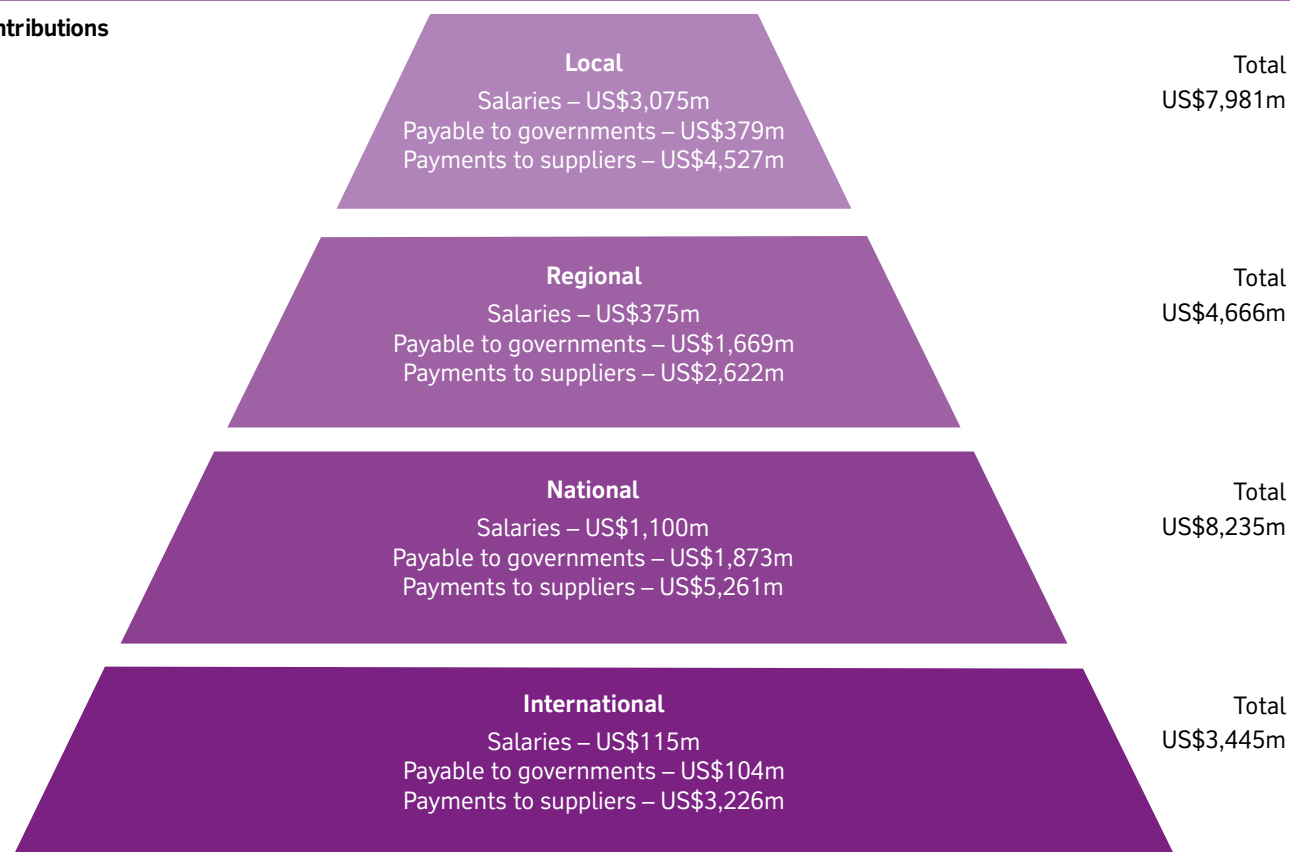
Discretionary contributions



A pyramid diagram with a light purple top section and a darker purple bottom section. The top section contains a table with three rows of data and a total. The bottom section is empty.

Direct community programmes	– US\$46.9m	Total US\$166.3m
Benefit receiving trusts	– US\$104.9m	
Management costs	– US\$14.5m	

Direct contributions



Note: The sum of the categories may be different due to rounding.

The direct contributions breakdown is provided only for material balances including salaries and payable to governments which are included in the total value add number.

Promoting responsible practices from mine to market

In our globally connected world of widespread trade, materials pass through many hands before reaching the end consumer. One of the challenges we face is implementing effective control and assurance systems across our global supply chain.

One way to achieve this is by seeking suppliers whose values are consistent with ours. We clearly communicate our policies to our suppliers and conduct regular training with our internal teams. All procurement employees are required to complete human rights training.

In remote and less-developed parts of the world we share tools and knowledge with local suppliers to increase supply chain reliability and encourage good social and environmental practices. Our product stewardship strategy and programmes guide our approach to managing regulatory, life cycle 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.

In 2016 the EU finalised new conflict minerals legislation which comes into effect in 2021. We have reviewed our operations in light of the legislation and consider that the changes won't directly impact our business. Our [human rights policy](#) and [The way we work](#) help us prevent financing or supporting conflict either directly or through our supply chain.

We play an active role in industry stewardship programmes such as the [Aluminium Stewardship Initiative](#), the [Responsible Jewellery Council](#) and the [World Diamond Council](#). We work with our supply chain partners to conduct life cycle assessments of our products. The assessment methods are aligned to international standards. We look for opportunities to make improvements to our products, in relation to areas such as greenhouse gas emissions, product quality and safety.

The focus on sustainable supply chains is an opportunity for us. Our aluminium business has one of the lowest carbon footprints in the industry, and we have also introduced RenewAl™, a low CO₂ aluminium brand. We continue to explore other opportunities.

2016 performance

We launched our new Supplier code of conduct, which outlines our human- and labour-rights, safety and environment expectations of suppliers, their subsidiaries and sub-contractors. The Code is available on our website and 32,000 copies were distributed to our current suppliers.

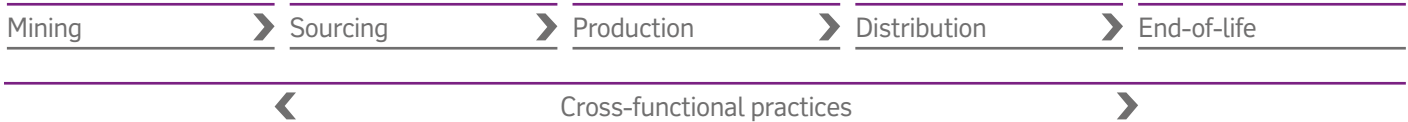
We launched our Know your supplier procedure which establishes our process to understand legal, ethical and reputational risks arising from use of a supplier.

We established a dedicated third party due diligence team within our Ethics and Integrity function to facilitate risk-based due diligence assessments on our commercial relationships. The assessments cover bribery, corruption, human rights, money-laundering, trade sanctions, denied parties risks and other areas which may result in reputational concerns.

We launched our Australian Diamonds™ programme in the US, China and India. Australian Diamonds™ is an independently audited chain of custody system developed with authorised diamond and jewellery manufacturers and retailers. The system provides consumers with the assurance that their Argyle diamonds are traceable, from the mine to the market.

During the year, we supported ICMM on a modified global corrosion test for solid bulk cargoes. Once finalised, the test will be included in the International Maritime Solid Bulk Cargoes Code. We are leading work on a new bauxite schedule for this code, which will ensure safe shipping of bauxite through application of appropriate test protocols for the likelihood of bauxite vessels capsizing due to liquefaction of the cargo.

The value chain of our products: from extraction through to their end-of-life



Delivering benefits for generations to come

Unlocking value through partnerships at Oyu Tolgoi



Many mining projects are rich in superlatives – and the Oyu Tolgoi copper-gold mine in Mongolia’s South Gobi desert is no exception. With a potential productive life of more than 75 years, Oyu Tolgoi was the country’s largest taxpayer in 2015. Between 2010 and 2016 it injected US\$6.1 billion into the Mongolian economy through salaries, payments to Mongolian suppliers, taxes and other payments to the Government.

As with all operations on this scale, a crucial question is how will Oyu Tolgoi’s environmental, social and economic contributions remain positive over time.

A unique and challenging location

Eighty kilometres north of the Mongolia-China border, Oyu Tolgoi is jointly owned by the Government of Mongolia (34 per cent) and Turquoise Hill Resources (66 per cent, of which Rio Tinto owns 51 per cent). Since 2010, Rio Tinto has also been the manager of the Oyu Tolgoi project.

Oyu Tolgoi’s open pit mine began producing copper in 2013. The underground mine, which began development in 2016, will allow access to 80 per cent of the expected value of the mine.

Located in an isolated and underdeveloped region, the question of sustainability both challenges and provides opportunities for Oyu Tolgoi. Its scale means it affects both settled and nomadic communities, many of whom have lived off the land for thousands of years. To contribute to both social and economic sustainability, the operation has to ensure benefits flow to the local economy and people and help build long-term prosperity. It is important its contribution to local communities is positive.

The South Gobi is also rich in biodiversity and home to a unique ecosystem that features rare plant species. The mine’s development must be sensitive to this fragile environment. And in a water-scarce area, the water-intensive mining process needs to operate without depleting this most precious of resources.

Development based on mutual agreement

The operation already makes a major direct contribution to the Mongolian economy and society. In addition to its contributions through taxation, the multi-billion dollar investment, which includes thousands of relatively well-paid employees and contractors, has a “multiplier effect”, stimulating the economy indirectly.

Armando Torres, managing director, Oyu Tolgoi, said partnerships were central to the way Rio Tinto shared the value created from the region’s highly valuable resources.

“To be successful, any project we develop has to deliver mutual benefit through genuine partnership,” Armando said.

“The ideal legacy for Oyu Tolgoi is that together with our employees and our partners in the government, our neighbouring communities and our suppliers, we deliver a sustainable, world-class Mongolian business that generates ongoing value for the country and showcases the capabilities and assets of Mongolia for generations to come.”

Partnerships require an understanding of social and environmental impacts in great detail, and in the context of a project that spans a long timeframe and many stakeholders. To date, partnership agreements have underpinned the value this operation has released for all involved.

Investment Agreement

Signed in 2009, the Investment Agreement covers tax rates and clarifies requirements and expectations around infrastructure, regional development, employment and local content. With a 30-year initial term and two 20-year extensions, this agreement matches the duration of the mining licence at Oyu Tolgoi. The Agreement, which took six years to negotiate, provides a stable and predictable legal structure for the business to invest the billions of dollars required to develop the mine and subsequent infrastructure.

A subsequent shareholder agreement between Turquoise Hill, Rio Tinto and the Government of Mongolia regulates corporate governance on the project and funding arrangements between shareholders.

Image: Playground funded by Oyu Tolgoi, Khanbogd, Mongolia

Delivering benefits for generations to come

The importance of the process

The discussions and planning involved in forming partnerships are just as important as the agreement itself.

In establishing the Underground Development and Finance plan, the company worked with the project's partners to overcome points of disagreement – constructively and respectfully. This included local tax law interpretations, and how aspects of the underground project would be approached – such as feasibility studies and funding structure.

The plan, which was signed in 2015 after two and a half years of negotiation, closed the chapter on Oyu Tolgoi's initial development and made sure that issues relating to the underground project were clarified and agreed with the Government. This allowed Oyu Tolgoi to move forward on the project with a common understanding.



Image: Oyu Tolgoi open day, Khanbogd, Mongolia

“

This significant investment demonstrates the confidence of all the partners in both the Oyu Tolgoi mine and in Mongolia. It also demonstrates the attractiveness of Mongolia as a place to do business and invest, which will be a catalyst for further investments that will strengthen Mongolia's economy.

The development of the underground will create further jobs, support Mongolian suppliers and unlock substantial value for all stakeholders, delivering benefits for all Mongolians for generations to come. This is a proud day for Mongolia and is a clear demonstration that the country is back to business.”

Chimediin Saikhanbileg

Prime Minister of Mongolia MP

Supporting local suppliers

623

Mongolian suppliers, comprising 62% of total procurement spend

89

suppliers from South Gobi province

Delivering benefits for generations to come

Sharing the benefits with local communities

Community partnerships have played an important role in ensuring the operation's funds are directed to where they're needed most.

In 2015, after four years of discussion and negotiation, Oyu Tolgoi established a Cooperation Agreement with its partner communities Umnugobi aimag (province) and Khanbogd soum (county) as well as Manlai, Bayan-Ovoo and Dalanzadgad soums.

The first of its kind in Mongolia, this Agreement commits Oyu Tolgoi and these communities to work together for mutual benefit, promoting socioeconomic development for current and future generations. It is an international-standard agreement, setting a new benchmark in Mongolia.

The cooperation agreement has seven thematic areas:

- Water management
- Environmental management
- Traditional animal husbandry and pasture management
- Natural history, culture and tourism
- Social services
- Local business development and procurement
- Infrastructure and capital projects

A key benefit of the agreement is the transparency with which community and regional development projects are funded. All key stakeholders, including local and provincial governments and community groups, discuss how funds are going to be used – whether it's education, hospitals or infrastructure.

Specific interest groups within Oyu Tolgoi and partner communities work together on each area. For example, the operation's procurement department engages with communities and local government to encourage business growth: this is an area where Oyu Tolgoi can make a large contribution to the wellbeing and wealth of partner communities.

Strengthening the social fabric

The Cooperation Agreement was closely followed in September 2015 by the launch of the "Gobi Oyu Development Support Fund" (DSF), which makes US\$5 million available each year for sustainable development in the South Gobi.

In just over one year, the Gobi Oyu Development Support Fund has already initiated seven social infrastructure projects and 21 sustainable development programmes. These include:

- two kindergartens in Dalanzadgad, creating 67 jobs, with a school and kindergarten complex planned for Khanbogd soum in 2016-2018;
- an animal health care centre serving the Khanbogd, Manlai, Bayan-Ovoo and Tsotgtsetseii soums;
- a medical rehabilitation and therapy centre for disabled people;
- an urban culture training programme that reached 16,000 people;
- an animal disinfection programme covering 2.2 million head of livestock; and
- promoting local procurement – in 2016 Oyu Tolgoi spent US\$69 million with 89 South Gobi suppliers.

In addition to the initiatives delivered by the Development Support Fund, Oyu Tolgoi has built new infrastructure such as roads, sporting and recreational facilities and a bulk water supply system – further improving living conditions for the local community.

Working to protect cultural heritage

The South Gobi has a rich cultural heritage that includes "tangible" heritage, such as archaeological and paleontological sites, and "intangible" heritage and social practices that include rituals, folklore, music, material crafts, traditional knowledge, places of cultural or sacred interest, and protected landscapes. Oyu Tolgoi has been proactively implementing cultural heritage protection and preservation programmes within South Gobi and its partner communities. These include:

- Undertaking joint cultural heritage site monitoring with the Khanbogd soum government and local herders.
- Hosting Gobi cultural awareness training conducted by Khanbogd elders for 599 visitors at Oyu Tolgoi's culture ger.
- Supporting the Shar Tsav and Hurdet cave cultural heritage protection and tourism programme in Manlai soum.
- Contributing to the Manlai soum museum renovation.
- Working with the Khanbogd Elders' Association to pass down traditional culture and knowledge to the younger generation.
- Supporting the Naadam Festival, Camel Festivals and Mountain Worshipping ceremonies in partner communities.
- Providing cultural heritage induction for Oyu Tolgoi employees and contractors.

Efficient use of scarce resources

The way Oyu Tolgoi manages water resources is of great importance to the local Khanbogd herders, whose livelihoods depend on it. It's also a key theme covered by the Cooperation Agreement.

Water is precious in the arid South Gobi region, which receives on average 57mm of rainfall each year. Local herders rely on shallow sources of groundwater from springs and wells for their animals.

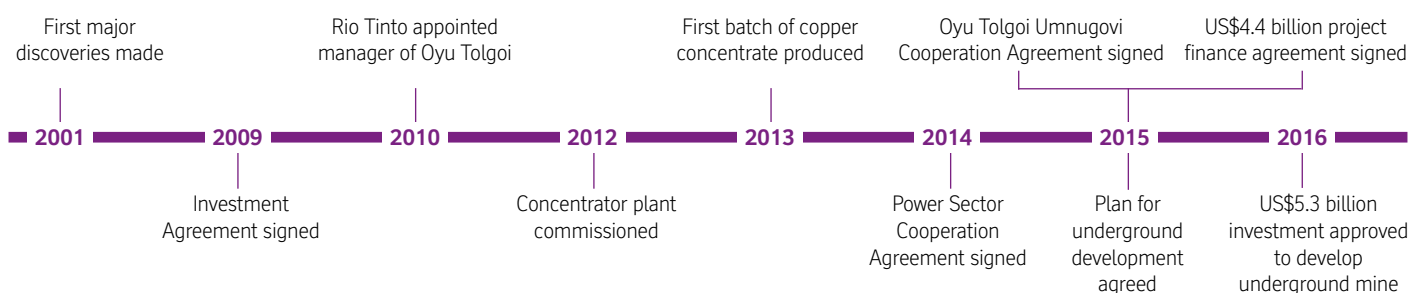
Producing copper concentrate from ore is, however, water-intensive. So to find a sustainable solution that doesn't conflict with the population, Oyu Tolgoi surveyed the area seeking a suitable underground water supply. The work uncovered the Gunii Hooloi aquifer, a 150-metre deep resource holding 6.8 billion cubic metres of non-drinkable saline water. Oyu Tolgoi is allowed to use 20 per cent of this, sufficient for 40 years.

The operation also goes to great lengths to use its allocated water efficiently. More than 80 per cent of the water used in production is recycled. Recycling and conservation practices mean that on average Oyu Tolgoi uses 520 litres of water to process a tonne of ore, around one half the industry average (more than 1,000 litres for each tonne of ore processed).

The mine also works with herders, local people and the government to protect the water in boreholes, existing wells and other community water supplies.

Delivering benefits for generations to come

Fifteen years of milestones



Oyu Tolgoi at a glance

499mt¹
Probable ore reserves

3,000
Workforce

175,000-275,000

tonnes of copper per year, projected to rise to more than 500,000 tonnes² per year when the underground mine finally reaches its full design output in 2027. The mine also benefits from significant gold by-products, with an average gold grade of 0.35 grams per tonne

Promoting local employment

93.5%
Mongolian workforce

22%
hired from South Gobi province

100%
Mongolian frontline leaders

(1) Oyu Tolgoi resources and reserves are taken from Rio Tinto's 2015 Annual Report dated 2 March 2016 and released to the market on 3 March 2016. Oyu Tolgoi underground reserves include Hugo Dummett North and Hugo Dummett North Extension. The Competent Persons responsible for that previous reporting were J Dudley (AusIMM Reserves), R Singh (AusIMM Reserves) and O Togtokhbayer (AusIMM Reserves). Rio Tinto is not aware of any new information or data that materially affects these resource estimates, and confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The form and context in which the Competent Persons' findings are presented have not been materially modified.

(2) This production target (stated as payable metal) for the Oyu Tolgoi underground and open pit is underpinned three per cent by proven ore reserves and 97 per cent by probable ore reserves for the years 2025-2030, which have been scheduled from current mine designs by Competent Persons in accordance with the requirements of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves, 2012 Edition.

Sustainability fundamentals



Image: Environment team member spreading native seed on a rehabilitation trial area at Argyle Diamond Mine, Western Australia

Goals and targets

We set targets to communicate across the company the areas where we need to improve in sustainability performance and to stretch our thinking as to what is possible and acceptable. Our performance against these targets is summarised below. Actions to maintain or improve performance in these areas is described throughout this report. Information on the risk framework we apply to identify these metrics can be found in our [Annual report](#).

Targets	Outcomes in 2016
Our goal is zero harm, including, above all, the elimination of workplace fatalities. Performance against this goal is measured by the number of fatalities and a year-on-year improvement in our all injury frequency rate (AIFR) per 200,000 hours worked.	One fatality at managed operations in 2016. AIFR remains the same as 2015.
A year-on-year improvement in the rate of new cases of occupational illness per 10,000 employees annually.	36 per cent increase in the rate of new cases of occupational illness compared with 2015.
By end of 2018, all managed operations will be effectively controlling exposure to all identified material health risks by verifying that critical controls are reducing harmful exposure.	57 per cent of businesses identified and consolidated critical control management plans for their material health risks with the remainder on track to achieve our end of 2018 goal.
Our diversity goal is to employ people based on job requirements that represent the diversity of our surrounding communities. We are targeting: <ul style="list-style-type: none"> – Women to represent 20 per cent of our senior management by 2016. – Women to represent 40 per cent of our 2016 graduate intake. – 15 per cent of our 2016 graduate intake to be nationals from regions where we are developing new businesses. 	Women represented 19.2 per cent of our senior management in 2016. Women represented ten per cent of our Executive Committee in 2016. From 1 January 2017, women represented 27.3 per cent of our Executive Committee. Women represented 46.4 per cent of our 2016 graduate intake. 36.2 per cent of our 2016 graduate intake were nationals from regions where we are developing new businesses.
From 2016 all operations will locally report on an annual basis, and will demonstrably achieve by 2020: <ul style="list-style-type: none"> – Progress against a locally defined target that demonstrates the local economic benefits of employment and procurement of goods and services. – Effective capture and management of community complaints with year-on-year reduction in repeat and significant complaints. 	100 per cent of sites established their Communities and Social Performance targets in 2016.
24 per cent reduction in total greenhouse gas emissions intensity between 2008 and 2020.	We are on track to meet our 2020 target. Seven per cent reduction in greenhouse gas emissions intensity in 2016 versus 2015.
All managed operations with material water risk will have achieved their approved local water performance targets by 2018.	67 per cent of managed operations are on track to meet their approved local water performance targets.

Engaging with our stakeholders

We consider any person or organisation that has an interest in our activities to be a stakeholder, including those who are potentially affected by our activities and those influential to our business decisions.

The nature of our business means we often operate and conduct our business in complex and challenging geographies and markets, which attracts a diversity of stakeholders with a range of interests and concerns. We recognise that our stakeholders are increasingly interested in our activities and their expectations and concerns change over time. Information from our engagement allows us to identify opportunities to share mutual value, helps us to manage risk and provides essential input to our annual materiality assessment.

While specific stakeholders, their interests and concerns, and the frequency of engagement vary across the business, our approach is globally consistent – we expect ethical, honest and constructive engagement with all our stakeholders. We also engage across all phases of our business life cycle. We forge targeted relationships with select organisations and universities that share common interests in areas such as climate change, community development and health.

Stakeholder engagement is essential to the role of many of our employees. We ensure our people are skilled in consultation and engagement and have access to Rio Tinto's Stakeholder Engagement Academy.

The following table contains the key methods for engagement during 2016, the key interests which were identified, and where we have reported on these.

Examples of key topics and areas of interest

Engagement methods and how we address topics and areas of interest

Employees

Safe and healthy work environment
Workplace diversity and inclusion
Wages, benefits and recognition
Workplace conditions and agreements
Career development
Strategic direction of the business
Governance and business integrity practices

The way we work, policies and standards
Collective bargaining/contract negotiations
Conversations between leaders, managers and employees
Performance feedback process, employee engagement survey
Employee communication channels (Rio Tinto Yammer, intranet), town hall meetings
Rio Tinto College training and development programmes
Refer to "Our people" (page 22) and "Governance integrity" (page 52) sections for more information.

Host communities

Safe and healthy operations
Agreements
Employment and procurement opportunities
Access to education and health services
Community investment and infrastructure
Transparent distribution of direct and indirect contributions
Environment and closure
Indigenous people's rights, land access, cultural heritage
Security
Business integrity and human rights practices
Reputation and legacy management
Shared value creation

The way we work, policies and standards, publications, communities and social performance guides
Community forums, committees, meetings, personal communications
Participation in social and environmental assessments, socio-economic programmes, site visits, surveys
Community investment framework
Negotiated agreements
Complaints and grievance mechanisms
Speak-OUT programme
Refer to "Community relationships", (page 30) "Governance integrity" (page 52) and "Our value chain" (page 60) sections for more information.

Engaging with our stakeholders

Examples of key topics and areas of interest	Engagement methods and how we address topics and areas of interest
Suppliers and contractors	
Safe and healthy work environment	<i>The way we work</i> , policies and standards
Contractor management	Supplier code of conduct , Know your supplier procedure
Employment and procurement opportunities	Contract negotiations
Financial and operating performance	Contractor safety programmes
Business integrity and human rights practices	Participation in continuous improvement, safety initiatives
Supply chain management	Local content agreements, partnerships
Operating efficiencies	Meetings and personal communications
Strong partnerships	Refer to “Our people” (page 22), “Governance integrity” (page 52) and “Our value chain” (page 60) sections for more information.
Customers	
Product reliability and quality	Site visits, meetings and personal communications
Pricing and contracts	Contract negotiations
Logistics	Questionnaires linked to collective initiatives, certification schemes
Supply chain management	Refer to “Governance integrity” (page 52) and “Our value chain” (page 60) sections for more information.
Environmental stewardship	
Research and development	
Governments and regulators	
Taxes and royalties	Annual, biannual and quarterly reports and disclosures
Employment and procurement opportunities	Regular meetings and communications via telephone, email
Contribution to national and regional development priorities	Regulatory filings, responses to requests for information
Infrastructure	Participation in legislation and policy development
Government regulations, permits, licences and agreements	Submissions to government enquiries
Regulatory and legal compliance	Business conformance audits
Legislation and policy development	Tours of operations and site visits
Shared value creation	Community and social performance initiatives
	Refer to “Governance integrity” (page 52) and “Our value chain” (page 60) sections for more information.

Engaging with our stakeholders

Examples of key topics and areas of interest	Engagement methods and how we address topics and areas of interest
Shareholders, investors and analysts	
Financial and operating performance	Annual, half yearly and quarterly reports, sustainability reports, market announcements, investor seminars, annual general meetings, site tours, road shows
Returns	
Reserves and resources	Regular meetings and communications via telephone, email, website and mail
Government regulations and permits	
Mergers, acquisitions and divestments	Participation in sustainability and ethical indices surveys, disclosure questionnaires and benchmarking
Safety, health, environmental, community performance and disclosures	
Governance including business integrity and human rights performance	Refer to “Protecting the environment”, (page 39) “Governance integrity” (page 52) and “Our value chain” (page 60) sections for more information.
Non-government organisations, special interest groups and civil society	
Safety, health, environmental performance	Annual, half yearly and quarterly reports, sustainability reports
Human rights including the rights of Indigenous peoples	
Employee relations	Regular meetings and communications via telephone, email, website, media
Supply chain management	
Business integrity practices, transparency	Participation in multi-stakeholder initiatives, forums, conferences, working groups
Shared value creation	
Community development	Partnerships and memberships
Research and development	
Partnership opportunities	Refer to “Governance integrity” (page 52) and “Our value chain” (page 60) sections for more information.
Peers and industry associations	
Safe, healthy and efficient operations	Active participation as members of global, national and regional organisations and industry associations and their initiatives
Environmental stewardship	
Sharing lessons, opportunities and best practice	Regular meetings and communications via telephone, email
Policy trends, positions and development	
Business integrity and human rights practices	Participation in industry forums, conferences, working groups
Community engagement	
Industry reputation and legacy	Refer to “External benchmarking and voluntary commitments” section (page 74) for more information.
Media	
Financial and operating performance	Press releases, interviews, regulatory filings, presentations, publications,
Safety, health, community, environmental performance	
Government regulations	Regular communications via telephone, email, website and media channels
Mergers, acquisitions and divestments	
Business integrity practices	

Voluntary commitments and external benchmarking

Rio Tinto participates in a number of relevant global, national and regional organisations and initiatives to inform our sustainability standards, management approaches and improve performance. These include:



International Council on Mining & Metals (ICMM) Sustainable Development Framework

As a corporate member, we commit to implementing and reporting on ICMM's 10 Principles for Sustainable Development, which cover corporate governance, environmental stewardship and community engagement. Rio Tinto's chief executive is a member of the ICMM Council and we are an active participant in various working groups.



United Nations Global Compact (UNGC)

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

We report our implementation of the ten principles in our annual Communication on Progress. We are actively involved in the UNGC Local Networks and participate in the advisory groups such as in the UK and Australia. We are also a member of the UN Global Compact's Human Rights Working Group.



Voluntary Principles on Security and Human Rights (VPSHR)

The Voluntary Principles are the only human rights guidelines designed specifically for extractive sector companies. Participants including governments, companies, and non government organisations agree to proactively implement or assist in the implementation of the Voluntary Principles.



OECD Guidelines for Multinational Enterprises

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



Extractive Industries Transparency Initiative (EITI)

Rio Tinto is a founding member of the EITI and has played an active role in this global standard since 2003. The EITI promotes open and accountable management of natural resources, to ensure that the fruits of our activity benefit the many, not the few. We are transparent about the taxes and royalties we pay – publishing an annual Taxes paid report since 2010.

Voluntary commitments and external benchmarking

Global Reporting Initiative (GRI)

GRI is an independent organisation that has established an international framework and standards for sustainability reporting. Rio Tinto's Group-level sustainability report is prepared in accordance with the GRI's G4 Core option guidelines.

Dow Jones Sustainability Index (DJSI)

The Dow Jones Sustainability World Index is a global sustainability benchmark offered by RobecoSAM and S&P Dow Jones Indices. It tracks the stock performance of the world's leading companies in terms of economic, environmental and social criteria and serves as a benchmark for investors. Rio Tinto has been included in the DJSI series since 2002. Our 2016 result meant we maintained our position in the top 15 per cent of the Metals & Mining Sustainability Leaders Group.

FTSE4Good

The FTSE4Good Index Series is designed to measure 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. Rio Tinto participates in this annual index.



The CDP

The CDP works with corporations and shareholders to disclose major corporations' greenhouse gas emissions. Rio Tinto has participated in the CDP's annual questionnaire related to greenhouse gas emissions since 2010.

Scope of this report

This Sustainable development report forms part of Rio Tinto's 2016 corporate reporting suite. It offers a fuller account of our contributions to sustainable development to that in the [2016 Annual report](#). In this report there is expanded commentary and additional data about our performance during 2016.

To complement this report we communicate sustainable development performance highlights and case studies throughout the year on our website at riotinto.com. [Archived reports](#) and information on specific product group activities are detailed in local sustainable development reports also available online at riotinto.com.

Report boundaries

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. Refer to our ICMM sustainable development framework (see page 83). We report in accordance with the Global Reporting Initiative's (GRI) framework, which is recognised as the international standard for sustainability reporting.

This report has been prepared in accordance with the GRI G4 (Core options) guidelines and the GRI Mining and Metals Sector Supplement. We use a materiality assessment to select the information to be disclosed in our Annual report and this report. Issues that meet materiality thresholds are linked to the GRI aspects and mapped to the boundaries where impacts could occur.

The GRI index on page 83 includes disclosures and responses to the GRI G4 general and specific standards and the Mining & Metals sector supplement indicators, where we have determined the matters to be material. The index also notes where the ICMM principles apply.

This report predominantly covers aspects related to current Rio Tinto managed operations. Some data from previous reporting periods are restated as a result of changes to data calculations or improvements in our data management. Where data has been restated, a footnote to the data has been provided.

Data and reporting

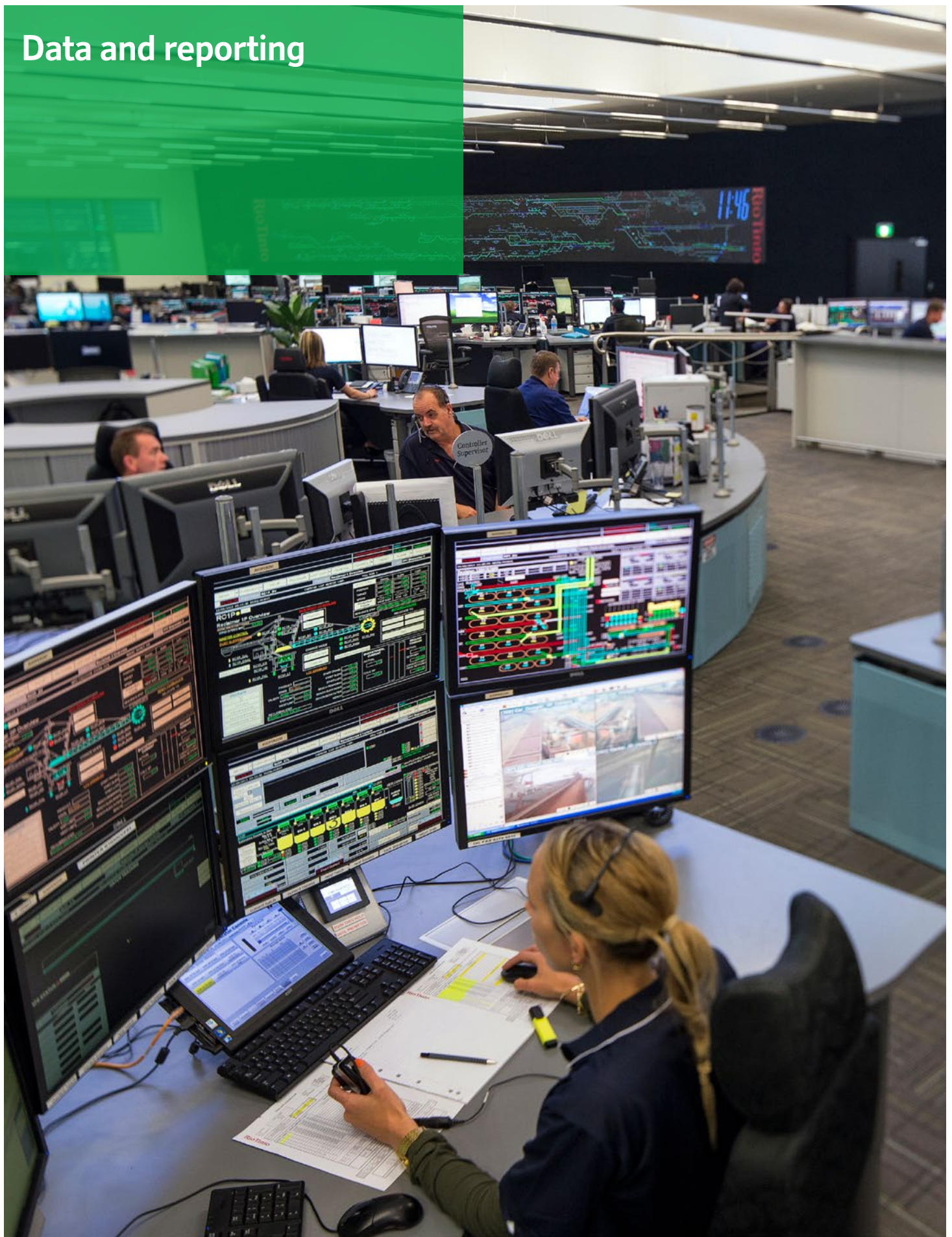


Image: Iron Ore's Operations Centre, Perth, Western Australia

People performance

Safety, health and employee numbers

	2016	2015	2014	2013	2012
Employees (average) ⁽¹⁾	51,000	55,000	60,000	66,000	71,000
Fatalities at managed operations from safety incidents	1	4	2	3	2
Fatalities at managed operations from health incidents	-	-	-	-	1
All injury frequency rate (AIFR) (per 200,000 hours worked)	0.44	0.44	0.59	0.65	0.67
Number of lost time injuries	206	220	381	500	535
Lost time injury frequency rate (LTIFR) (per 200,000 hours worked)	0.26	0.25	0.37	0.42	0.37
New cases of occupational illness (per 10,000 employees)	44	31*	17	16	15
Fines and prosecutions – safety (US\$'000)	62.0	23.5	95	145.5	536.1
Fines and prosecutions – health (US\$'000)	0.0	0.0	0.0	0.0	23.2

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

(1) These figures include the Group's share of joint ventures and associates (rounded to the nearest thousand).

2016 Employees by gender and employment type

	Female	Male
Executive management	18	86
Senior management	83	340
Regular employees ⁽¹⁾	6,563	31,696
Students/interns	108	136
Total permanent employees	6,772	32,258
Temporary	274	711
Total⁽²⁾	7,046	32,969

(1) Includes graduates.

(2) Figure includes temporary employees.

Data does not include contractors and non-executive directors.

Total contractors are 3,616. Gender distribution for our workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016. Less than one per cent of the workforce gender is undeclared.

2016 Workforce by region and gender

	Employees ⁽¹⁾	Female ⁽²⁾	Male ⁽²⁾
Africa	6,000	16.7%	83.3%
Asia	7,000	30.1%	69.8%
Australia/New Zealand	21,000	17.1%	82.9%
Americas	15,000	14.2%	85.8%
Europe	2,000	23.9%	76.1%
Total	51,000	17.6%	82.4%

(1) Includes the Group's share of joint ventures and associates (rounded to the nearest thousand).

(2) Total contractors are 3,616. Gender distribution for our workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016. Less than one per cent of the workforce gender is undeclared.

Data does not include contractors and non-executive directors.

2016 Employee hiring rate and turnover

	Gender		Age group				Region				
	Female	Male	Under 30	30-39	40-49	Over 50	Africa	Asia	Americas	Australia	Europe
Employee hiring rate	11%	6%	23%	6%	4%	2%	3%	17%	7%	5%	12%
Employee turnover	21%	17%	27%	15%	15%	18%	27%	14%	12%	17%	42%

Excludes contractors and non-executive directors. Total contractors are 3,616. Turnover rate includes reduction of employees due to business divestment. Rates have been calculated over headcount in the year. Gender distribution for our total workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016. Less than one per cent of the workforce gender is undeclared.

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

People performance

2016 Workforce by region

	Fatalities	AIFR (per 200,000 hours worked)	Occupational illnesses (per 10,000 employees)*	Absenteeism rate ^{(1) (2)}	
				Female	Male
Africa	-	0.28	5	57	54
Asia	-	0.18	0	3	0
Australia/New Zealand	1	0.56	15	56	57
Americas	-	0.45	137	37	25
Europe	-	0.30	5	93	86
Total	1	0.44	44	66	65

* Estimates based on internal health and employee databases.

(1) Absenteeism comprises sick leave, disability, FMLA and other unpaid leave.

(2) Gender distribution of our total workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016.

Types of fatal injuries are located in the "Our people" section of this report. Lost time injuries are presented in the Annual report in the Sustainable development section. For illness and injury rates, breakdown by gender is not available.

2016 Employee performance reviews

	Gender		Employee category				
	Female	Male	Executive management	Senior management	Regular employees ⁽¹⁾	Operator/trade/ technical	Apprentice
Employees receiving regular performance and career development reviews	86%	88%	67%	69%	87%	91%	N/A

(1) Includes graduates.

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

The population includes those employees who are managed according to the global performance process. There are various other local site-based performance processes that cover the remaining population. Excludes contractors and non-executive directors. Total contractors are 3,616. Gender distribution of our total workforce is based on managed operations (excludes non-managed operations and joint ventures) as of 31 December 2016. Less than one per cent of the workforce gender is undeclared.

Environmental performance

Environmental impacts

	2016	2015	2014	2013	2012
Significant environmental incidents ⁽¹⁾	1	0	12	15	7
Fines and prosecutions – environment (US\$'000)	57.6 ⁽²⁾	130.4	319.5	190.3	47.1
Energy use (petajoules)	454	433	450	484	502
Greenhouse gas emissions intensity (indexed relative to 2008)	74.1	79.7**	81.7	83.2	94.1
Greenhouse gas emissions – scope 1 (million tonnes CO ₂ equivalent)	21.1	20.2**	21.9	23.6	26.5
Greenhouse gas emissions – scope 2 (million tonnes CO ₂ equivalent)	11.3	11.9**	12.4	14.4	16.4
Greenhouse gas emissions – total (million tonnes CO ₂ equivalent)	32.0	31.7**	33.8	37.4	40.7
Freshwater withdrawal (billion litres)	573	564*	555	516	537
Freshwater used (billion litres)	467	460*	465	436	446
Land footprint – disturbed (square kilometres)	3,696	3,629	3,592	3,556	3,530
Land footprint – rehabilitated (square kilometres)	541	533	502	472	446
Mineral waste disposed or stored (million tonnes)	1,781	1,746*	1,737	1,950	1,853
Non-mineral waste disposed or stored (million tonnes)	0.53	0.28*	0.42	0.53	1.04
SO _x emissions (thousand tonnes)	88	87*	118	128	153
NO _x emissions (thousand tonnes)	69	67	75	78	73
Total fluoride emissions (thousand tonnes)	2.5	2.3	3.2	3.1	3.28
Particulate (PM ₁₀) emissions (thousand tonnes)	91	95*	102	113	136

* Numbers restated from those published in 2015 to ensure comparability over time.

Number restated due to updated global warming potentials from the IPCC's fourth assessment report.

(1) We adopted a definition of "significant environmental incidents" in 2015. See Glossary on page 96.

(2) In 2016 we paid environmental fines totalling US\$57,618 based on the prosecutions paid against the following incidents: late reporting and effluent discharge exceedance (both at Canada), two stack test failures at a power plant (US), two penalty infringement notices in relation to nitrogen oxide emissions and one for exceeding airblast overpressure criterion during pit blast (Australia).

2016 Greenhouse gas emissions by product group

(million tonnes of CO ₂ equivalent)	Scope 1 greenhouse gas emissions	Total greenhouse gas emissions
Aluminium	10.3	17.5
Copper & Diamonds	1.6	3.3
Energy & Minerals	5.3	7.5
Iron Ore	3.8	3.7
Growth & Innovation	0	0
Other*	0	0
Rio Tinto Total	21.1	32.0

* Includes corporate offices.

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

2016 Greenhouse gas emissions by location

(million tonnes of CO ₂ equivalent)	Scope 1 greenhouse gas emissions	Total greenhouse gas emissions
Australia	10.3	17.5
Canada	6.3	6.4
France	0.6	0.9
South Africa	0.4	2.0
United Kingdom	0.1	0.1
United States	1.5	2.0
Other: Rest of Africa	0.1	0.2
Other: Rest of Europe	0.3	0.3
Other: Asia, New Zealand, Central America, South America	1.3	2.5
Rio Tinto Total	21.1	32.0

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

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

Environmental performance

2016 Water withdrawn by product group

(billion litres)	Marine	Surface water	Groundwater	Municipal water	Total
Aluminium	68.5	31.3	37.0	12.7	149.6
Copper & Diamonds	0.0	27.8	55.7	0.8	84.3
Energy & Minerals	4.6	286.6	24.4	17.7	333.3
Iron Ore	5.8	0.0	175.6	4.9	186.3
Growth & Innovation	0.0	0.0	0.0	0.0	0.0
Other*	0.0	0.0	0.0	0.0	0.0
Rio Tinto Total	78.9	345.7	292.7	36.2	753.4

* Includes corporate offices.

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

2016 Water withdrawn by location

(billion litres)	Marine	Surface water	Groundwater	Municipal water	Total
Australia	78.5	47.5	207.7	16.5	350.1
Canada	0.4	273.8	16.1	5.0	295.2
France	0.0	0.3	0.0	0.3	0.6
South Africa	0.0	5.9	0.0	10.1	16.0
United Kingdom	0.0	0.4	0.0	0.0	0.4
United States	0.0	15.8	39.0	1.5	56.3
Other: Rest of Africa	0.0	2.0	3.2	2.7	7.9
Other: Rest of Europe	0.0	0.0	10.0	0.1	10.1
Other: Asia, New Zealand, Central America, South America	0.0	0.0	16.6	0.0	16.7
Rio Tinto Total	78.9	345.8	292.7	36.2	753.4

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

Economic performance

Economic contributions

	2016	2015	2014	2013	2012
Gross sales revenue (US\$ million)	35,318	36,784	50,041	54,575	55,597
Net cash generated from operating activities (US\$ million) ^(a)	8,465	9,383	14,286	15,078	9,430
Underlying earnings (US\$ million)	5,100	4,540	9,305	10,217	9,269
Underlying earnings per share (US cents)	283.8	248.8	503.4	553.1	501.3
Profit/(loss) after tax for the year (US\$ million)	4,776	(1,719)	6,499	1,079	(3,027)
Net debt (US\$ million)	9,587	13,783	12,496	18,055	19,192
Capital expenditure (US\$ million) ^(b)	3,012	4,685	8,162	13,001	17,615
Employment costs (US\$ million)	4,881	5,446	6,659	7,568	8,671
Payments to governments (US\$ million) ^(c)	4,025	3,666	8,938	9,414	11,625
Total value add (US\$ million)	19,515	18,888	29,178	31,818	26,195
Payments to suppliers (US\$ million)	15,637	17,896	21,370	26,054	30,271
Community contributions (US\$ million)	166	184	264	332	291

(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 payments to governments include:

Amounts paid by Rio Tinto (US\$ million)	n/a ⁽¹⁾	4,523	7,099	7,470	9,708
Amounts paid by Rio Tinto on behalf of its employees (US\$ million)	n/a ⁽¹⁾	1,569	1,839	1,944	1,917

(1) Taxes paid in 2016 report will be available on our website.

Major material purchases for 2016⁽¹⁾

Material	Amount ('000 tonnes)
Petroleum coke	1,203
Caustic soda	593
Diesel	1,319
Fuel oil*	784
Explosives	554
Coal tar pitch	190
Aluminium fluoride	11
Lubricants and greases	20

* Fuel oil includes bunker

(1) Most of the materials included in the table are globally procured. Most mine-related services are procured within local areas, states, territories and provinces where we operate.

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

Global Reporting Initiative Index

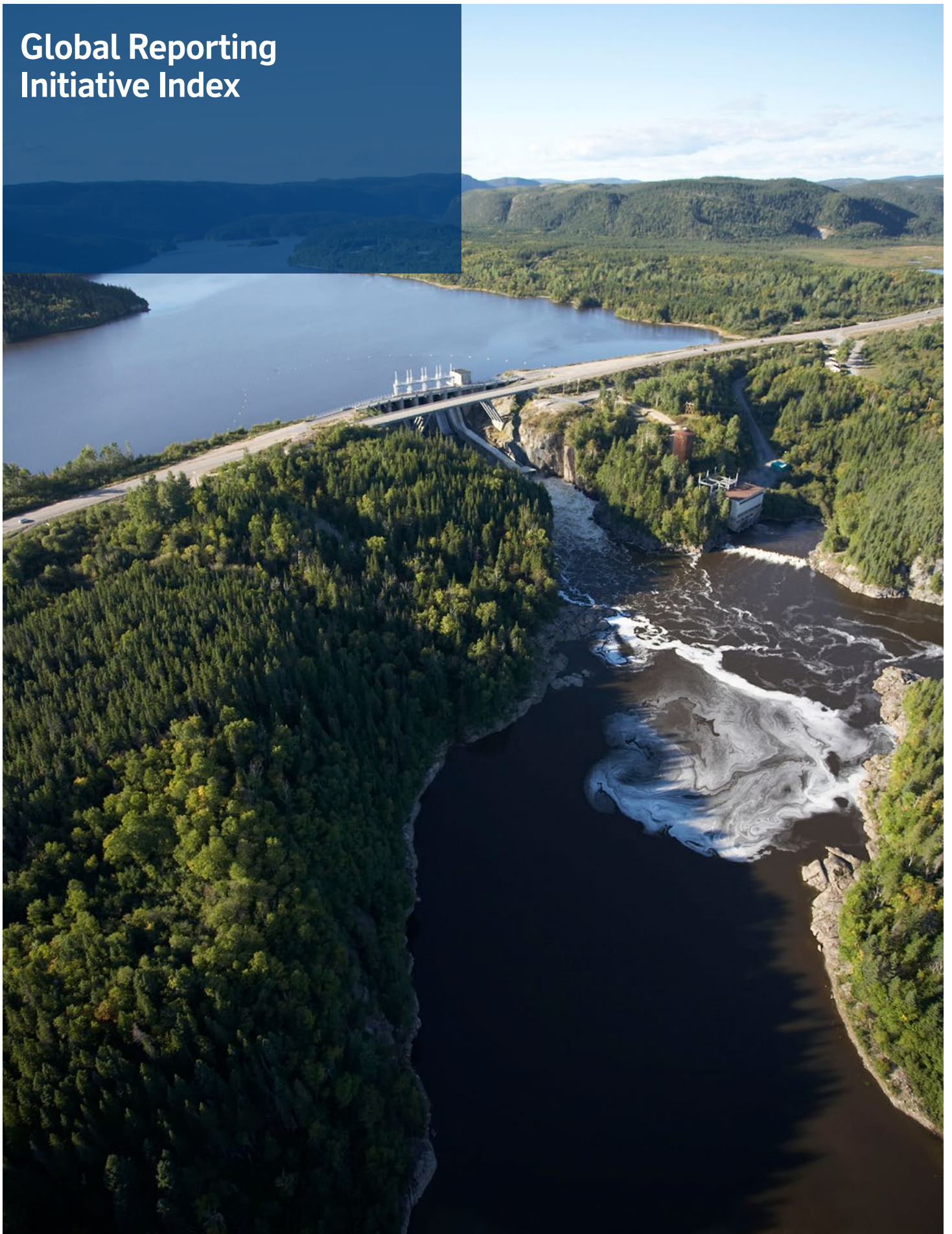


Image: The Sept-Iles power plant supplies power to the town of Sept-Iles and the Iron Ore Company of Canada, Quebec, Canada

Global Reporting Initiative Index

General disclosures

Indicator	Description	Location or explanation
Strategy and Analysis		
G4-1	Statement from the most senior decision-maker	Overview – Chief executive's message (page 04) Message from the chair of the Sustainability Committee (page 06)
G4-2	Description of key impacts, risks and opportunities	Annual report – Risk management (page 14); Principal risks and uncertainties (page 16); Sustainable development (page 24) Reporting what matters (page 18)
Organisational Profile		
G4-3	Name of the organisation	Annual report
G4-4	Primary brands, products and services	Annual report – Group overview (page 2)
G4-5	Location of headquarters	Annual report – Shareholder information (page 244)
G4-6	Countries of operation	Annual report – Group overview (page 2)
G4-7	Nature of ownership and legal form	Annual report Overview – Our business (page 08)
G4-8	Markets served	Annual report – Group overview (page 2)
G4-9	Scale of the organisation	Overview – Our business (page 08)
G4-10	Workforce overview	Data and reporting – People performance (page 78)
G4-11	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 sixty per cent of employees are covered by collective bargaining agreements.
G4-12	Supply chain	Overview – Our business (page 08) Our value chain – Promoting responsible practices from mine to market (page 64)
G4-13	Changes during the reporting period	Annual report – Chairman's letter (page 04)
G4-14	Precautionary principle or approach	Sustainability fundamentals – Voluntary commitments and external benchmarking (United Nations Global Compact) (page 74)
G4-15	External sustainability initiatives	Sustainability fundamentals – Engaging with our stakeholders (page 71); Voluntary commitments and external benchmarking (page 74)
G4-16	Membership of associations	Sustainability fundamentals – Voluntary commitments and external benchmarking (page 74)
Identified Material Aspects and Boundaries		
G4-17	Entities in consolidated financial statements	Annual report – Financial statements (page 109)
G4-18	Defining report content and topic boundaries	Annual report – Sustainable development (page 24) Reporting what matters (page 17) Sustainability fundamentals – Scope of this report (page 76)
G4-19	List of material topics	Annual report – Sustainable development (page 24) Reporting what matters (page 17)
G4-20	Aspect boundaries for material topics within Rio Tinto	Reporting what matters (page 17)
G4-21	Aspect boundaries for material topics outside of Rio Tinto	Reporting what matters (page 17)
G4-22	Impacts of restatements	Sustainability fundamentals – Scope of this report (page 76) Data and reporting (page 77)
G4-23	Changes in reporting	No significant changes have been made from previous reporting period

Global Reporting Initiative Index

Indicator	Description	Location or explanation
Stakeholder Engagement		
G4-24	Stakeholder groups	Sustainability fundamentals – Engaging with our stakeholders (page 71)
G4-25	Stakeholder identification and selection	Sustainability fundamentals – Engaging with our stakeholders (page 71)
G4-26	Approach to stakeholder engagement	Sustainability fundamentals – Engaging with our stakeholders (page 71)
G4-27	Stakeholder topics and concerns	Sustainability fundamentals – Engaging with our stakeholders (page 71)
Reporting Profile		
G4-28	Reporting period	1 January 2016 to 31 December 2016
G4-29	Date of most recent report	2015
G4-30	Reporting cycle	Sustainability fundamentals – Scope of this report (page 76)
G4-31	Contact for questions regarding the report	About this report (page 02)
G4-32	Location of Standard Disclosures	This GRI Index
G4-33	External assurance for report	About this report (page 02)
Governance		
Governance structure and composition		
G4-34	Structure of the organisation	Annual report – Directors' report (page 45)
Ethics and Integrity		
G4-56	Description of the organisation's values and principles	Overview – Our business (page 08)

Specific standard disclosures

Indicator	Description	Location
Economic		
Economic performance		
G4-DMA	Management approach on economic performance	Our value chain (page 60)
G4-EC1	Direct economic value generated and distributed	Our value chain – Sharing the benefits of world's natural resources (page 62) Data and reporting (page 77)
G4-EC2	Financial implications of climate change	Protecting the environment – Preparing for a low-carbon future (page 41) ICMM principle 6
G4-EC3	Coverage of defined benefit plan obligations	Annual report – Directors' report (page 45)
G4-EC4	Financial assistance received from government	No significant financial assistance has been received from governments during 2016.
Market presence		
G4-EC5	Standard entry level wage by gender compared to local minimum wage at significant locations	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.
Indirect economic impacts		
G4-EC7	Infrastructure investments and services supported	Community relationships (page 30) Data and reporting (page 77) ICMM principle 9
Environment		
Energy		
G4-DMA	Management approach on energy	Protecting the environment – Preparing for a low-carbon future (page 41) Sustainability fundamentals – Goals and targets (page 70) ICMM principle 6
G4-EN3	Energy consumption	Protecting the environment – Preparing for a low-carbon future (page 43) Data and reporting (page 77)

Global Reporting Initiative Index

Indicator	Description	Location
Water		
G4-DMA	Management approach on water	Protecting the environment – Responsible water management (page 44) Sustainability fundamentals – Goals and targets (page 70) ICMM principle 6
G4-EN8	Total water withdrawal by source	Protecting the environment – Responsible water management (page 44) Data and reporting (page 77)
G4-EN10	Percentage and total water recycled and reused	Protecting the environment – Responsible water management (page 45)
Biodiversity		
G4-DMA	Management approach on biodiversity	Protecting the environment – Minimising our biodiversity impacts (page 47); Our evolving approach to biodiversity (page 50) ICMM principles 2, 7
G4-EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Protecting the environment – Minimising our biodiversity impacts (page 47)
Emissions		
G4-DMA	Management approach on emissions	Annual report – Key performance indicators (page 12) Protecting the environment – Preparing for a low-carbon future (page 41); Managing our day-to-day responsibilities (page 48) Sustainability fundamentals – Goals and targets (page 70) ICMM principle 6
G4-EN15	Direct greenhouse gas emissions (scope 1)	Protecting the environment – Preparing for a low-carbon future (page 42) Data and reporting (page 77)
G4-EN16	Energy indirect greenhouse gas emissions (scope 2)	Protecting the environment – Preparing for a low-carbon future (page 42) Data and reporting (page 77)
G4-EN17	Other indirect greenhouse gas emissions (Scope 3)	Protecting the environment – Preparing for a low-carbon future (page 42)
G4-EN18	Greenhouse gas emissions intensity	Protecting the environment – Preparing for a low-carbon future (page 42) Data and reporting (page 77)
G4-EN21	NO _x , SO _x and other significant air emissions	Protecting the environment – Managing our day-to-day responsibilities (page 49) Data and reporting (page 77)
Effluents and waste		
G4-EN23	Waste by type and disposal method	Protecting the environment – Managing our day-to-day responsibilities (page 49) ICMM principle 6
MM3	Overburden, rock, tailings and sludges and their associated risks	Protecting the environment – Managing tailings and structures (page 46) ICMM principle 7

Global Reporting Initiative Index

Indicator	Description	Location
Compliance		
G4-EN29	Non-compliance with environmental laws and regulations	Annual report – Directors' report (page 45) ICMM principle 6
Environmental grievance mechanisms		
G4-EN34	Number of formal grievances about environmental impacts	Community relationships (page 30) Protecting the environment (page 39) Governance integrity – Maintaining integrity and compliance (page 54)
Labor Practices and Decent Work		
Employment		
G4-DMA	Management approach on employment	Our people – Capability and development (page 27) Sustainability fundamentals – Goals and targets (page 70)
G4-LA1	New employee hires and employee turnover	Data and reporting (page 77)
Labor/management relations		
G4-LA4	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	Nil
Occupational health and safety		
G4-DMA	Management approach on occupational health and safety	Annual report – Key performance indicators (page 12) Our people (page 22) Sustainability fundamentals – Goals and targets (page 70) ICMM principle 5
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities	Our people – Safe operations (page 24); Healthy workforce (page 26) Sustainability fundamentals – Goals and targets (page 70) Data and reporting (page 77)
Training and education		
G4-DMA	Management approach to training and education	Our people – Capability and development (page 27) ICMM principle 3, 5
G4-LA9	Average hours of employee training	Data and reporting (page 77)
G4-LA11	Employee regular performance and career development reviews	Data and reporting (page 77)
Diversity and equal opportunity		
G4-DMA	Management approach on diversity and equal opportunity	Our people – Capability and development (page 27) Sustainability fundamentals – Goals and targets (page 70)
G4-LA12	Composition of governance bodies and breakdown of employees per employee category	Annual report – Directors' report (page 44) Data and reporting (page 77)

Global Reporting Initiative Index

Indicator	Description	Location
Equal remuneration for women and men		
G4-DMA	Management approach on equal remuneration	Our people – Capability and development (page 27)
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	Rio Tinto employs on the basis of job requirements. We do not report statistics on the ratio of basic salary of men to women by employment category at the Group level, outside of the senior leadership group. This is because we have a variety of data collection systems implemented by individual business units therefore data aggregation is not currently possible. We are improving our data collection approach in this area and will be able to report more completely on this indicator in the future. Annual report – Remuneration report (page 67) Our people – Capability and development (page 27) Data and reporting (page 77)
Labor practices grievance mechanisms		
G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	Approximately 2,400 grievances about labour practices were filed with approximately 2,100 addressed during the reporting period. Governance integrity – Maintaining integrity and compliance (page 54) ICMM principle 3
Human Rights		
G4-DMA	Management approach on human rights	Community relationships (page 30) Governance integrity – Respecting human rights (page 56) ICMM principle 2
Investment		
G4-HR1	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Governance integrity – Respecting human rights (page 56)
Security practices		
G4-HR7	Security personnel trained in human rights policies or procedures	Governance practices – Respecting human rights (page 56) ICMM principle 3
Indigenous rights		
G4-HR8	Incidents of violations involving rights of indigenous peoples and actions taken	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. At this stage we are unable to report centrally on business unit level data, however we have a programme of work under way to provide Group-level data in this area. As an indication of Rio Tinto's commitment to this work, in 2016 we published <i>Why agreements matter</i> that outlines Rio Tinto's approach to agreement-making. 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. Community relationships (page 30) ICMM principle 3, 10
Human rights grievance mechanisms		
G4-HR12	Grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	Governance practices – Respecting human rights (page 56) ICMM principle 3, 9

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Indicator	Description	Location
Society		
Local communities		
G4-DMA	Management approach on communities	Community relationships (page 30) Community relationships – Changing perspectives (page 36) Sustainability fundamentals – Goals and targets (page 70) ICMM principle 9, 10
G4-S01	Operations with implemented local community engagement, impact assessments and development programs	Community relationships – Negotiating long-term, mutually beneficial partnerships (page 34); Changing perspectives (page 36)
MM6	Significant disputes relating to land use, customary rights of local communities and Indigenous peoples	In 2016 Rio Tinto continued engagement on two significant disputes in respect of land, resources use and communities.
MM7	Grievance mechanisms used to resolve disputes relating to land use, customary rights of local communities and Indigenous peoples	All our sites are required to have complaints mechanisms and grievance procedures in place to resolve disputes including on land use and customary rights of local communities and Indigenous peoples. In 2016, no formal grievance procedures have been triggered regarding the significant disputes noted in MM6 however in both cases Rio Tinto is actively seeking resolution of the dispute. In one case, this involves extensive consultation and engagement with the affected parties, and in the other, the re-establishment of a negotiation process which is intended to result in a substantive community agreement with the company. For the purposes of this report, “significant” is defined as a dispute which received international media attention and/or caused a delay to production.
Anti-corruption		
G4-DMA	Management approach on anti-corruption	Annual report – Directors’ report (page 44) Governance integrity (page 52) ICMM principle 1
G4-S05	Confirmed incidents of corruption and actions	Annual report – Directors’ report (page 44)
Public policy		
G4-S06	Political contributions by country and recipient/beneficiary	Rio Tinto does not make political contributions.
Compliance		
G4-S08	Significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	Annual report – Directors’ report (page 44) ICMM principle 4
Grievance mechanisms for impacts on society		
G4-S011	Grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms	Community relationships – Contributing to strong and prosperous communities (page 32) Governance integrity – Maintaining integrity and compliance (page 54) Sustainability goals and targets (page 70) ICMM principle 6
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	Community relationships – Contributing to strong and prosperous communities (page 32)

Global Reporting Initiative Index

Indicator	Description	Location
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 2016. We are currently monitoring the outcomes from the resettlement of communities at our Oyu Tolgoi operations and resettling community members at our Richards Bay Minerals operation. ICMM principle 3, 10
Closure Planning		
G4-DMA	Management approach on closure	Governance integrity – Mine closure (page 57); A new future for an old industrial town (page 58) ICMM principle 6, 9
MM10	Number and percentage of operations with closure plans	Governance integrity – Mine closure (page 57)
Other		
G4-DMA	Management approach on business resilience	Governance integrity – Building a resilient business (page 55)
G4-DMA	Management approach on non-managed operations	Annual report – Product groups (page 36) Governance integrity – Supporting non-managed operations and joint arrangements (page 57)

Management approach 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 aspects together with the underlying reason why they have been deemed material for our business is provided in “Reporting what matters” section on page 17. Further detail, including our approach to managing the underlying issues associated with these aspects, is discussed in the relevant pages referenced within this section.

Our overall approach to managing the underlying issues associated with these aspects is set out in “Sustainability fundamentals” section of this report on page 69. Information on our current activities, including performance against targets, is detailed throughout this report, the GRI table and the *2016 Annual report*.

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

GRI Material aspect	More detailed information in addition to this report	GRI Material aspect	More detailed information in addition to this report
Economic performance	2016 Annual report	Water	Rio Tinto management system standard 2015
Market presence	Taxes paid in 2015 report Annual results 2016	Effluents and waste	Health, safety, environment and communities policy
Occupational health and safety	Rio Tinto management system standard 2015 Health, safety, environment and communities policy H06 Radiation exposure control standard	Biodiversity	Health, safety, environment and communities policy
Compliance	2016 Annual report The way we work Antitrust standard Business integrity standard	Emissions	Climate change position statement
Anti-competitive behaviour	The way we work	Energy	Climate change report
Anti-corruption	Business integrity standard	Diversity and equal opportunity	Employment policy
Grievance mechanisms for impacts on society and environment	Communities and Social Performance standard	Employment	Diversity and inclusion policy
Resettlement		Equal remuneration	Why gender matters
Labor practices grievance mechanisms	Rio Tinto Speak-OUT contact options and phone numbers	Human rights assessment	Human rights policy Why human rights matters

Management approach disclosures

GRI Material aspect	More detailed information in addition to this report	GRI Material aspect	More detailed information in addition to this report
Child labor Forced or compulsory labor Human rights grievance mechanisms	Annual modern slavery statement	Materials Materials stewardship	Product stewardship strategy
Supplier human rights assessment	Supplier code of conduct	Products and services	Product stewardship programme
Freedom of association & collective bargaining	<i>The way we work</i>	Procurement practices	Statement of procurement practice (Rio Tinto procurement principles) Supplier code of conduct
Indigenous rights	Communities and Social Performance standard Human rights policy	Emergency preparedness	Rio Tinto management system standard 2015
Non-discrimination	<i>The way we work</i> Employment policy Diversity and inclusion policy Why gender matters	Closure planning	Rio Tinto management system standard 2015 Health, safety, environment and communities policy Rio Tinto's approach to closure

2016 Glossary

General

Term	Definition
GRI	GRI refers to the Global Reporting Initiative (GRI) which provides the generally accepted framework for reporting on an organisation's economic, environmental and social performance. The framework contains general and sector specific content that has been agreed by a wide range of stakeholders.
GRI G4 core option	GRI G4 core option contains the following: <ul style="list-style-type: none"> – All GRI G4 organisational profile disclosures; – Management approach disclosures for each material indicator category; and – Respond to each material core G4 and Sector supplement indicator with due regard to the materiality principle by either a) reporting on the indicator, or b) explaining the reason for its omission.
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.
Materiality assessment	<p>Materiality is the threshold at which an issue or indicator becomes sufficiently important that it should be reported. Beyond this threshold, not all material topics will be of equal importance and the emphasis should reflect the relative priority of these material topics and indicators.</p> <p>Materiality is important because information presented in a sustainable development report should cover topics and indicators that reflect the organisation's significant economic, environmental and social impacts or that would substantially influence the assessment and decisions of stakeholders.</p> <p>In defining material topics, we take into account external factors, including:</p> <ul style="list-style-type: none"> – The main sustainability interests/topics and indicators raised by stakeholders; – The main topics and future challenges for the sector reported by peers and competitors; – Relevant laws, regulations, international agreements, or voluntary agreements with strategic significance to the organisation and its stakeholders; and – Reasonably estimable sustainability impacts, risks, or opportunities identified through sound investigation by people with recognised expertise or by expert bodies with recognised credentials in the field. <p>In defining material topics, we take into account internal factors, including:</p> <ul style="list-style-type: none"> – Key organisational values, policies, strategies, operational management systems, goals, and targets; – The interests and expectations of stakeholders specifically invested in the success of the organisation; – Significant risks to the organisation; – Critical factors for enabling organisational success; and – The core competencies of the organisation and the manner in which they can or could contribute to sustainable development.
Sustainable development	<p>Sustainable development is commonly defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁽¹⁾</p> <p>(1) 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.un-documents.net/wced-ocf.htm</p>

Operations and products

Term	Definition
Brownfield exploration	Brownfield exploration is directed at sustaining or growing existing Group business units. With processing infrastructure already in place, capital expenditure requirements for developing brownfield orebodies are usually lower than in a greenfield setting.
Greenfield exploration	Greenfield exploration aims to establish completely new operating business units, involving geographic or commodity diversification away from existing Group operations.
Key products	Key products are those 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/ or waste or by-products from which major revenue is gained. Examples of key products include iron lump, iron fines, copper cathode, gold, borates, uranium oxide, steel powder and molybdenum oxide.
Life cycle assessment (LCA)	Life cycle assessment (LCA) is a technical analytical procedure or method that includes the collation of 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 LCIA). Described by ISO 14040 series.
Managed operation	Managed operation is defined as an operation where: <ul style="list-style-type: none"> – Rio Tinto wholly owns the operation; or – A management agreement is in place which names Rio Tinto as the manager; or – Rio Tinto management systems and processes are fully implemented.
Tier 1 resources	Tier 1 resources are low-cost, expandable resources that are profitable at all parts of the natural price cycle and deliver a sustainable competitive advantage.

2016 Glossary

Environmental

Term	Definition
Biodiversity	Biodiversity refers to the variety of life on earth, the different animals, plants and micro-organisms, their genes and the ecosystems of which they are a part.
Emission (air) incident	Emission (air) incident applies to an environmental incident in which material and/or energy is ejected in an uncontrolled manner to the atmosphere or emissions that are not compliant with agreed licences, including: dust, noise, vibration and blasting incidents.
Energy use	<p>Energy use includes energy associated with the combustion of fuels and use of electricity and other energy sources such as steam and hydro power. Energy use for anodes and reductants is evaluated from a carbon balance used to evaluate the resultant carbon dioxide emissions.</p> <p>Under Rio Tinto's reporting guidelines, any individual operation that is 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. It is recognised that reporting trivial quantities of fuels and emissions may result in a significant workload. Thus operations may omit or estimate individual emission or energy sources from their inventories subject to the following rules:</p> <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 five per cent of the operation's complete inventory; – For Australian operations: The National Greenhouse and Energy Reporting (NGER) Act 2007 requires all sources to be included. However, 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; and – Energy conversion factors are consistent with Australian National Greenhouse and Energy Reporting Measurement Determination 2008 and for non-Australian operations default factors from the Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA) are used unless a more suitable factor is available from local suppliers or Government.
Environment	Environment refers to the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.
Freshwater	Freshwater refers to potable water or good quality raw 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).
Freshwater withdrawn	<p>Freshwater withdrawn includes:</p> <ul style="list-style-type: none"> – Imported surface water (water provided by a third party for Rio Tinto use); – On-site impounded water used in process applications; – Imported and on-site groundwater; and – Freshwater withdrawn for use as cooling water, that is chemically, physically or biologically modified at the final point of discharge and / or is returned to the environment with a temperature change of greater 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 that has not had the quality significantly altered 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 (i) for use in agricultural or pastoral properties; (ii) for export to third parties or (iii) for town use; and – Freshwater withdrawn and used for hydropower generation.
Freshwater withdrawn and not used	Freshwater withdrawn and not used includes on-site groundwater which is extracted for ground control (dewatering) and discharged without use in the process.
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 Rio Tinto use); – On-site impounded water used in process applications; – Imported groundwater; – On-site groundwater, except that which is extracted for ground control (dewatering) and discharged without use; and – Freshwater withdrawn for use as cooling water, that is chemically, physically or biologically modified at the final point of discharge and / or is returned to the environment with a temperature change of greater than five degrees.

2016 Glossary

Environmental

Term	Definition
Greenhouse gas emissions	<p>Rio Tinto reports emissions of all six groups of greenhouse gases included in the Kyoto Protocol: carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorinated carbon compounds and sulphur hexafluoride.</p> <p>Under Rio Tinto's reporting guidelines, individual operations that are not expected to exceed 3,000 tonnes of carbon dioxide equivalent (tCO₂-e) emissions in any year over the next three years can be excluded from our data collection processes. It is recognised that reporting trivial quantities of fuels and emissions may result in a significant workload.</p> <p>Thus operations may omit or estimate individual emission sources from their inventories subject to the following rules:</p> <p>For non-Australian operations:</p> <ul style="list-style-type: none"> – Individual sources that can be excluded should be less than 1,000t CO₂-e. The total of these excluded sources should be less than five per cent of the operation's complete inventory. <p>For Australian operations:</p> <ul style="list-style-type: none"> – The NGER Act 2007 requires all sources to be included. However, some incidental sources can be estimated. An incidental source is any source that is 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).
Local water performance target	<p>Local water performance targets are set by managed operations with water risk and approved by the operation's managing director or general manager. These local targets are set to reflect specific operational circumstances, and aim to improve site-specific water performance under three defined areas: water supply, ecological impacts, and water surplus management. Targets are established for the Group water target performance period of 2014-2018 and annual water target trajectories are established for assessing annual performance. Changes to targets and/or internal water target trajectories, which are used for water target performance tracking, may be considered in certain circumstances as described below. A local water performance target may be changed to ensure that it remains relevant within the context of the local water risk that is being managed, and ensure that it drives performance in managing the 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. A change in local target or trajectory may be considered only when a substantial change in production, conformance/compliance, reputation, community or environment circumstances occurs that was not planned at the commencement of the target period and that renders the current target inappropriate for an operation. A change requires approval from the relevant product group chief executive and the Head of Environment and Legacy Management before adoption.</p> <p>An administrative change is one that adjusts the way a target or trajectory is stated or premised without changing the level of performance necessary to meet the local water target or trajectory. Such changes may be considered only when necessary to add clarity to the intent of the target or correct the calculation of baseline or trajectory. An administrative change to a target and/or trajectory requires approval from the Head of Environment and Legacy Management.</p>
Managed operations with water risk	<p>Rio Tinto initially identified managed operations with water risks for the 2014-2018 performance target period based on a Group-wide water risk assessment conducted in 2011. This risk assessment assigned managed operations a priority ranking from 1 to 4 based on a number of objective criteria. Priority 1 operations were defined as those that need urgent actions to focus on critical water risks, and priority 2 operations were defined as those that need to focus on high water risk. All managed operations assessed through this evaluation as priority 1 or priority 2 operations were defined as having a water risk unless, at the commencement 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; or – The operation had been divested; or – The operation was included within an active divestment or closure process; or – The operation had not been managed by Rio Tinto for at least three years. <p>In addition, any managed operations with an initial categorisation of priority 1 or priority 2 where the operation had, to the satisfaction of Rio Tinto Group Environment, sufficiently reduced the inherent water risk exposure that led to the initial categorisation prior to the commencement of the target performance period, were excluded from the population of managed operations with water risks.</p>
Water risk	<p>Water risk is one that has 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.</p>
Mineral waste	<p>Mineral waste include waste rock, tailings and slag:</p> <ul style="list-style-type: none"> – Waste rock is composed of soils or bedrock that must be removed to uncover or access ore during mining. – Tailings consist of ground up rock mixed with process water that remains 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 are typically produced in very large volumes. Handling and storage can directly impact the land. Mineral waste is usually permanently stored on site where it is used as in pit backfill or held in engineered repositories. Most mineral waste are inert, but some is chemically reactive and must be appropriately handled to protect people, wildlife and water quality.</p>

2016 Glossary

Environmental

Term	Definition
Mobile sources	Emission release points that move, such as haul trucks. Compare with “stationary sources”.
Non-mineral waste	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 streams 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.
On-site greenhouse gas emissions	On-site greenhouse gas emissions refers to Scope 1 greenhouse gas emissions, such as direct greenhouse gas emissions that are owned or controlled by the company and include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock.
Operational land holdings	Operational land holdings are categorised into two categories: <ul style="list-style-type: none"> – All land disturbed for mining, processing and related activities, including rehabilitated land. This is known as our operational footprint. – 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.
Process	Process refers to the activities associated with the process of mining or refining. This includes mining, milling, slurrying, washing ore, dust suppression, wastewater / sewerage treatment, power generation, bathhouse, camp, canteen, offices, irrigating rehabilitated land and wash down.
Scope 1 greenhouse gas emissions	The World Resource Institute /World Business Council for Sustainable Development Greenhouse Gas Protocol: A Carbon Reporting and Accounting Standard, March 2004 defines three scopes of greenhouse gas emissions for reporting purposes. Scope 1 emissions are direct greenhouse gas emissions that are owned or controlled by the company and include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock (on-site emissions). Scope 1 emission factors are consistent with the Australian National Greenhouse and Energy Reporting (NGER) Measurement Determination 2008 and for non-Australian operations from the IPCC Guidelines for National Greenhouse Gas Inventories (2006). Scope 1 emissions are presented on a managed operations basis.
Scope 2 greenhouse gas emissions	Scope 2 greenhouse gas emissions are greenhouse gas emissions from the imports of electricity, heat or steam from third parties (indirect emissions). Scope 2 emission factors are consistent with the Australian National Greenhouse and Energy Reporting (NGER) Measurement Determination and for non-Australian operations, where possible, factors sourced from electricity retailers are used. Scope 2 emissions are presented on a managed operations basis.
Scope 3 greenhouse gas emissions	Scope 3 greenhouse gas emissions are other indirect greenhouse gas emissions. Scope 3 emission factors are derived from life cycle analysis and various research studies. This work systematically assessed Scope 3 emissions and their materiality to the Group. Based on this assessment Scope 3 emissions deemed to be material at the Group level are reported as part of Rio Tinto disclosures in the Annual report, Sustainable development report and Rio Tinto's submission to CDP. All other sources are immaterial to the Group inventory.
Significant environmental incident	Rio Tinto measures and rates incidents according to their actual environmental and compliance impacts using five severity categories (minor, medium, serious, major, or catastrophic). A significant environmental incident is one with an actual consequence rating of major or catastrophic. Major and catastrophic environmental incidents are of a nature that they typically result in notification to the relevant product group head and Rio Tinto chief executive as soon as practicable after the incident occurring.
Stationary sources	Stationary sources refers to emission release points that do not move, such as power stations, smelters, refineries and concentrators. Compare with “mobile sources”.
Total greenhouse gas emissions	Total greenhouse gas 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 intensity index	Total greenhouse gas emissions intensity index is a measure of the change in emissions per unit of product compared to a baseline intensity, evaluated for each of our commodities. Commodities are products sold to the market from operations of comparable scope. Examples include bauxite mined, smelter grade alumina refined from bauxite, primary aluminium smelted from alumina, copper concentrate from mine to concentrator, and copper cathode from mine to refinery. Rio Tinto's total greenhouse gas emissions intensity target is evaluated as the per cent 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. 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 per cent of nameplate production within a reporting year. We index our performance relative to 2008 as a baseline year.
Water target performance tracking	A managed operation with water risk is “on track” to meet its 2014-2018 local water performance target if it can demonstrate that it has met its internal water target trajectory in the current reporting year.

2016 Glossary

Social

Term	Definition
All injuries	All injuries refer to the sum of lost time injuries and medical treatment cases.
Contractor	<p>Contractor is a person or organisation providing services to an employer at the employer's workplace in accordance with agreed specifications, terms and conditions. For the purposes of Rio Tinto's health, safety and environmental standards, contractors have been classified into three categories:</p> <ul style="list-style-type: none"> – Category 1: Individuals engaged on temporary contracts to work within existing operations. – Category 2: Companies or individuals engaged for a discrete project which will be carried out in a designated area separate from existing operations. – Category 3: Companies or individuals engaged under contract to carry out specific tasks or provide specified services within existing operations areas.
Employee	Employee is a person in full or part time employment at a Rio Tinto business and listed on the payroll of a business.
Fatal injury or occupational illness	Fatal injury or occupational illness refers to when one or more person(s) 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.
Frequency rates	<p>Frequency rates measures of 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>Rio Tinto uses AIFR to assess performance against the goal of zero injuries and zero fatalities. This assessment includes employees and all categories of contractors.</p> <p>Rio Tinto's health target (rate of new cases of occupational illness) is evaluated using employee data only, as relevant. Whilst diagnosed occupational illnesses are recorded for contractors, this data is not included in the evaluation of performance against our health targets. Developing operations and acquisitions after 31st Dec RY-1 are excluded when assessing performance against these targets. Divested and closed operations are removed from the baseline when assessing performance against these targets.</p>
HIV/AIDS	Acquired immune deficiency syndrome or acquired immunodeficiency syndrome (AIDS) is a disease of the human immune system caused by the human immunodeficiency virus (HIV).
Hours of exposure	<p>Hours of exposure refers to 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 determined by either "Planned time + overtime - all absences" or actual time (collected via gate pass or timesheet systems) or represent reasonable estimates made by a Rio Tinto company supervisor. – For contractors: Hours worked are provided by either the vendor or represent reasonable estimates made by a Rio Tinto company supervisor. These hours are recorded by month, vendor, work area and organisation unit, they reflect the total time spent by contractors on Rio Tinto sites.
Injury	Injury refers to any injury such as a cut, fracture, sprain or amputation, which results from a work related event during a single shift. All occupational injuries are to be reported as safety incidents with safety impact. All occupational injuries must be recorded for employees and contractors regardless of contractor category.
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 impacts:</p> <ul style="list-style-type: none"> – An occupational injury or illness – Damage to physical assets (eg plant and equipment), the environment, process, product, or reputation – Disruption to a community – Exposure to legal liability – Security threat <p>It is evaluated both by its Actual Consequence, and its Maximum Reasonable Outcome for each area of impact.</p>
Lost day injury or occupational illness	Lost day injury or occupational illness refers to 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 (i) returns in a full time unrestricted capacity to their pre- injury / illness role or (ii) (in the case of a RWI) the person is permanently redeployed into another role.
Lost time injury or occupational illness	Lost time injury or occupational illness refers to the sum of fatal, lost day and restricted work day injuries or illnesses.

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Term	Definition
Medical treatment case injury or occupational illness	<p>Medical treatment case injury or occupational illness refers to a work related injury or occupational illness which is not classified as lost time, but which results 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"> – Administration of prescription medication – Use of wound closing devices such as sutures, staples, or wound adhesives (glue). Where glue is used to protect a wound (that does not require sutures) as a precaution against infection in wet environments and in place of an adhesive dressing, this may be considered a first aid treatment if supported in writing by a doctor or registered nurse – Use of devices with rigid stays or other systems designed to immobilise parts of the body – Use of eye patches (except for use 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 conduct of diagnostic procedures, such as x-rays, blood tests, and the administration of prescription medications used solely for diagnostic purposes (e.g. 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 sutures were not necessary to treat the injury. This might occur, for instance, if steri-strips or butterfly bandages were not available.
Musculo-skeletal illness	<p>Musculo-skeletal illness refers to 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 definition for occupational illness).</p> <p>A case is reportable where a medical practitioner diagnoses musculo-skeletal disease that meets defined diagnostic criteria, and it is due to repeated workplace exposure (other than due to vibration) and it results in medical treatment, restricted work days, lost days or permanent damage. Includes recurring musculo-skeletal conditions. Recurring musculo-skeletal conditions are counted as a new case and reported only if the medical practitioner considers that the worker had fully recovered from the previous condition. Can include repetitive strain injuries, also known as occupational overuse syndrome.</p>
New case / recurrence	<p>An injury or illness is considered as a new case if the employee has not previously experienced an injury or illness of the same type, or 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>
Noise induced hearing loss (NIHL)	<p>To be diagnosed as being related to noise exposure requires the assessment of 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 steps are required to determine whether or not a case of NIHL meets Rio Tinto's reporting criteria:</p> <ol style="list-style-type: none"> 1. Occupationally exposed to noise (e.g. > 85 dB(A) TWA); and 2. Has sustained a standard threshold shift (see definition); and 3. Non-age corrected average hearing loss over 2, 3 and 4 kHz of the audiogram, in one or both ears, of greater than or equal to 25 dB as compared to audiometric zero. <p>If it meets these criteria it should be recorded as a PDOI. If the hearing loss is due to age factors alone, then it is not work related and should be excluded. Hearing loss due to a one-time high exposure is considered an injury. Excludes Contractors of category 2 or 3.</p>
Occupational asthma	<p>A case is reportable if a medical practitioner following the International Council on Mining & Metals/International Aluminium Institute occupational asthma definition diagnoses the patient as an asthmatic due to the occupational exposures such as those in aluminium smelting, resulting in medical treatment, restricted work days, lost days or permanent damage. Contractors of category 2 or 3 are not included.</p>
Occupational exposure	<p>Occupational exposure refers to exposure to chemical, physical, biological or ergonomic hazards under controlled conditions, in the course of and intrinsic to the nature of their work, of a population consisting of adults who are trained or informed to be aware of potential risks and to take appropriate precautions. The duration of occupational exposure is limited to the duration of the working day or duty shift per 24 hours and the duration of the working lifetime.</p>
Occupational exposure limit (OEL)	<p>Occupational exposure limit (OEL) refers to the level of an agent in workplace air, which it is believed is low enough to protect nearly all workers from adverse health effects over a series of eight-hour shifts for a working lifetime. OELs should be used as guidelines only, rather than not safe / safe limits. Rio Tinto has defined a number of OELs that apply across all of its operations.</p>
Occupational illness	<p>Occupational illness refers to an illness or disease is 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 there has been a complete recovery from the original case. All occupational illnesses are reported as health incidents with health impact.</p>

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Term	Definition
Permanent damage injury or illness	<p>Permanent damage injury or illness is a measure of the severity of an injury or occupational illness from which:</p> <ol style="list-style-type: none">1. There has not been, or is not expected to be, full recovery after two years; and/or2. There has been substantial negative consequences for the individual, that is prolonged hospitalisation, prolonged inability to work, loss of ability to continue normal social and home life, major damage to body or body function (eg paraplegia, lung disease, blindness or amputation – a traumatic loss of a limb or other external body part such as a limb or appendage that has been severed, cut off or amputated (completely or partially and with any loss of bone)); and/or3. The person is unable to work and has been retired. <p>Lost or restricted shifts and calendar days are counted until either of the following occur:</p> <ol style="list-style-type: none">1. The person returns in a full time unrestricted capacity to their pre-injury role; or2. The person is permanently redeployed into another role; or3. Two years have passed from the date of the injury; or4. The person leaves the service of the company.
Restricted work day injury or occupational illness	<p>A restricted work activity 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.</p>
Similar exposure group (SEG)	<p>Similar exposure group (SEG) are employee/contractor groups who have similar responsibilities, common hazards and similar exposure profiles that are identified by similar substance and exposure factors. Rio Tinto uses SEGs as the basis for assessing workplace exposure to hazardous agents with chronic effect.</p>
Voluntary counselling and testing	<p>Voluntary counselling and testing with regard to HIV/AIDS programmes, voluntary counselling and testing (VCT) is the process by which an individual undergoes confidential counselling to enable the individual to make an informed choice about learning his or her HIV status and to take appropriate action. If the individual decides to take the HIV test, VCT enables confidential HIV testing. Counselling for VCT consists of pre-test, post-test and follow-up counselling.</p>
Wellbeing / wellness programme	<p>Wellbeing / wellness programme is a proactive, preventive approach of helping people change their lifestyle to move toward a state of optimal health, a balance of physical, emotional, social, spiritual, and intellectual health. It is an active process of enhancing awareness and skills, changing behaviour and values, and creating an environment that supports good health practices and increase a person's ability to enjoy a balanced and fulfilling life.</p>

Economic

Term	Definition
Direct economic contribution	<p>Direct economic contribution refers to the total value of all sales made to third parties during the year.</p>
Value added	<p>Value added 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, payments to governments, plus all returns to capital – including interest payments, profits paid out to shareholders, and money retained in the business for future investment and to replace depreciated assets.</p>