

RioTinto

**Responsible and
Sustainable: Rio Tinto
in the community**



The way we work

The Jadar Project is an exciting development for Rio Tinto, and for Western Serbia.

The discovery of a high-grade, large-scale deposit of Jadarite – a new mineral containing lithium and boron – near Loznica in the Jadar Valley, is a promising addition to the world's supply of materials for low-carbon technologies. If approved, the establishment of a mine in Jadar will help to position Serbia as a European hub for green energy.

Rio Tinto already operates in 35 countries around the world, producing materials that are essential to human progress.

We work to deliver real and lasting benefits in these locations and we are committed to, working safely, respectfully and sustainably.

This brochure will hopefully give you some insights into the ways we constantly strive to improve our operations and maximize our community impact, across many different landscapes and cultures.

The Jadar Project Team

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Using technology to work smarter, cleaner, safer

Using Artificial Intelligence to harness the power of the sun

Energy changes are afoot at the Boron mine in California, home to one of the richest deposits of borates in the world, producing approximately 30 per cent of global demand each year.



Rio Tinto has signed an agreement with renewable energy technology company Heliogen to use its solar technology to generate and store carbon-free energy to power the mine's industrial processes.

Heliogen's breakthrough technology, which is powered by artificial intelligence, will be used to supplement existing energy sources at the mine. It will initially generate up to 35,000 pounds per hour of steam to power operations, with the potential to reduce carbon emissions at the Boron site by around seven per cent. The potential for larger scale use of the technology will also be assessed, possibly reducing the site's carbon footprint by up to 24 per cent.

The Boron installation, which is hoped to be up and running by 2022, will also be used to explore the potential for deployment of Heliogen's technology at other Rio Tinto operations around the world.

The partnership with Heliogen is part of Rio Tinto's commitment to spend approximately US\$1 billion on emissions reduction initiatives through to 2025 and achieve net zero carbon emissions by 2050, working with world-leading technology providers to achieve this goal.

Snapshots of technology at work



Drones in practice

Drones are becoming an increasingly common sight in the mining industry, where they are used to collect a wealth of information and execute a range of often complex tasks more quickly, safely and cost effectively – from mapping to mineral exploration to equipment inspection. They are currently being used to help improve safety and productivity at the Bingham Canyon copper mine in the United States, with a chief drone pilot from Rio Tinto's Kennecott operations leading a team of 20 certified drone pilots in the use of the unmanned vehicles.

Complex underground ventilation systems

Two kilometres underground at the Resolution Copper project, near Arizona in the USA, the rock temperature hits nearly 80°C. The extreme temperatures at this depth required the engineering of a complex ventilation system – like a giant air conditioning unit – which keeps the air in the mine breathable and at a comfortable 25°C.

Innovative processing technology

Jadarite is a new mineral deposit containing lithium and boron discovered by Rio Tinto geologists in Western Serbia in 2004. With no industrial precedent for processing the new mineral, a new and innovative processing technology is being successfully tested at a pilot plant at Rio Tinto's research centre in Melbourne, Australia. This plant will be relocated to Serbia where it will be stored for further development and to train young and talented Serbian processing and chemical engineers.



START - the first sustainability label for aluminium

Rio Tinto has set a new standard in transparency and traceability for the aluminium industry with the launch of its new sustainability label, START.

Using blockchain technology, START provides a digital sustainability label containing key information for customers about the site where the aluminium was produced – in much the same way that a nutrition label on food and drink packaging provides information on the contents.



The START label covers the following ten criteria:

- carbon footprint
- water use
- recycled content
- energy sources
- community investment
- safety performance
- diversity in leadership
- business integrity
- regulatory compliance
- transparency

Partnerships power greener steel initiatives

In 2020, Rio Tinto set a new ambition to be carbon neutral by 2050, having reduced its emissions footprint by more than 30 per cent in the previous decade.

Partnering to reduce the emissions footprint across our value chain is central to our strategy. In 2018, we announced a pioneering new technology partnership with Alcoa, with support from Apple and the governments of Canada and Quebec, to further

develop carbon-free aluminium smelting technology – an industry first.

The following year, an agreement was forged with China's largest steel producer, China Baowu Steel Group, and one of China's most prestigious and influential universities, Tsinghua University, to develop and implement new methods to reduce carbon emissions and improve environmental performance across the steel value chain.

The partnership aims to explore a breadth of technologies for decarbonisation of the entire steel value chain from iron ore mining to steelmaking. This includes integrating Rio Tinto's iron ore processing technology and Nippon Steel's steelmaking technology to establish an innovative steel manufacturing process with low carbon emissions.

Our partnerships

China Baowu and Tsinghua University partnership

A total of \$10 million has been dedicated to research projects and \$4.5 million for the Tsinghua University Joint Research Center, including the development of a pilot testing facility for biomass application and the use of microwave technology in ore preparation.

Nippon Steel Corporation

In December 2020, a Memorandum of Understanding was signed with Nippon Steel Corporation, Japan's largest steel producer, to jointly explore, develop and demonstrate technologies to transition to a low-carbon emissions steel value chain. It will focus on research into the use of gas, including hydrogen, as a reductant for our iron ore in Nippon Steel's steelmaking process. It will also look at potential roles for hydrogen in our mining operations. We also intend to look into the potential reduction of emissions associated with bulk commodity shipping.

Paul Wurth and SHS – Stahl-Holding-Saar

A Memorandum of Understanding has been signed with international engineering company, Paul Wurth and SHS – Stahl-Holding-Saar (Dillinger/Saarstahl/Rogesa) – to explore the feasibility of the production of green hot briquetted iron with hydrogen from hydroelectricity in Canada.

Taking care of the environment

Waste practices get a tick from the geckos

One of the ways that Rio Tinto minimises its impact is through careful waste management, including management of mineral waste such as waste rock, slag and tailings, and non mineral waste such as used oil, office and processing waste. We are constantly looking for new and more effective ways to do this across our operations.

In 2017, the efforts of Rio Tinto Iron Ore to implement its Reverse Circulation Drilling Waste Removal System into its exploratory drilling activities earned the company a certificate of merit in Western Australian government's Golden Gecko Awards for Environmental Excellence. These awards – named after the small lizard that is amongst the last species to return to an area after land disturbance, signalling a return to a

healthy ecosystem – recognise leading practice and innovation in environmental management and provide an opportunity to share experiences between government, industry and the community.

Several environmental benefits were identified with the use of this system, including reduced ground disturbance, reduced hydrocarbon use and better management of drilling waste.

What blueberries and aluminium have in common

The Saguenay – Lac-Saint-Jean region in Canada is an important hub for Rio Tinto's aluminium business, responsible for close to half of our global aluminium production. Our operations in the area include an alumina refinery, four wholly owned smelters, six hydropower plants, our Arvida Research and Development Centre, the Aluminium Operational Centre, a rail network and one port.





Award winning products

Our anhydrite is loved by more than blueberries. We won an award for “Quebec circulaire” – a local government-led initiative that recognises companies that have integrated circular economy strategies into their business – for finding ways to reuse anhydrite in agriculture and construction.

Our refinery and smelters are some of the most technologically advanced in the world, and are powered entirely by clean, renewable hydropower. With a daily spend of C\$1 million per day to maintain and increase the competitiveness of our business, we are also the largest private investor in the region.

We are also pleased to say that around 85 per cent of the waste material (excluding bauxite residue) created by the Saguenay – Lac-Saint-Jean Aluminium operations is used to make new products, including a safe and effective anhydrite fertilizer used to boost the production of local blueberries.

Anhydrite is a mineral normally found in rocks, but we produce around 85,000 tonnes a year in Canada, as a by-product of our aluminium production process.

Research shows this trusty mineral, which contains calcium and sulphur, helps blueberry plants grow more leaves, longer roots and – most importantly – more fruit. Because it’s local, it is cheaper than many other fertilisers too. That is good news for local blueberry growers, who can at times face high costs and lower selling prices.



Oyu Tolgoi: one of the most water-efficient mines in the world

Oyu Tolgoi, in the South Gobi region of Mongolia, is one of the largest known copper and gold deposits in the world. Open pit mining began at Oyu Tolgoi in 2011 and the copper concentrator, the largest industrial complex ever built in Mongolia, began processing mined ore into copper concentrate in 2013. When the underground operation is complete, it will be the world's fourth largest copper mine.

Water is the most precious natural resource in the South Gobi, so it is important that Oyu Tolgoi is able to operate as one of the most water efficient mines in the world: it uses less than half of the global average of water per tonne of ore processed for similar mines.

The water it uses comes from a deep and saline aquifer and has no impact on drinkable water in the region. In 2019, water used by Oyu Tolgoi was continuously recycled at an average rate of 87.5 per cent.

In addition to its water conservation and recycling activities, the mine works with members of the local community to maintain a water monitoring program, keeping a check on the levels and quality of water in boreholes, existing wells and other community water supplies. Local herders and others whose livelihoods are dependent on these water resources are actively involved in the environmental management program, with data collected to date indicating no negative impact on the wells from the mine's operations.

Discovering new water sources

Rio Tinto has been undertaking detailed hydro-geological investigations in the region since 2003 to ensure that water resources will be available to the community well into the future. Two large aquifers have so far been identified. These are at least 150 metres below the surface, far deeper than the surface water sources used by local people and animals.

Detailed hydro-geological investigations of the aquifer known as Gunii Hooloi have concluded that it has water reserves of 6,800,000,000 cubic metres. The mine is only permitted to use less than 20 per cent of the aquifer over 40 years, ensuring that the majority of the water remains underground for future generations. Significant funding is being invested in testing and modelling to help develop a detailed plan for a sustainable new water source for the district of Khanbogd, where the mine is located.





Protecting precious water resources in Canada



The Diavik diamond mine is located on an island in Lac de Gras in the Northwest Territories of Canada, some 200 kilometres south of the Arctic Circle. To reach the diamond-bearing pipes at the bottom of the lake, Rio Tinto had to develop highly innovative engineering technology to hold back the waters of Lac de Gras in a way that would minimise any disturbance. The award-winning, environmentally sensitive dike technology that was developed for Diavik is now in wide use across the Tundra.

Despite the apparent abundance of lakes and rivers in this region, water is considered a precious resource, especially by Aboriginal peoples as it has provided habitat for much of the wildlife that is critical to their traditional lifestyles.

As many of Diavik's activities involve taking water from and releasing water to the pristine waters of Lac de Gras, protecting the long-term health of the lake is therefore a top priority.

All surface water and groundwater is collected in the mine's water management system and sent to a water treatment plant before being returned to Lac de Gras. This process ensures that all water returned to the lake is safe for use by people, wildlife and aquatic life, both now and into the future. It is also a condition of Diavik's water licence that it maintains an Aquatic Effects Monitoring Program to mitigate the short and long-term effects the mine has on the aquatic environment.

Looking after local bees in California

A respectful relationship has been building between the Boron borates mine in California and its local bee population.

For more than 40 years, local beekeeper Steve Breckenbridge has been working with Rio Tinto to protect the bees, which will literally go anywhere to find a safe place to live – including the bottom of mine pits!

The mine operates on the edge of the Mojave desert. Great care is taken to move the bees to around 12 square miles of conservation land, adjacent to the mine, where they can forage on wildflowers and pollinate the local flora. They are later moved nearer to commercial orchards to help pollinate crops like almonds, cherries, plums and avocados.



Land rehabilitation and re-use

Using virtual reality to partner with Traditional Owners in Australia



Mining delivers significant economic and social benefits to communities, including employment, small business development, tax and royalty streams and education and health programs. By its very nature, of course, mining also requires disturbance to the land and environment and can have impacts on local communities.

To help prevent and minimize these impacts, detailed assessments are undertaken in consultation with these communities and robust internal standards and practices are followed that often go beyond domestic regulations. Rio Tinto consults and engages with its communities regularly, in good faith, and in ways that are transparent, inclusive and culturally appropriate. For example, we often establish community information centres in local towns and villages and promote toll-free contact numbers that community members can call with questions or complaints.

We take local languages into account when developing materials, and regularly present to local councils. We also strive to ensure our engagement is participatory and representative of everyone in the community, including women, young people and vulnerable groups.

In recent times, a virtual reality tool has been used to connect with host communities in Australia to help them clearly visualise what the impacts on the local landscape would be. Base images of key project areas were overlaid with 3-D modelling images to show where the plant would be located and where areas would be cleared. This proved a highly effective community engagement tool, particularly with Traditional Owners and individuals in remote communities.

New life for French aluminium smelter

A former aluminium smelter in the French Alps has been transformed into a number of environmentally sustainable projects of direct benefit to surrounding communities. The seven hectare ecopark site, nestled between the Arly River and the mountainside in the small village of Venthon, is now host to an ecological water treatment plant, a cycle path and a high-tech household waste transit station, with a waste recycling and processing centre also planned.



Whilst deconstruction began as early as 1995, the revitalisation of the Venthon site began in 2005 with the dismantling of the last industrial buildings and remediation of the groundwater.

It is a great example of how an industrial site can safely take on a new life within the community once its operational days are over.

Consultation an important part of rehabilitation

Rehabilitation is a critical element of environmental sustainability within the resources sector, involving the return of mined land to a natural state through strict, well-researched strategies of revegetation and the regeneration of natural ecosystems.

The Weipa bauxite mine in the far north of Queensland, Australia, has been operating for almost 60 years. Once the mine has ceased operating, it is planned to put back the top soil from the mined area, revegetate the area using local native seeds and fertilizer and return the land to its Traditional Owners.

In 2013, Weipa established a Rehabilitation Advisory Panel to ensure the best advice is available to manage rehabilitation risks and issues and this has been progressively improving understanding of how this important environmental work is best managed. Many local Aboriginal people have been collecting native seed for use in Weipa's rehabilitation programs.



Nature now the main attraction at the old Flambeau Mine

The Flambeau Mine, located along the shores of the Flambeau River near Ladysmith, Wisconsin, USA, operated from 1993 to 1997 and was reclaimed by 1999. As the first mine to earn permits and operate under Wisconsin's stringent modern mining laws, the Flambeau Mine met the highest mining, exploration and reclamation standards.

After a long history of exploration in the area, the Flambeau ore body was discovered in 1968 – a relatively small, but exceptionally rich, ore body with a copper concentration of 10 per cent. During the four years of the mine's operation, the deposit generated a total of 181,000 tons of copper, 334,000 ounces of gold and 3.3 million ounces of silver.

Today, following a US\$20 million reclamation project, the 150-acre site has been transformed into the Reclaimed Flambeau Mine Nature Trails & Recreation Area and serves as a year-round community resource. The site is home to prairie and woodland habitat along with 10 acres of wetlands that support hundreds of plant and wildlife species. Visitors enjoy free access to ten miles of hiking trails and five miles of equestrian trails, as well as bird watching, fishing and a variety of other activities.

Protecting biodiversity in Madagascar

The island country of Madagascar is a biodiversity hotspot, home to plants and animals that are found nowhere else on Earth. Agricultural practices have, however, significantly deforested Madagascar over time, threatening this rich diversity of species.



Along the coastline of south-east Madagascar, ilmenite, zircon and monazite is being mined at Rio Tinto's QIT Madagascar Minerals (QMM) site. To help conserve the land for future generations, and ensure it is returned to the community in rich and fertile condition, Rio Tinto is rehabilitating the mined areas with fast-growing tree species using previously stored topsoil.

Three community-protected areas have been created within the mining concession, comprising 2,095 hectares of littoral forest. These protected areas, which are managed by the communities who depend on the land for subsistence, are helping to protect and promote biodiversity in this very special landscape.



All figures in US dollars

Strengthening local communities

Supporting agriculture in Serbia



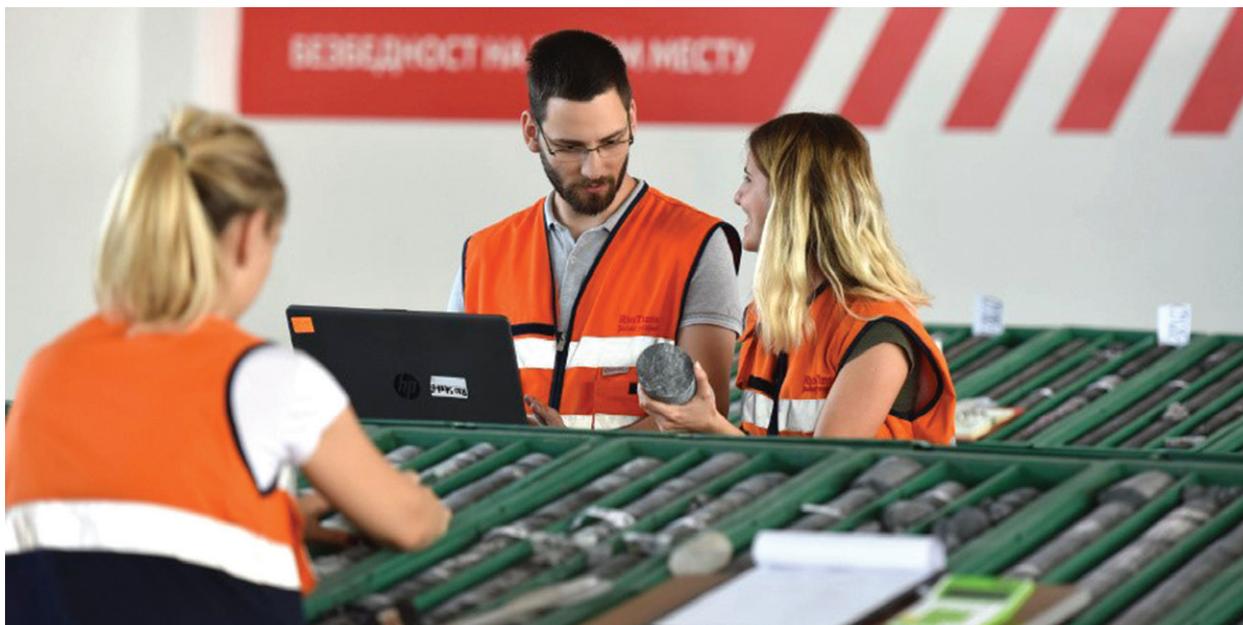
The development of the Jadar project is providing new opportunities to strengthen agricultural activity in Western Serbia. In cooperation with local communities, the long-term Supporting Access to Agricultural Advisory Services project has been established and is taking an educational approach to improving living conditions and local opportunities.

Early consultations, undertaken before the project began, identified significant community interest in building berry cultures, particularly for raspberries. Women were also identified as benefiting from more equal participation in these activities.

The project has been implemented in cooperation with the Agricultural Advisory Service Poljosavet since 2018 at the initiative of the Regional Development Agency, with support from the town of Loznica. An amount of USD\$45,000 has been invested to date.

The key objectives of the project are:

- the continuous provision of services to local agricultural producers;
- transfer of knowledge focused on all key aspects of agricultural production;
- demonstration of new technologies in planting that can be transferred to commercial raspberry production;
- demonstration of modern technologies in planting and growing berries; and
- production of high-quality raspberry seedlings.



Internships provide great opportunities for graduates

Rio Tinto's highly successful global internship scheme has been extended to the Jadar project, offering a range of exciting opportunities for Serbian graduates in the fields of geology, environment, engineering and health and safety.

The eight-week program initially ran in July and August 2018, with participants keen to share their positive impressions of the learning experience:

"I would say that the major quality of such a program is that it allows participants to get to know the way of working within a big company. This student internship broadened my horizons about working in the field and enabled me to learn other skills that are not strictly field-related. The most important thing I learned from this experience is the importance and universality of health and safety at work."

**Dusan, Faculty of Mining and Geology,
University of Belgrade**

"In the course of this program, I learned a lot about administration as well as fieldwork. Thanks to my mentors I also had a privilege to get acquainted with the company's project and work methods, and I learned that for this company, safety comes first."

**Ana, Faculty of Mining and Geology, University
of Belgrade**

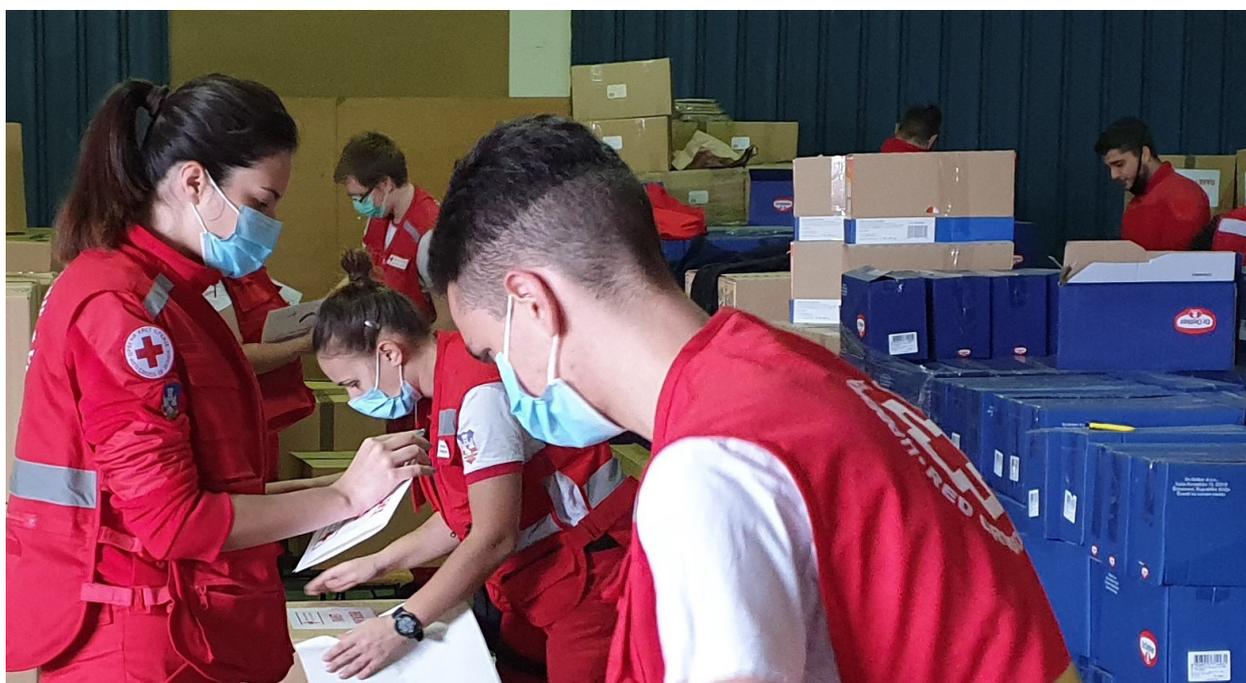


The most crucial thing for any student on the path of professional development is an opportunity to work with people who are willing to share their knowledge and experience with joy. The internship at Rio Tinto has helped me realize that with teamwork and mutual respect, any business goal is achievable."

**Ivana, Faculty of Mining and Geology,
University of Belgrade**

Covid-19 community investment funding allocation in Serbia

Rio Tinto's total estimated voluntary global community contributions to support COVID-19 preparedness and recovery is around \$60 million for 2020. This shows that we mean it when we say that we want to support both the health and safety of our employees and our communities. In Serbia, we made a charitable donation to Red Cross worth EUR 40,000 in support of the most vulnerable categories of citizens in Belgrade and Loznica. The donation was used for procurement of essential food and personal hygiene items. Additionally, Rio Tinto and its employees jointly donated EUR 10,000 to UNICEF in Serbia.



Safety is paramount, at work and at home

Rio Tinto wants its staff to be safe, both at work and at home, and is proud of its industry-leading program to help support victims of domestic violence – providing them with special leave, emergency accommodation and financial support, as well as training to equip leaders and employees to safely step in and help.

Funding support has also been provided to community organisations dealing with the increased demand for domestic violence services throughout the COVID-19 pandemic. For example, Rio Tinto

has donated C\$360,000 to 12 women's shelters and local organisations in communities where it operates across Canada, including British Columbia, Newfoundland and Labrador, the Northwest Territories and Quebec. This has allowed these organisations to continue providing a variety of support services to women and their families, including safe shelters, education and training, counselling, workshops and activities for children. Five of these groups are focused on providing services to Indigenous women and their children.

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