



# Sustainability benchmark report, 2016-2018

ALROSA



## Disclaimer

This report was commissioned by ALROSA and prepared by OOO PricewaterhouseCoopers Advisory. PwC has performed procedures in relation to sustainability benchmarking. The scope of work included comparative analysis of secondary sustainability and market data research from sources freely available online\*. Detailed specification of the scope is defined in “Peer selection criteria” and “Benchmarking indicators” sections of this report. Details of the procedures, results and sources of information are described in further sections of this document (“Benchmarking results”, “Indicative table”, “Reference list”). Projected market and financial information, analyses and conclusions contained herein are based (unless sourced otherwise) on the information described above and on PwC’s judgment, and should not be construed as definitive forecasts or guarantees of future performance or results.

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Due to the limited scope of our work and because the procedures are not intended to constitute either an audit or a review or any other form of assurance engagement performed in accordance with applicable auditing, review or other assurance standards, we do not express any form of assurance on corporate sustainability data in a form of an opinion or overall conclusion.

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\* The Scope of work agreed between ALROSA and PriceWaterhouseCoopers Advisory in the agreement.

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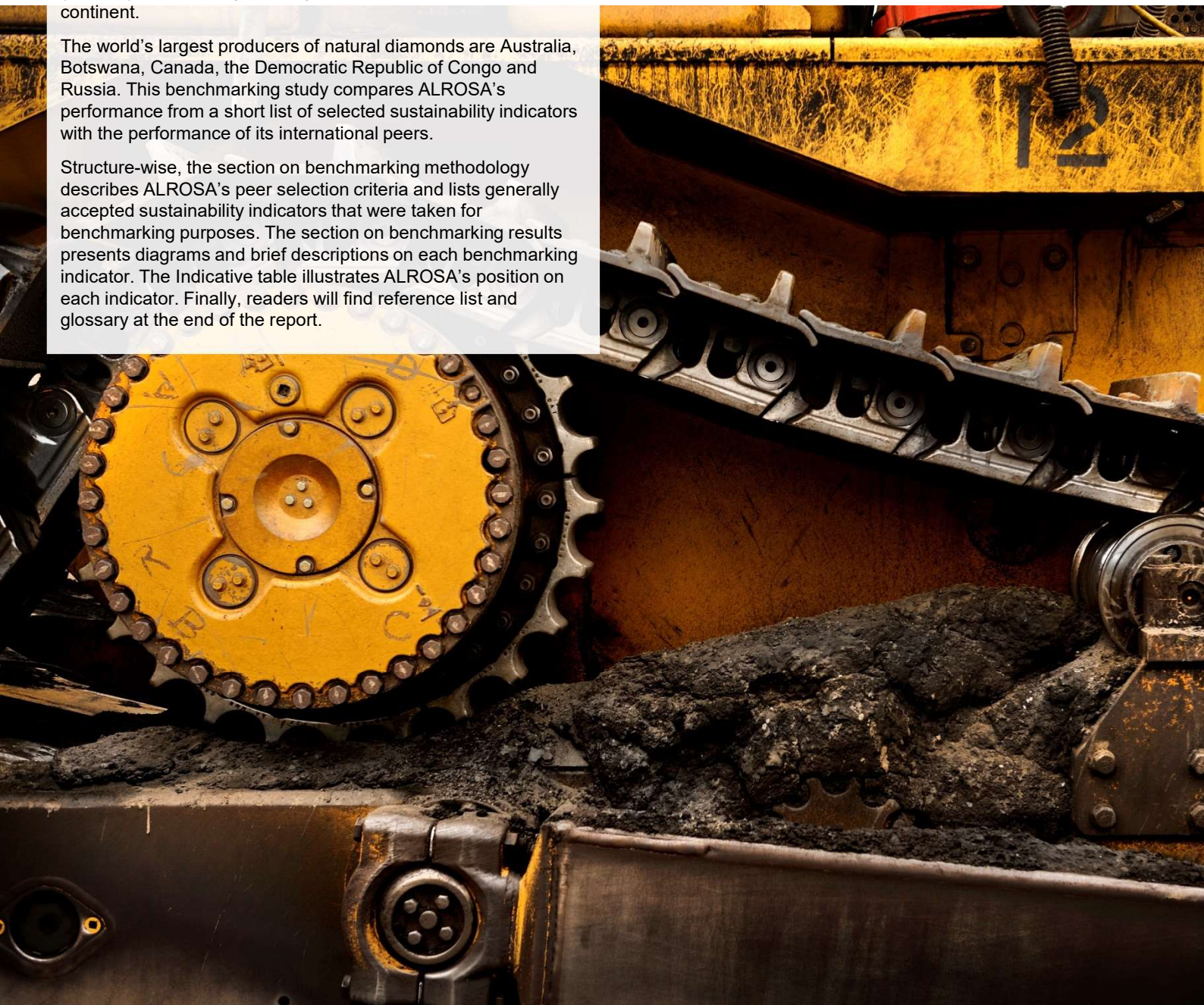
# Note to readers

Welcome to the second report on the precious stones and metal producers' sustainability benchmark report prepared by PwC and ALROSA. This year's edition covers industry developments from 2016 to 2018 and takes closer look at key sustainability indicators.

ALROSA accounts for 97% of the total diamond production in Russia in physical terms and is the leading diamond-mining company in the world. ALROSA accounts for one-third of the reserves and more than a quarter of the production in the global rough diamond market. ALROSA's core activities are concentrated in two Russian regions, the Republic of Sakha (Yakutia) and Arkhangelsk Region, as well as on the African continent.

The world's largest producers of natural diamonds are Australia, Botswana, Canada, the Democratic Republic of Congo and Russia. This benchmarking study compares ALROSA's performance from a short list of selected sustainability indicators with the performance of its international peers.

Structure-wise, the section on benchmarking methodology describes ALROSA's peer selection criteria and lists generally accepted sustainability indicators that were taken for benchmarking purposes. The section on benchmarking results presents diagrams and brief descriptions on each benchmarking indicator. The Indicative table illustrates ALROSA's position on each indicator. Finally, readers will find reference list and glossary at the end of the report.



# Peers selection criteria

Rough diamonds production is dominated by a small number of companies. For this report, we took major rough diamond producers by volume, even though ALROSA alone accounts for roughly one-third of the global production volume.

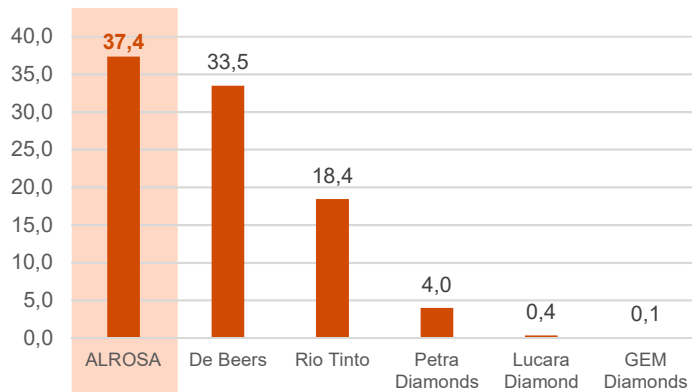
The Diamond Producers Association (DPA), which accounts for about 75% of the world diamond production, served as an initial pool of companies to select from. As of August 2019, DPA members include ALROSA, De Beers Group, Dominion Diamond Mines, Gem Diamonds, Lucara Diamond, Murowa Diamonds, Petra Diamonds and Rio Tinto. Due to lack of disclosed sustainability information on Dominion Diamond Mines and Murowa Diamonds, we excluded these two companies from further assessment.

To complement the assessment universe, we then looked at international gold mining companies. Diamond mining is less energy intensive than other types of mining and has certain

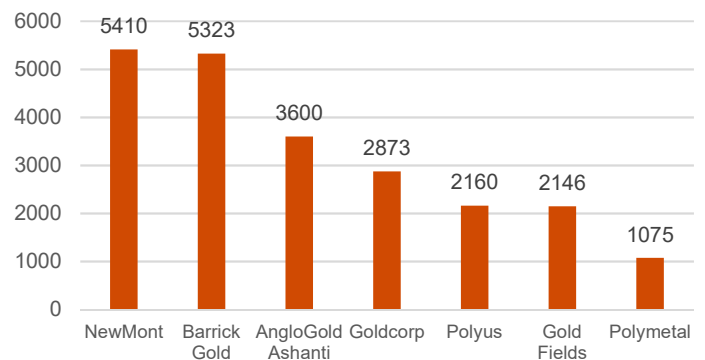
unique features. For this report, however, gold mining companies are taken into the assessment universe due to the similarity in sustainability issues that are material to the precious metals and minerals mining sector in general. From the range of ten companies (AngloGold Ashanti, Anglo American Platinum, BHP Billiton, Barrick Gold, Goldcorp Inc., Gold Fields, NewMont Mining Corporation, Nornickel, Polymetal and Polyus), we excluded three (Anglo American Platinum, BHP Billiton and Nornickel), because their production is concentrated on other minerals and metals and gold is a by-product with a small share of production volumes. In January 2019, NewMont Mining Corporation and Goldcorp Inc. merged and now represent the NewMont Goldcorp.

The final assessment universe consists of thirteen international mining companies, including six that produce diamonds.

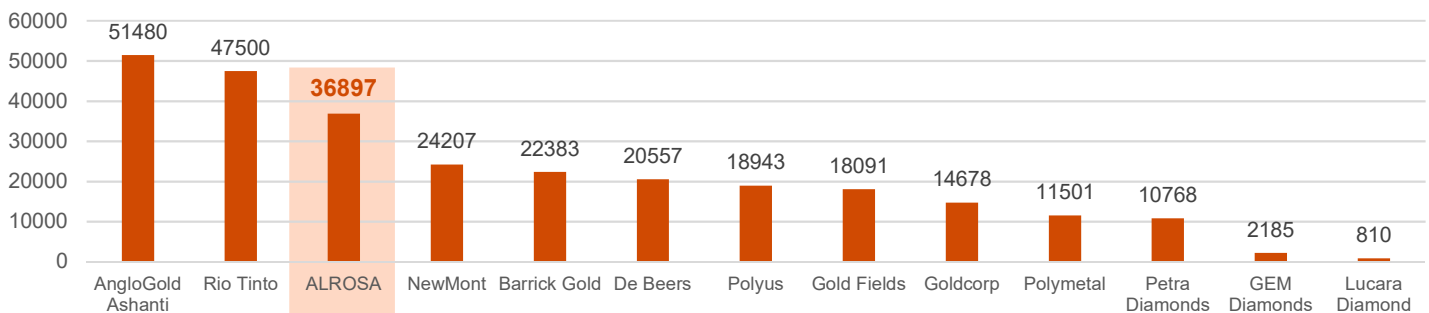
## Diamond production, mln carats, 2016-2018 median



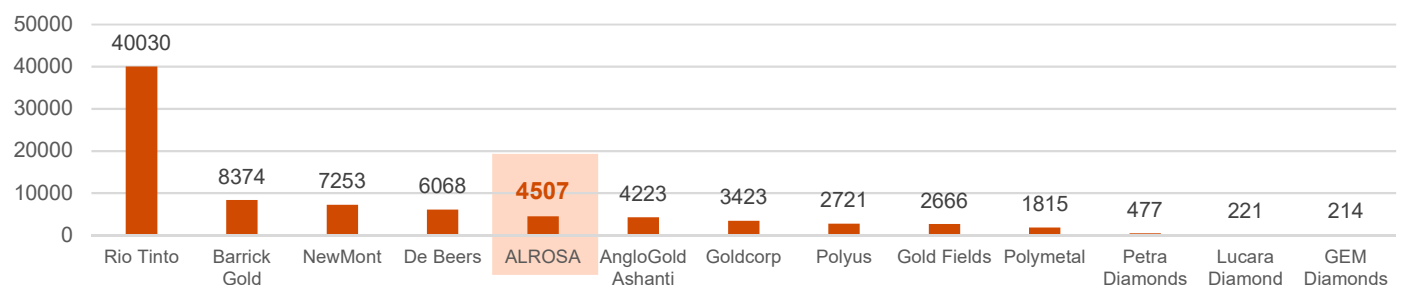
## Gold production, thousand ounces, 2016-2018 median



## Staff, people, 2016-2018 median



## Total revenue, mln USD, 2016-2018 median



# Benchmarking indicators

To select benchmarking indicators, we first looked at sustainability issues material to the sector. The sector's operations and product offerings are associated with various sustainability impacts on stakeholders and the environment.

There is an established understanding of what issues are material to precious metals and minerals mining sector. Reputable international multilateral organisations, such as GRI, SASB and Sustainalytics, among others, have published suggestions on sector-specific material sustainability issues. We have put together four versions of a materiality matrix (authored by GRI, SASB, Sustainalytics and ALROSA) to create a short list of sustainability benchmarking indicators. Thus, we ensured that benchmarking is performed objectively according to sector-specific materiality.

The number of peers taken for every benchmarking indicator varies. Benchmarking is performed only in cases where relevant sustainability information has been disclosed and publicly available for more than two companies per indicator.

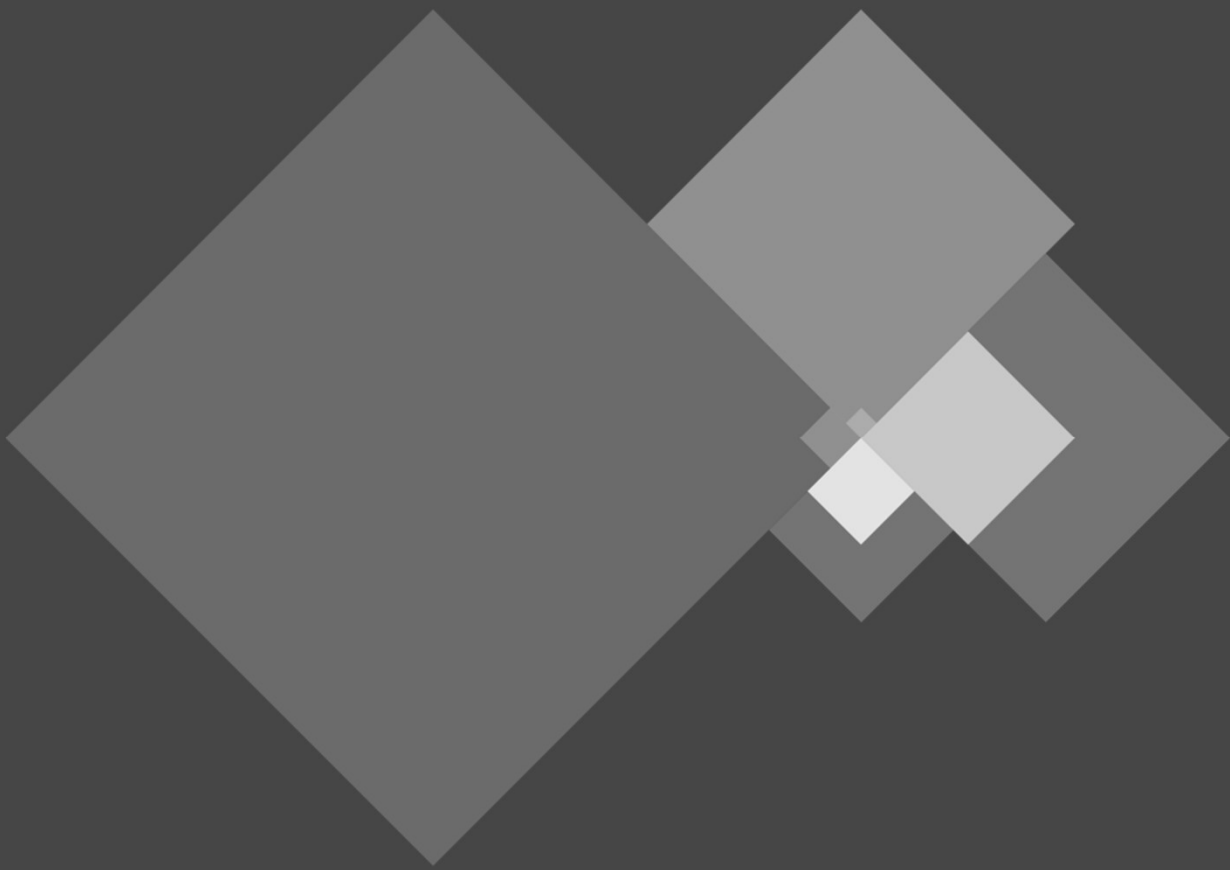
The set of short-listed benchmarking indicators includes:

- Community expenditures to revenue ratio;
- Environment expenditures to revenue ratio;
- Share of women in the workforce;
- Average hours of training per year per employee;
- Energy consumption to revenue ratio;
- Water consumption to revenue ratio;
- Share of water recycled and reused;
- Greenhouse gas emissions to revenue ratio.

Material indicators of Share of waste recycled and reused, Employee turnover and Average monthly wage have been excluded due to lack of disclosed information from peers.



# Benchmarking results



# Community expenditures to revenue ratio

Local community relations are crucially important for the mining industry. It is highlighted as material by ALROSA, as well as by GRI Sector Disclosures, SASB sector-specific Materiality Map and Sustainalytics.

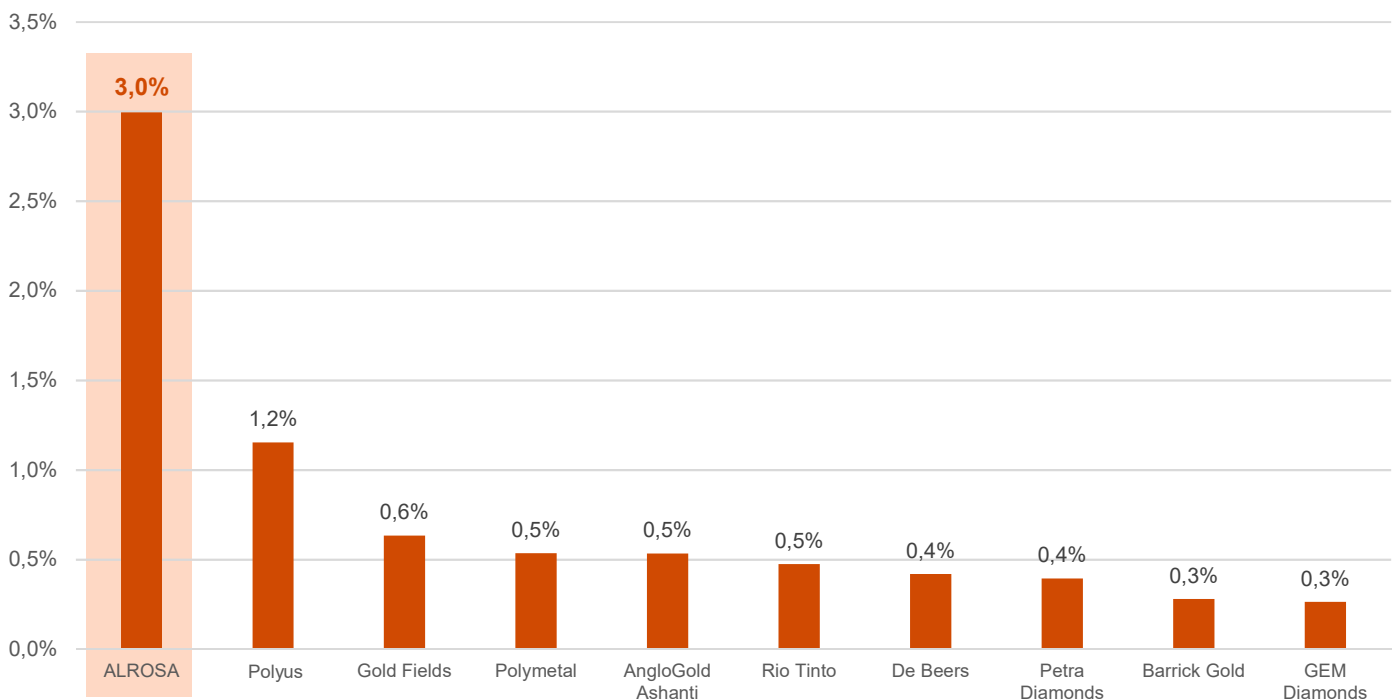
Mining activities take place over a number of years, and companies may be involved in multiple projects in a region. This can have a wide range of impact on the community. Community rights and interests may be affected through the environmental and social impact of mining operations, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. Mining companies need support from local communities to be able to obtain permits and leases, and to conduct their activities without disruption. Metals and mining companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socio-economic benefits in return may be exposed to the risk of actions motivated by resource nationalism on the part of host governments and communities.

A key element in managing the impact on people in local communities is assessment and planning in order to understand the actual and potential impact, and strong engagement with local communities to understand their expectations and needs. There are many elements that can be incorporated into local community engagement, impact assessments and development programmes.

ALROSA has the highest ratio among its peers. This diagram seeks to illustrate the priority that ALROSA gives to community engagement. ALROSA is an important organisation and main employer for local communities in Mirny, Udachny and Aychal. ALROSA is also a major employer in the entire Yakutia region. The Company funds many regional development programmes and, in partnership with the regional government, supports communities across a range of issues, including access to medicine, educational services, cultural heritage and diversity.



## Community expenditures to revenue ratio, %, 2016-2018 median



# Environment expenditures to revenue ratio

ALROSA considers that environmental protection expenditures, mitigation of environmental risks and ecological impact, as well as environmental compliance, are material.

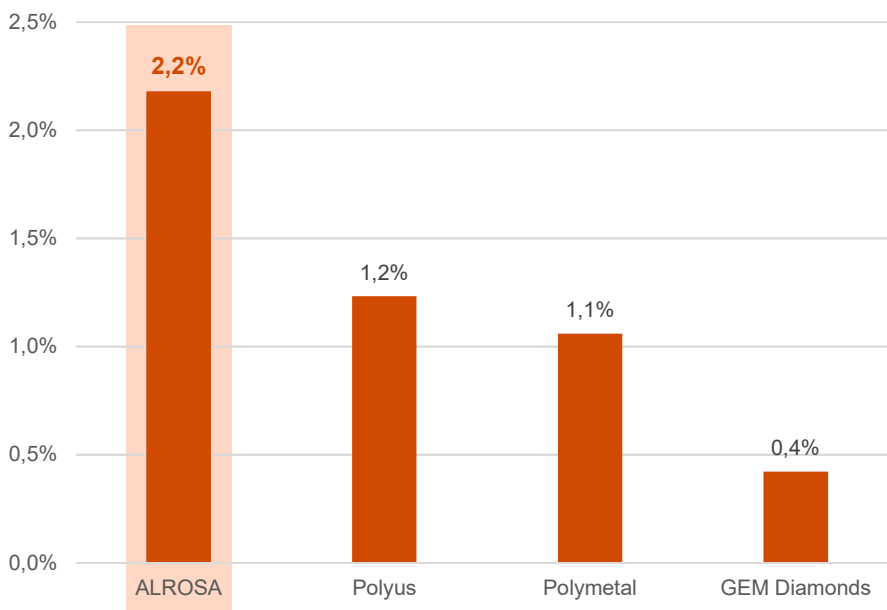
The development, operation, and closure of mines can have a range of impact on the environment, such as alterations of landscape, vegetation removal and destruction of wildlife habitats. Acid rock drainage is a particularly significant risk (highly acidic water, rich in heavy metals, formed when surface and shallow subsurface water come into contact with mining overburden). It can have harmful effects on humans, animals and plants. Companies that have an effective environmental management plan for different stages of the project lifecycle minimise their compliance costs and legal liabilities, face less resistance in developing new mines and mitigate the potential environmental impact more effectively.

ALROSA manages its environmental impact strategically and takes responsibility for a wide range of mitigation and protective measures. These include investing in construction of environmental and waste treatment facilities, land reclamation activities and funding for environmental research and monitoring. The backbone of the Company's environmental efforts was a comprehensive 2011-2018 environmental plan that covered key infrastructure and remediation projects across the Company.

As seen in the diagram, ALROSA has the highest environment expenditures to revenue ratio, which illustrates its strong commitment to the communities and territories where it operates.



## Environment expenditures to revenue ratio, %, 2016-2018 median



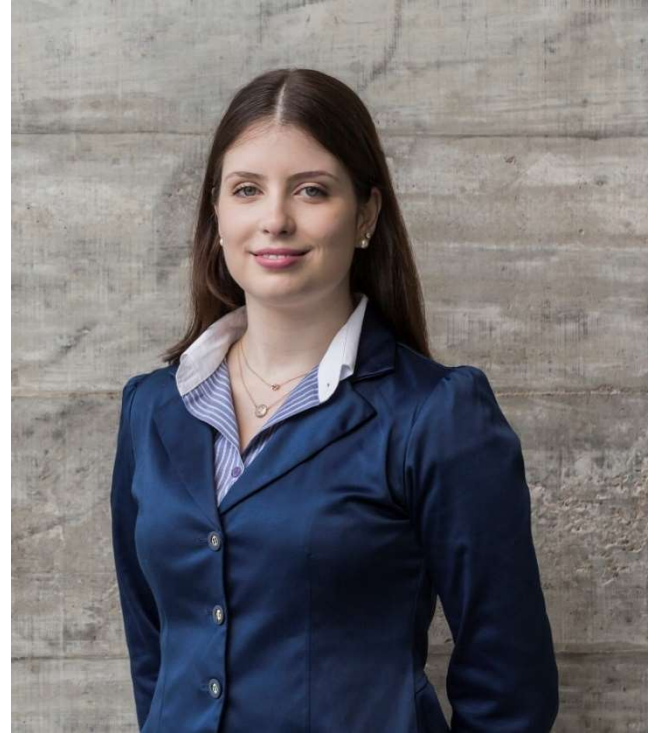
# Share of women in workforce

ALROSA defines employee diversity as a material topic. Gender diversity is taken seriously by management. ALROSA believes that this disclosure provides a quantitative measure of diversity within an organisation and helps in assessing which issues can be of relevance to certain segments of employees.

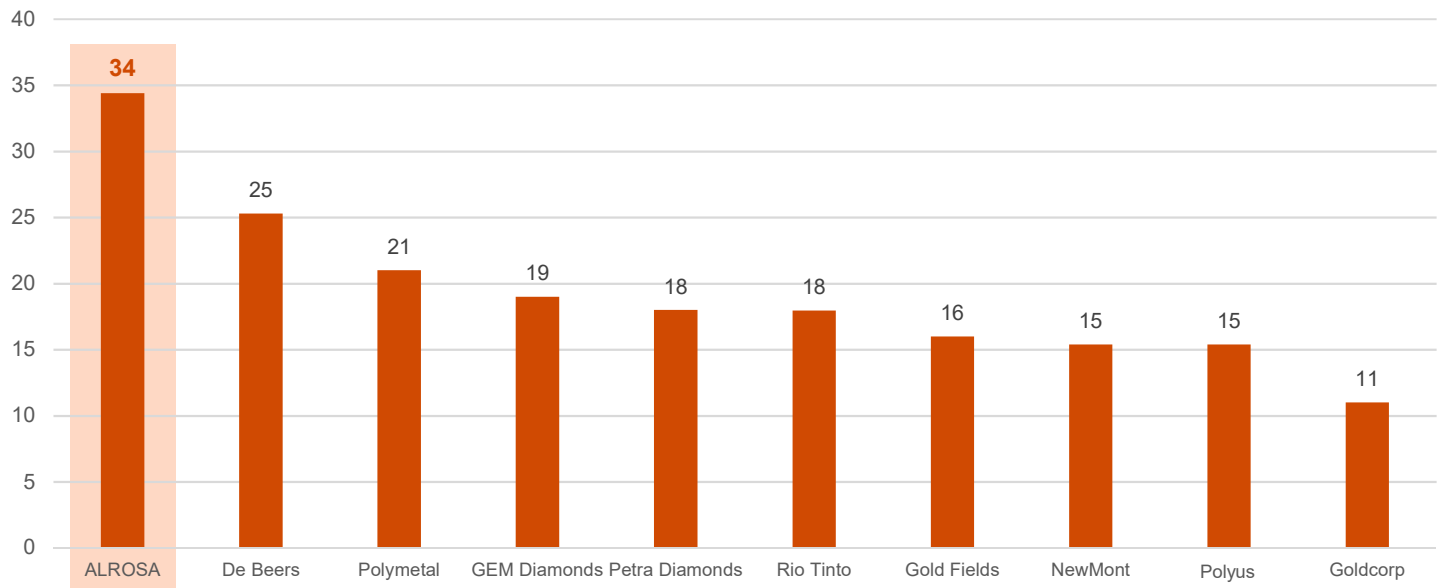
As per GRI Reporting Standards, disclosure on employee diversity offers information on equal opportunity. By promoting diversity, ALROSA fights against discrimination to prevent employees from being treated unequally (i.e. unequal burdens or denied benefits) and treats each person fairly on the basis of individual merit.

The diagram shows ALROSA's clear advantage in its efforts to promote gender diversity. ALROSA has the highest percentage of women in the total workforce among its peers.

In Russia, women are barred by government regulations from certain professions in the mining industry, including construction and underground work. Despite this, ALROSA employs women in mining-related professions at Yakutniiproalmaz University, the Almazavtomatika R&D Centre, medical centres and management departments, among others.



Share of women in workforce, %, 2016-2018 median



# Average hours of training per year per employee

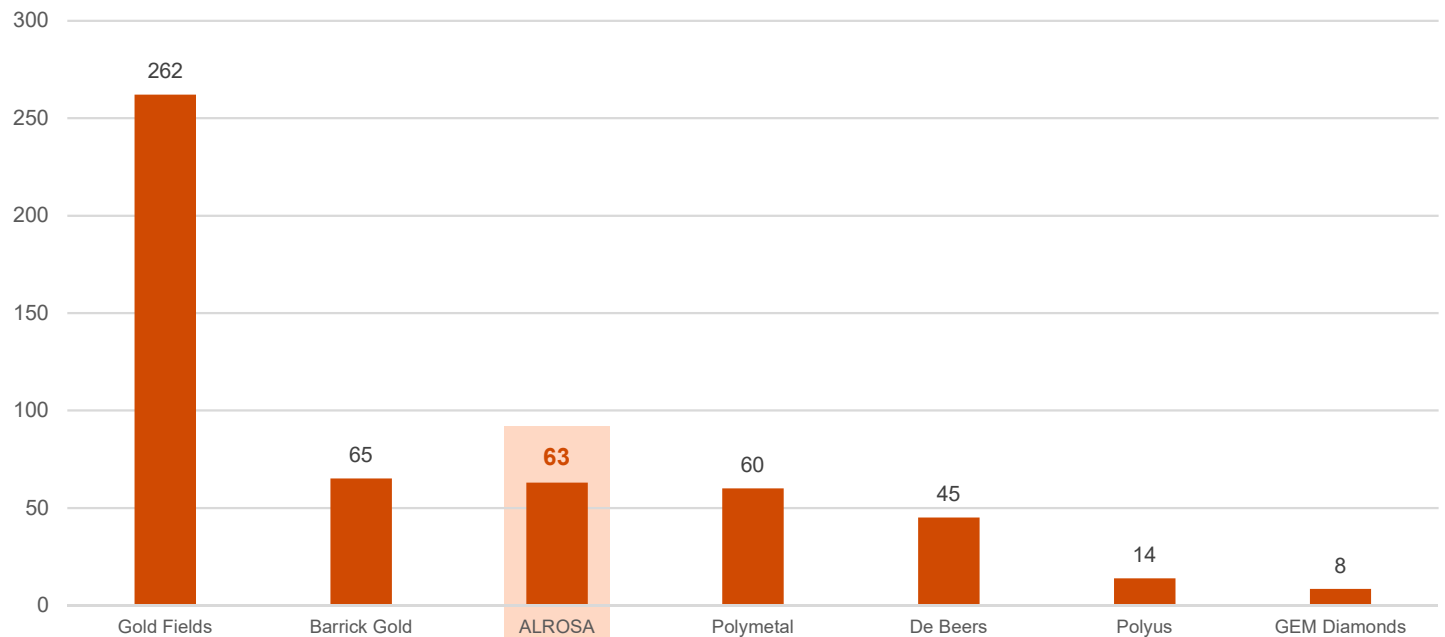
ALROSA considers that training and education for employees is a highly material topic. As per GRI Standards, disclosure on the average number of hours of training per year per employee provides insight into the scale of an organisation's investment in training and the degree to which the investment is made across the entire employee base.

Training in sustainability reporting normally refers to all types of vocational training and instruction, pursued both internally or externally, if provided by an organisation for its employees. However, it is out of scope of this study to ensure that all peers report training hours on the same basis. Regular health and safety trainings, for instance, might be the type of trainings not counted by some peers but be counted at Gold Fields.

ALROSA has an average number of training hours provided to employees among its peers. The company provides professional education and training to its employees of all grades on a regular basis. Around 99% of the total number of competency development training provided was conducted by ALROSA's internal training facility.



## Average hours of training per year per employee, hours, 2016-2018 median



# Energy consumption to revenue ratio

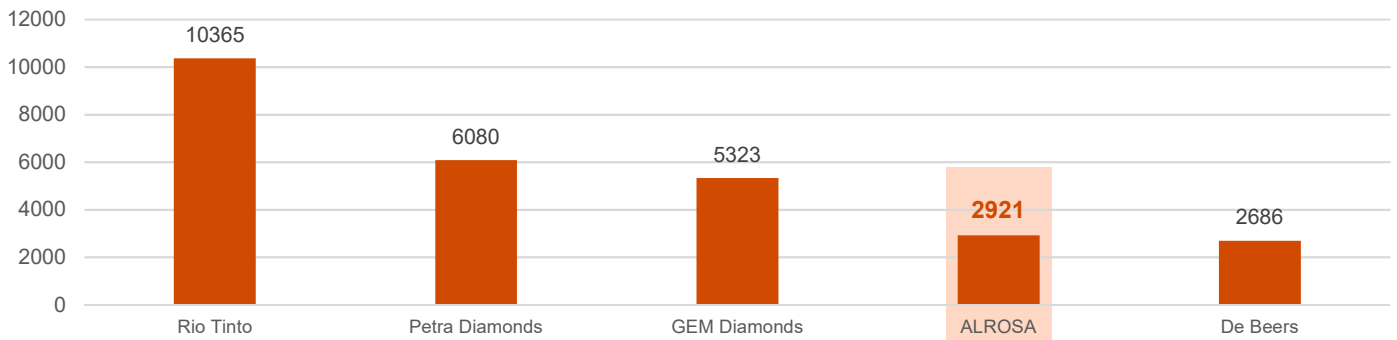
Energy consumption is considered material by ALROSA and its peers. GRI Sector Disclosures, the SASB sector-specific Materiality Map and Sustainalytics Sector Report all set energy management and consumption high on the materiality matrix.

Mining and metals production are energy-intensive processes, with a significant proportion of energy consumption accounted for by purchased electricity. Diamond mining is less energy intensive than other types of mining and certain unique features. The energy intensity of operations is likely to increase with decreasing grades of deposits and increasing depth and scale. The choice between on-site versus grid-sourced electricity, and the use of alternative energy, can play an important role in influencing both the cost and reliability of the energy supply. Affordable and easily accessible energy is essential for competing in a commodity market driven by global competition; purchased fuels and electricity account for a significant proportion of total production costs.

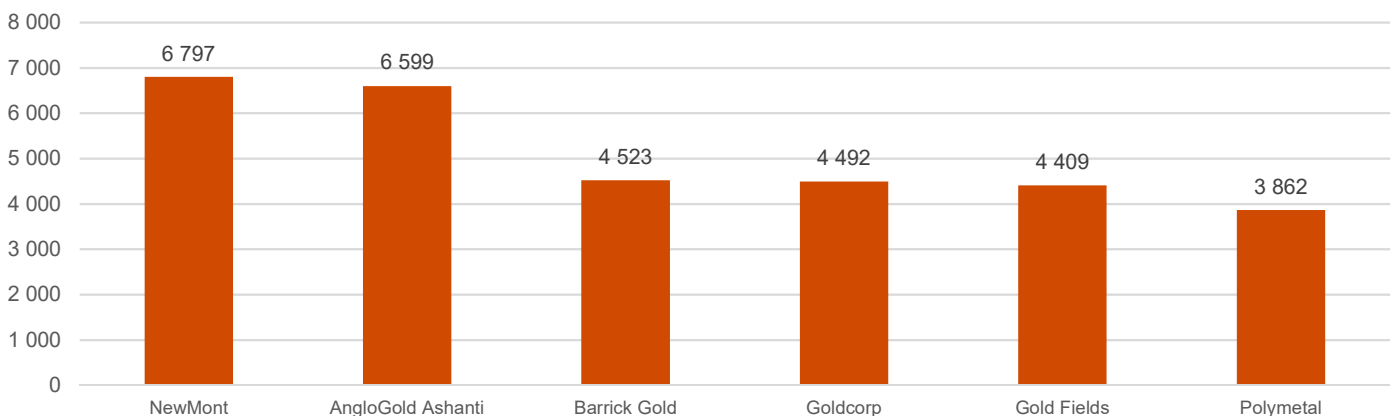
ALROSA provides organisation-specific metrics to report on its energy consumption and efficiency, which is the energy intensity ratio calculated in monetary units such as revenue. This ratio expresses the energy required per monetary unit and is often called normalised environmental impact data. As seen on the diagram, ALROSA shows one of the best ratios among diamond producers and has a significantly lower ratio than any of the gold producers.

For the past three years, ALROSA has significantly reduced the share of highly carbon-intensive fuels in its total energy consumption. The volume of coal, diesel and crude oil fuels has been reduced in favour of less carbon-intensive natural gas and electricity purchased from renewable sources (hydroelectric plants). In 2016-2018, the volume of consumed coal fell by 80%, diesel by almost 90%, and crude oil by half.

Energy consumption to revenue ratio, GJ/mln USD, 2016-2018 median



Energy consumption to revenue ratio, GJ/mln USD, 2016-2018 median



# Water consumption to revenue ratio

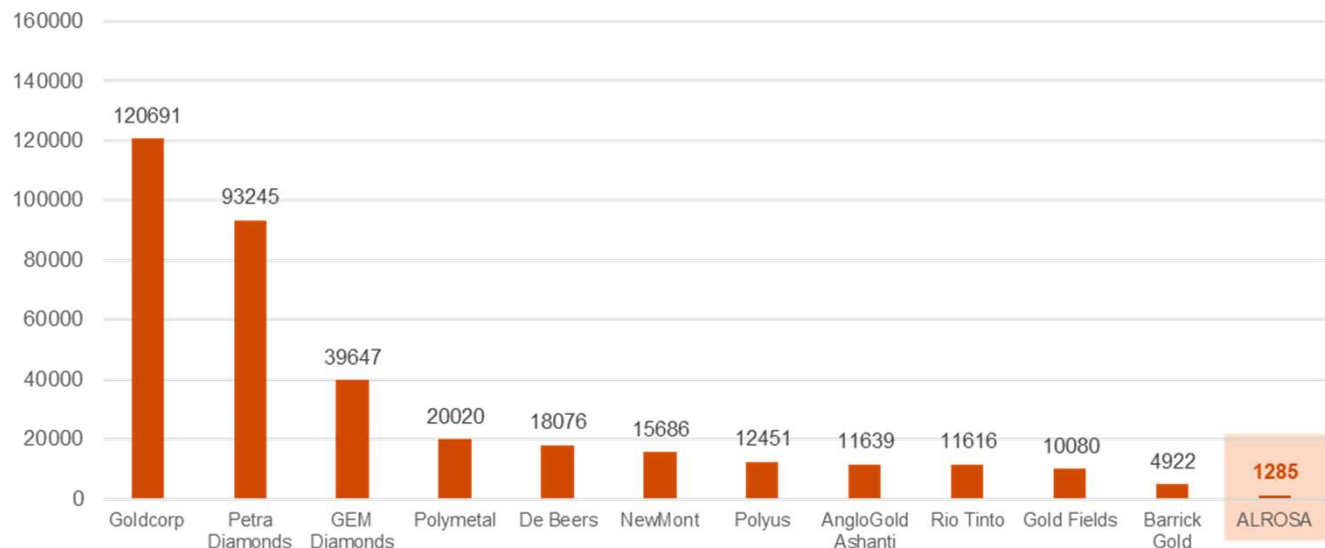
The volume of water withdrawn and utilised is considered material by ALROSA, as well as by the SASB sector-specific Materiality Map and Sustainalytics Sector Report.

Water is a key component in the mining process. It is used in mineral processing, chemical reagent mixtures, and heating and cooling machinery and equipment. Metals and mining companies face operational, regulatory and reputational risks due to water scarcity, water acquisition costs, regulations on effluents or amount of water used, and competition with local communities and other industries for limited water resources. Companies in the industry are addressing risks by increasingly using new technology, including desalination, water recirculation and innovative waste-disposal solutions. Reducing water use and contamination could also create opportunities for companies to improve their operational efficiency and lower their operating costs.

Reporting the total volume of water withdrawn provides an indication of an organisation's relative size and importance as a water user, and provides a baseline figure for other calculations related to efficiency and use.

ALROSA provides organisation-specific metrics to report on its water consumption and efficiency, which is the water consumption intensity ratio calculated in monetary units such as revenue. This ratio expresses the water required per monetary unit and is often called normalised environmental impact data. As seen on the diagram, ALROSA clearly outperforms its peers (both diamond and gold producers). This illustrates the importance that has been given to water management throughout ALROSA and operational improvements such as higher levels of water recycling and reuse and lower levels of water loss when transporting.

**Water consumption to revenue ratio, cubic meter/mIn USD, 2016-2018 median**

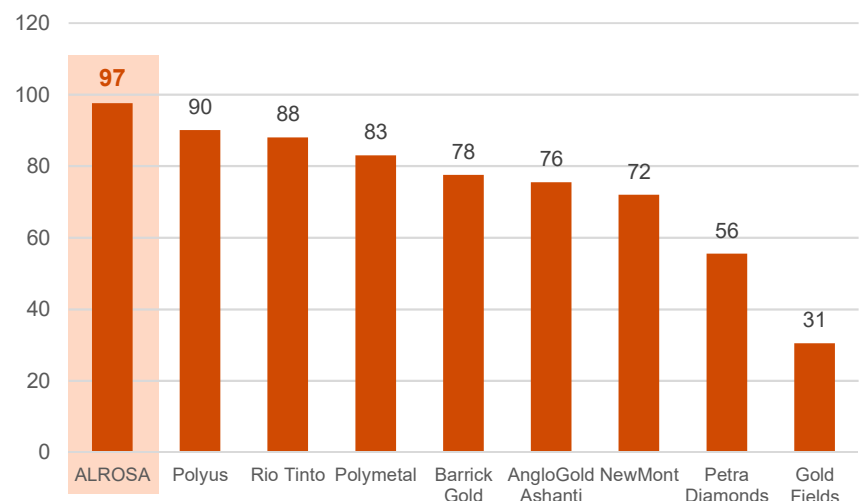


# Share of water recycled and reused

The rate of water reuse and recycling is a measure of efficiency and demonstrates the success of an organisation in reducing total water withdrawals and discharges. Increased reuse and recycling can reduce water consumption, treatment and disposal costs. Reducing water consumption over time through reuse and recycling also contributes to local, national and regional goals for managing water supplies.

ALROSA ranks number one among its peers in terms of water reuse and recycling rate. This diagram illustrates significant operational improvements made by the Company. Water recovered while mining is being collected and then pumped down back underground. Furthermore, the amount of water recycled at processing plants alone grew 9% in 2018. The total volume of water recycled and reused by ALROSA grew 25% in 2018 compared to 2016.

**Share of water recycled and reused, %, 2016-2018 median**



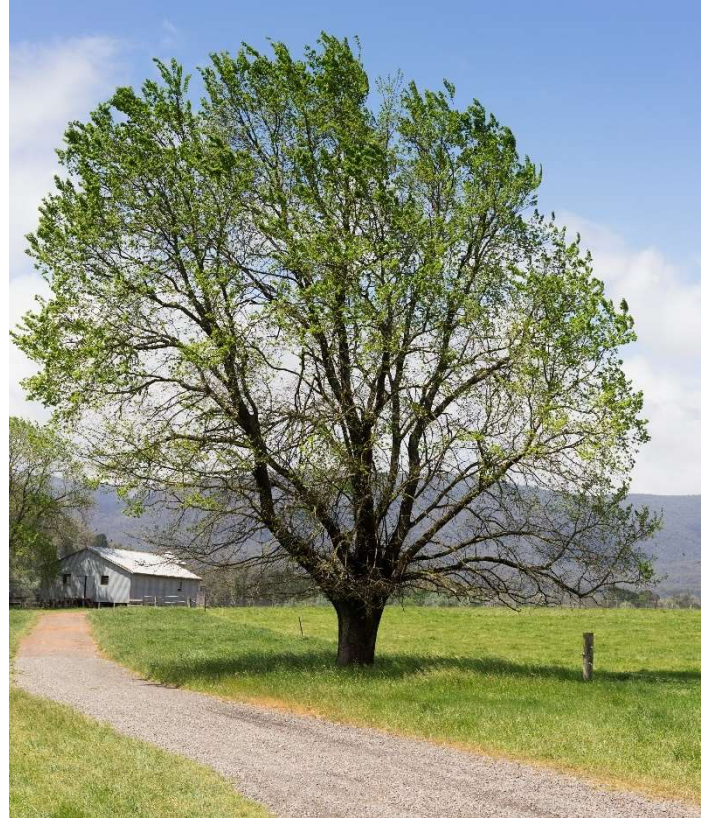
# Greenhouse Gas emissions to revenue ratio

All mining sector-specific reporting guidelines list emissions in their materiality matrix, including the GRI, SASB and Sustainalytics.

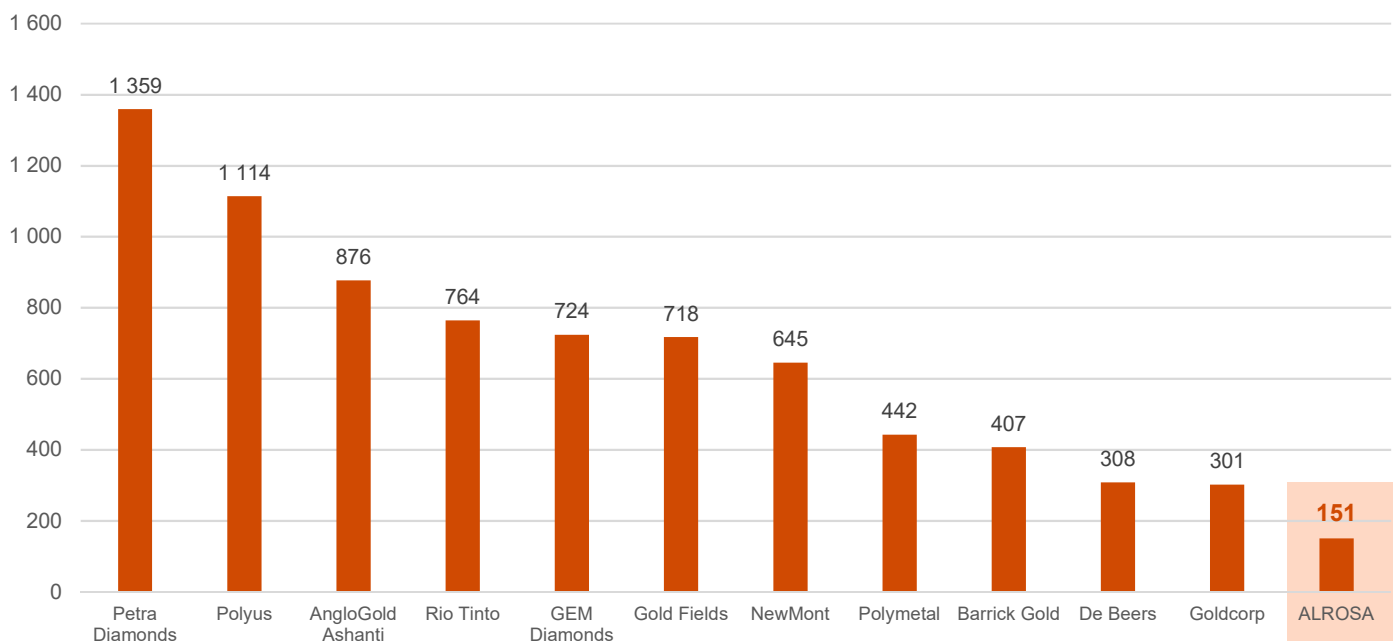
Mining operations are energy-intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use during mining, ore processing and smelting. The extent and type of GHG emissions can vary depending on the metal or mineral being mined and processed. GHG emissions contribute to climate change and create additional regulatory compliance costs and risks for metals and mining companies due to climate change mitigation policies. Companies that cost-effectively reduce GHG emissions from their operations by adopting industry-leading technology and processes can create operational efficiencies.

The following diagram presents an organisation-specific metric — the intensity ratio calculated as metric tons of CO<sub>2</sub> to revenue. Many organisations track their environmental performance with intensity ratios, which are often called normalised environmental impact data.

As seen on the diagram, ALROSA has the lowest intensity ratio among its peers. The descending three-year trajectory illustrates the priority given to reducing GHGs company-wide. The Company's trucks and vehicles are being gradually upgraded from diesel and gasoline to natural gas engines. In 2018, ALROSA already had 300 trucks powered by natural gas instead of more carbon-intensive fuels. Notably, ALROSA achieved a 52% decrease in the presented ratio over 2016 to 2018.



**Greenhouse gas emissions to revenue ratio, CO<sub>2</sub> tonnes/mIn USD, 2016-2018 median**



# Benchmarking results, Indicative table

## Indicator

### 0. Size by production volume and number of employees

#### ALROSA position

ALROSA is the largest company by volume of diamonds produced and third largest by number of employees

Performance bar: left to right, from poor to excellent performance

#### 1. Community expenditures to revenue ratio

ALROSA has the highest ratio



#### 2. Environment expenditures to revenue ratio

ALROSA has the highest ratio



#### 3. Share of women in the workforce

ALROSA has the highest share of women in the workforce



#### 4. Average hours of training per year per employee

ALROSA has an average number of hours of training



#### 5. Energy consumption to revenue ratio

ALROSA has the second lowest ratio



#### 6. Water consumption to revenue ration

ALROSA has the lowest ratio



#### 7. Share of water recycled and reused

ALROSA has the highest share of water recycled and reused



#### 8. Greenhouse gas emissions to revenue ratio

ALROSA has the lowest ratio



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# Glossary

**CO2:** Carbon dioxide equivalent is a measure used to compare the emissions from various types of greenhouse gases (GHG) based on their global warming potential. The CO2 equivalent for a gas is determined by multiplying the metric tonnes of the gas by the associated GWP.

**Community development programme:** A plan that detailed actions to minimise, mitigate or compensate for adverse social and/or economic impact, and/or to identify opportunities or actions to enhance the positive impact of a project on the community.

**Employee turnover:** Ratio of employees who leave an organisation voluntarily or due to dismissal, retirement or death in service.

**Environmental protection expenditure:** Expenditure on environmental protection by an organisation, or on its behalf, to prevent, reduce, control, and document environmental aspects, impact and hazards.

**GHG:** Greenhouse gases contribute to the greenhouse effect by absorbing infrared radiation.

**GRI:** The Global Reporting Initiative is an international independent standards organisation that helps businesses, governments and other organisations understand and communicate their impact on issues such as climate change, human rights and corruption.

**Local community:** people or groups of people living or working in any areas that are economically, socially or environmentally impacted (positively or negatively) by an organisation's operations.

**Material topic:** A topic that reflects a reporting organisation's significant economic, environmental and social impact or that substantively influences the assessments and decisions of stakeholders.

**Renewable energy source:** An energy source that is capable of being replenished in a short time through ecological cycles. Renewable energy sources can include geothermal, wind, solar, hydro and biomass.

**SASB:** The Sustainability Accounting Standards Board was founded in 2011 to develop and disseminate sustainability accounting standards.

**Water recycling and reuse:** The act of processing used water and wastewater through another cycle before discharge to final treatment and discharge to the environment.

# Key contacts for this report

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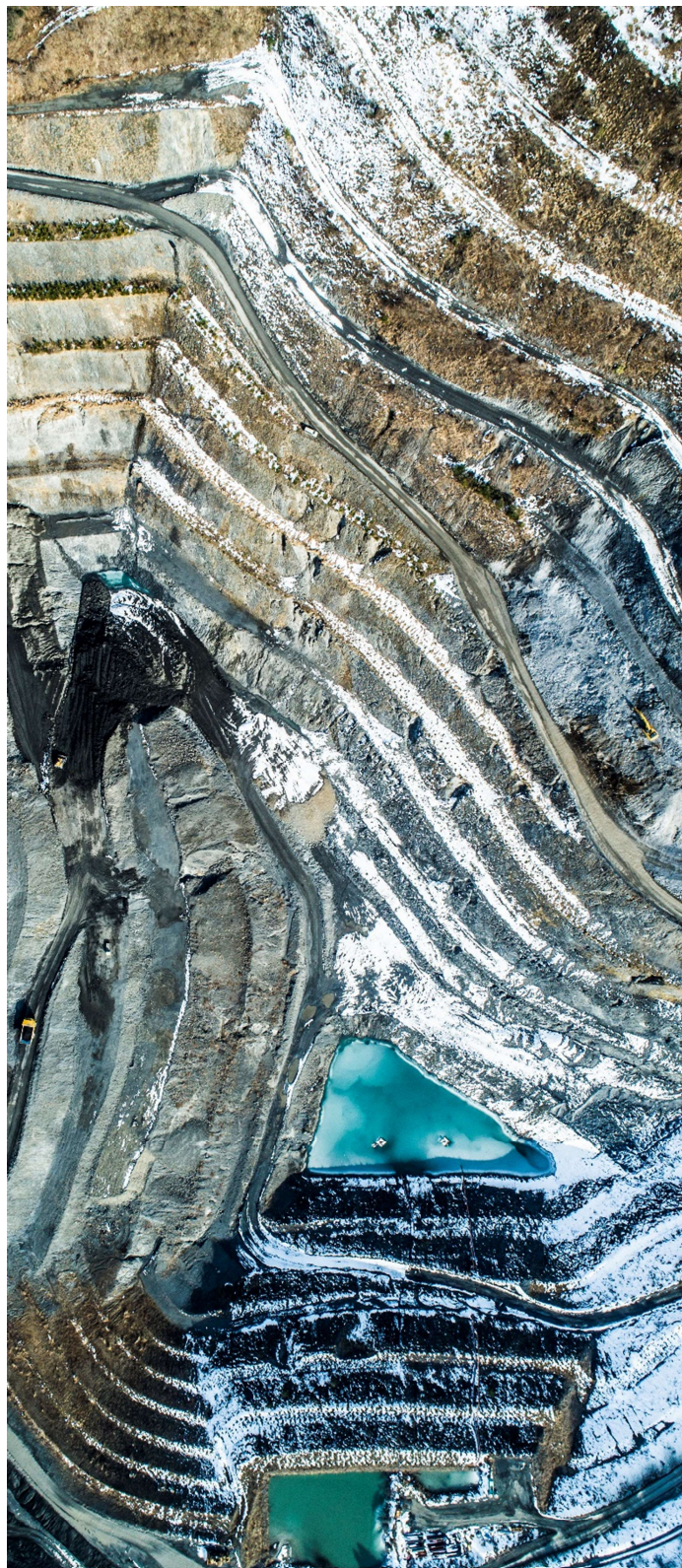
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