

NATURAL  
DIAMOND  
COUNCIL

# Total Clarity

THE REALITY OF MODERN DIAMOND MINING





It takes a trained eye and years of experience, supported by the latest diamond planning technology, to determine each rough diamond's value based on its likely polished outcome.

→

## THE REALITY OF MODERN DIAMOND MINING

# Shedding new light on the impact of modern large-scale diamond mining on employees, communities and the environment.

Total Clarity is an unprecedented initiative from the Natural Diamond Council (NDC), whose seven Members are mining companies, together representing 75% of the world's diamond production. The NDC has partnered with Trucost—a reputable independent research company—to examine and quantify the collective socio-economic and environmental impact of its Members' diamond mining activities. The Total Clarity report brings together the findings of this analysis and real-life case studies to illustrate the little known reality of modern diamond mining.

Why this initiative? A billion year-old natural diamond is a promise of love, commitment and sincerity. With it comes a legitimate expectation of transparency. NDC Members have all made a formal commitment to leading responsible and sustainable operations and they have individually produced more than 50 sustainability reports over the years. These sustainability reports are in the public domain and they detail the way our Members work and the impact of their operations on their communities, employees and environment. Our

objective with Total Clarity is to bring yet another level of transparency by consolidating the collective socio-economic and environmental footprint of NDC Members into one single document and by shedding a new light on the reality of diamond mining today.

The diamond sector has undergone significant transformation over the past 15 years, from mine to market. For all its imperfections and needs for reform, the Kimberley Process has been remarkably successful in virtually eliminating conflict diamonds from the market. The banking sector has imposed the strictest transparency rules on the diamond trade. The Responsible Jewellery Council (RJC) has provided effective standards and codes of practice for the industry to self regulate. Finally, new leaders and new geographies have emerged, like Russia and Canada, to become major actors on the world diamond stage.

Our examination took two years to complete and all data is from 2016. It involved the collection of thousands of data points by Trucost directly from NDC

Member company operations.

The analysis uncovers the magnitude of the socio-economic benefits brought by our Members' diamond mining activities to regions and communities in which they operate. It shows that NDC Members provide high quality and safe local employment to more than 77,000 people in some of the most remote places on the planet. It quantifies the economic wealth created by diamond mining for local communities through local sourcing of goods and services and through government revenues in turn responsibly invested in infrastructure, health and education. The report shows how entire ecosystems have been able to grow and flourish as a result of diamond mining in many African countries, but also in Canada, Russia and Australia.

Importantly, the Trucost analysis also details the positive and negative impacts our Members' diamond mining activities have on the environment. It uncovers that modern diamond mining has a relatively small environmental footprint, and that continuing to reduce carbon emissions—

more than pollution, land usage or water usage—is our key opportunity for improvement. The report provides useful comparisons and benchmarking with other products and industries so as to better assess our current position and set future objectives.

We trust that you will find the Total Clarity report is a balanced, informative and well-illustrated document. It is designed to bring new transparency to the impact of diamond mining for all those who have an interest in the diamond sector operating in the most responsible and sustainable way, whether you are consumers, professionals, or simply industry observers. For NDC Members, this report is a baseline and reaffirmation of our commitment to delivering ever more responsible, meaningful, and beautiful diamonds to the world.

By examining the *world's seven leading diamond producers*, Total Clarity shines a light on the global impact of modern diamond mining on mining workforces, local communities and on our planet.

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WHO WE ARE

In 2016, the world's leading diamond mining companies came together to form the Natural Diamond Council (NDC). Together, our seven Members represent approximately 75% of the world's rough diamond production. With 35 operations in eight countries across four continents, NDC Members impact the lives and environments of millions of people.

The NDC and its Members are fully committed to supporting the sustainable development of the diamond sector from mine to market. They aim to provide safe, high quality jobs to members of their communities and to source locally goods and services needed for their operations. NDC Members partner with local communities and governments to minimize their environmental impact, and work with all sectors in the value chain to expand responsible practices to the whole diamond ecosystem.

Importantly, the NDC and its Members are committed to transparency and to engaging with all stakeholders to explore ways to make the diamond sector ever more sustainable and responsible.



ALROSA is one of the world's leaders in diamond mining, accounting for about 26% of global rough diamond production. The company mines all of its diamonds in Russia, and its workforce is almost 35,000 people, whose average salaries are three times higher than the Russian national average. ALROSA places a premium on worker safety and compliance with environmental standards of operations. In terms of percentage of revenue spent, ALROSA is one of the industry's biggest benefactors.

[eng.alrosa.ru](http://eng.alrosa.ru)



Petra Diamonds, operating in Botswana, South Africa and Tanzania, is a leading independent diamond mining group and a consistent supplier of gem-quality rough diamonds to the international market. Petra conducts all operations according to the highest ethical standards and operates only in countries that are members of the Kimberley Process. The company contributes to the socioeconomic development of its host countries and supports long-term sustainable operations to the benefit of its employees, partners, and communities.

[petradiamonds.com](http://petradiamonds.com)



Dominion Diamond Mines is Canada's largest independent diamond producer with controlling interest in the Ekati Diamond Mine and a 40% stake in the Diavik Diamond Mine. It supplies rough diamonds to the global market and also maintains the Canadamark™ brand. Dominion is guided by the principles of social responsibility, environmental stewardship, and economic sustainability. It is fully committed to the health, safety, and well-being of its employees and to establishing strong, lasting and respectful relationships with the people and communities with whom it works

[ddmines.com](http://ddmines.com)



Rio Tinto operates a global diamond exploration, mining, and sales and marketing business, with a strong and trusted profile in established and developing markets. Rio Tinto's diamond business comprises some 1,000 people around the world. As one of the world's largest producers of rough diamonds, its diamond portfolio offers the full range of diamonds in terms of color, size, and quality. Rio Tinto is committed to the highest possible health, safety, and environmental standards and is strongly committed to improving the long-term future of the diverse communities in which it operates.

[riotinto.com](http://riotinto.com)

DE BEERS GROUP

De Beers Group, established in 1888, is the world's largest diamond producer by value, with mining operations in Botswana, Canada, Namibia and South Africa. Together with its joint venture partners, De Beers Group employs more than 20,000 people across the diamond pipeline. As part of the company's operating philosophy, the people of De Beers Group are committed to "Building Forever" by making a lasting contribution to the communities in which they live and work, and transforming natural resources into shared national wealth.

[debeersgroup.com](http://debeersgroup.com)



RZM is the majority owner and operator of Murowa Diamond Mines in Zimbabwe and today produces approximately 1,200,000 carats of predominantly white gem-quality diamonds. Murowa recently went through a strategic overhaul exercise that resulted in a new life-of-mine plan and a new approach to mining. RZM is dedicated to being an active member of the communities in which it operates through sustainable growth initiatives. It benefits 50,000 people through its five-year Community Action Plan and creates lasting contributions to the local economies.

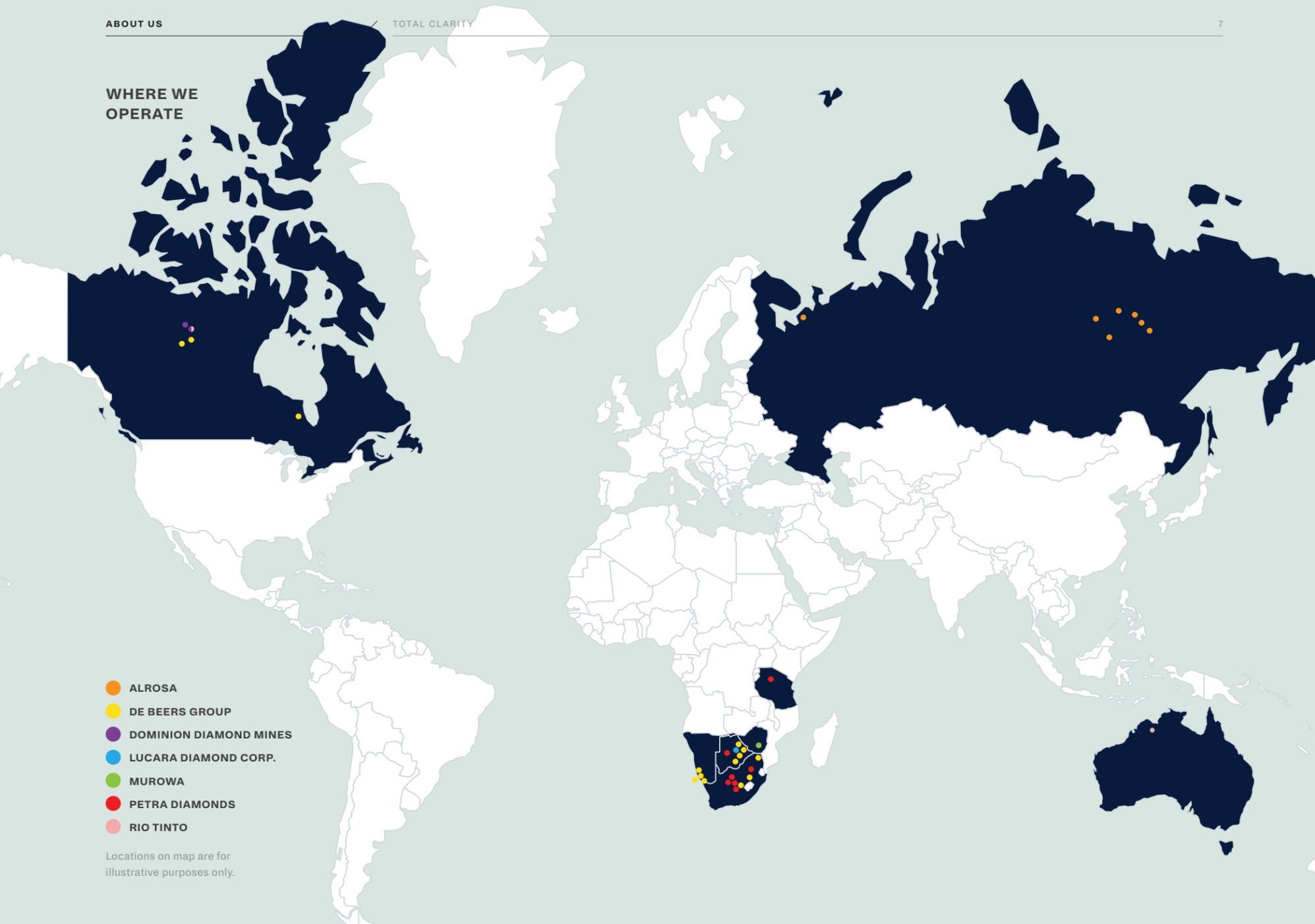
[murowadiamonds.com](http://murowadiamonds.com)



Lucara Diamond Corp. owns and operates the Karowe Diamond Mine located in north-central Botswana, where the second and seventh largest gem-quality diamonds were recovered: the historic 1,109 carat Lesedi La Rona and the 813 carat Constellation. In March 2018, Lucara acquired Clara Diamond Solutions Corp., a secure, digital sales platform that uses proprietary analytics and blockchain technologies to modernize the supply chain. Lucara has received awards for its targeted and sustainable community-investment initiatives and respect for the natural environment.

[lucaradiamond.com](http://lucaradiamond.com)

WHERE WE OPERATE



- ALROSA
- DE BEERS GROUP
- DOMINION DIAMOND MINES
- LUCARA DIAMOND CORP.
- MUROWA
- PETRA DIAMONDS
- RIO TINTO

Locations on map are for illustrative purposes only.

WHAT WE DO

# A Diamond's Journey

Diamonds are found in some of the most remote places on earth and are very difficult to locate. Significant investment and technical expertise are required to bring diamonds along a journey from the earth, where they formed billions of years ago, into beautifully crafted jewelry to be cherished.

1. FORMATION

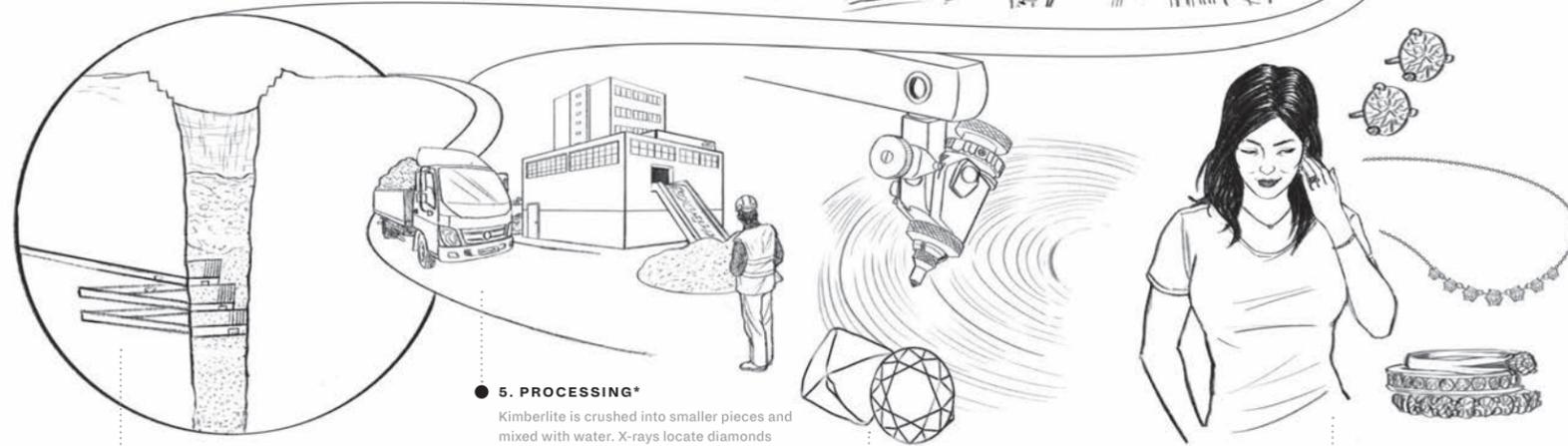
Diamonds were formed deep in the earth under intense heat and pressure one to three billion years ago. Diamonds were carried to the earth's surface in lava from volcanic eruptions that occur three times deeper than most volcanoes, forming kimberlite pipes.

2. EXPLORATION

Kimberlites are found in some of the most remote places on earth. When geologists locate kimberlite, it's an indicator that diamonds may be present. The number and quality of diamonds that are present in a kimberlite are confirmed by collecting samples.

3. PERMITTING AND CONSTRUCTION

Before mining begins, cultural, socio-economic, and environmental surveys and consultations are carried out to assess potential impacts of future mining operations and propose mitigation plans and remedies. Once all consultations have taken place and permits have been obtained, substantial investment of resources is required over several years to bring a mine into production. The journey from discovery to production typically extends over 10 to 15 years.



4. MINING\*

Mining takes place above and/or below ground (open pit mining and underground mining). Rock that does not contain diamonds is separated from kimberlite, which is transported to the ore processing facility. The area affected by mining is minimized and reclaimed once mining is complete.

5. PROCESSING\*

Kimberlite is crushed into smaller pieces and mixed with water. X-rays locate diamonds in the mixture; diamonds are then extracted using a puff of compressed air. The remaining mixture of water and kimberlite is placed in storage facilities and these areas are reclaimed once mining is complete. Rough diamonds are collected and sent to sorting, cutting and polishing facilities. The diamond recovery process uses no chemicals and relies entirely on the diamonds' physical properties: high density, fluorescence and hydrophobic surface.

6. CUTTING & POLISHING

Each rough diamond is assessed for size, color, clarity and model and sorted into consistent diamond assortments then sold to diamantaires. Diamantaires cut and polish rough diamonds to bring out their individual beauty and maximize their market value. Most diamonds today are cut and polished in the State of Gujarat in India, while Antwerp Tel-Aviv and New York continue to be home to exceptional craftsmanship.

7. COMPLETING THE JOURNEY

Polished diamonds are crafted into jewelry. The diamond becomes part of a design that tells your story and continues its billion year old journey with you.

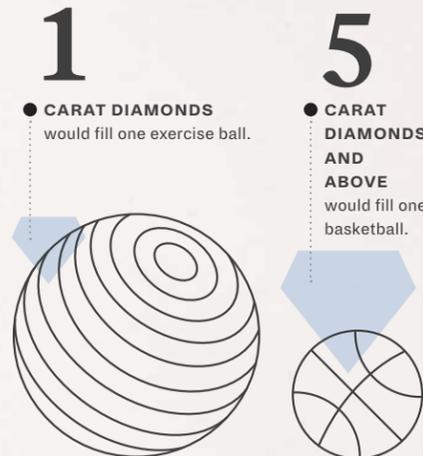
\*Mining and Processing stages of rough diamond production represent the scope of the Trucost analysis.

WHAT WE DO

# A Finite Resource

The number of recovered diamonds peaked in 2005 and will decrease significantly over the next decade. In fact, most of the diamonds recovered today come from kimberlites discovered decades ago, which is why diamond production is gradually decreasing.

## THE ANNUAL RECOVERY OF...



HOW BIG IS A CARAT?

Most people know diamonds are measured in carats, but many don't know what a carat looks like. This image provides perspective on popular sizes of round cut diamonds relative to a hand.

OUR SHARED VALUES

Requirements for NDC Members include involvement in diamond mining and commitment to the highest standards of integrity and responsibility in all aspects of their business and at all stages of the value chain.

Transparency

Ethical, sustainable business practices

Making a lasting, positive impact

Environmental stewardship

Promoting health and well-being of employees

Our shared values are captured by the sustainability commitments signed by all Members on joining the Natural Diamond Council.

Conduct our business with integrity, ethics and high standards of corporate governance.

Promote and encourage responsible business practices throughout the diamond supply chain.

Comply fully with the Kimberley Process Certification Scheme and the World Diamond Council (WDC) System of Warranties.

Support transparency in the way we conduct our business and report payments made to governments in accordance with applicable legal requirements.

Respect fundamental human rights and observe the UN Guiding Principles on Business & Human Rights.

Respect the cultures, customs and values of others with whom we engage, including our employees, contractors and the local communities around our operations.

Seek to further the economic, social and institutional development of communities where we operate.

Seek to protect the well-being of our employees by implementing robust health and safety practices in a culture of continual improvement.

Seek to prevent or otherwise minimize or mitigate and remediate our impacts to the environment and support the conservation of biodiversity, and continually seek to improve our environmental performance.

Want to know more?

Members also share their own specific commitments and progress toward sustainability publicly, with over 50 reports produced by our Members each year.

These reports are made available on our Members' websites. Links to each Member's annual sustainability report are also available on NDC's website.

MEASURING OUR IMPACT

In 2017, the NDC commissioned leading global research agency, Trucost, part of S&P Global, to produce the first-ever report on the socioeconomic and environmental impacts and benefits of the large-scale diamond mining sector through an analysis of the activities of NDC Members. The findings of this independent study form the base for this Total Clarity Report and provide an important baseline to measure the success of our Members' ongoing efforts to improve the sustainability of their operations.

Trucost focused exclusively on measuring the impact and benefits directly attributable to diamond mining and processing activities of NDC Members representing 75% of world diamond production. They surveyed 21 key socioeconomic and environmental indicators over 150 different metrics, across NDC Member operations on four continents accounting for 70% of their overall production. Thousands of data points were generated, which were in turn verified by Trucost and analyzed using their proprietary social and environmental capital valuation methodologies. The same proven methodology has been deployed by Trucost in more than 100 studies over the past 15 years.



Our People

Worker Safety

Salaries, Benefits and Labor Practices

Diversity

Training and Development



Our Communities

Local Purchasing of Goods and Services

Revenue for Local Governments and Communities

Social Programs

Infrastructure Investment



Our Planet

Energy Conservation and Emissions Reduction

Land Use and Protection

Waste Management

Water Conservation

A rough diamond with an octahedron shape is called a "sawable" because it will most often be sawn in its middle in order to produce two polished diamonds corresponding to each "pyramid." Octahedrons, comprised of eight triangles, are a naturally occurring phenomena in diamonds formed billions of years ago, deep below the earth's surface.

→



TOTAL CLARITY AT A GLANCE



OUR PEOPLE



**77,000+**

people employed by NDC Members.



**66%**

more than the national average salary is what the average NDC Member employee earns.



**\$3.9 Billion**

benefits created locally through employment.

OUR COMMUNITIES



**\$6.8 Billion**

benefits infused into communities through the purchase of local goods and services.



**60%**

of the value created is retained locally, benefitting communities directly and indirectly.



**\$292 Million**

benefits of social programs including education and healthcare.

OUR PLANET



**1,023 Sq Miles**

of land NDC Members protect; 3x the amount of land that they use.



**83%**

of water used for diamond mining is recycled.



**69%**

less carbon emission per carat than a laboratory-created diamond.

Iona MacKenzie, senior team leader for Dominion's processing plant operations in the Northwest Territories, Canada. Iona oversees a team of people who manage the processing of rough diamonds.

# Our People



PPE REQ  
BEYOND  
POINT

## SUPPORTING WORKERS AND STRENGTHENING LOCAL ECONOMIES

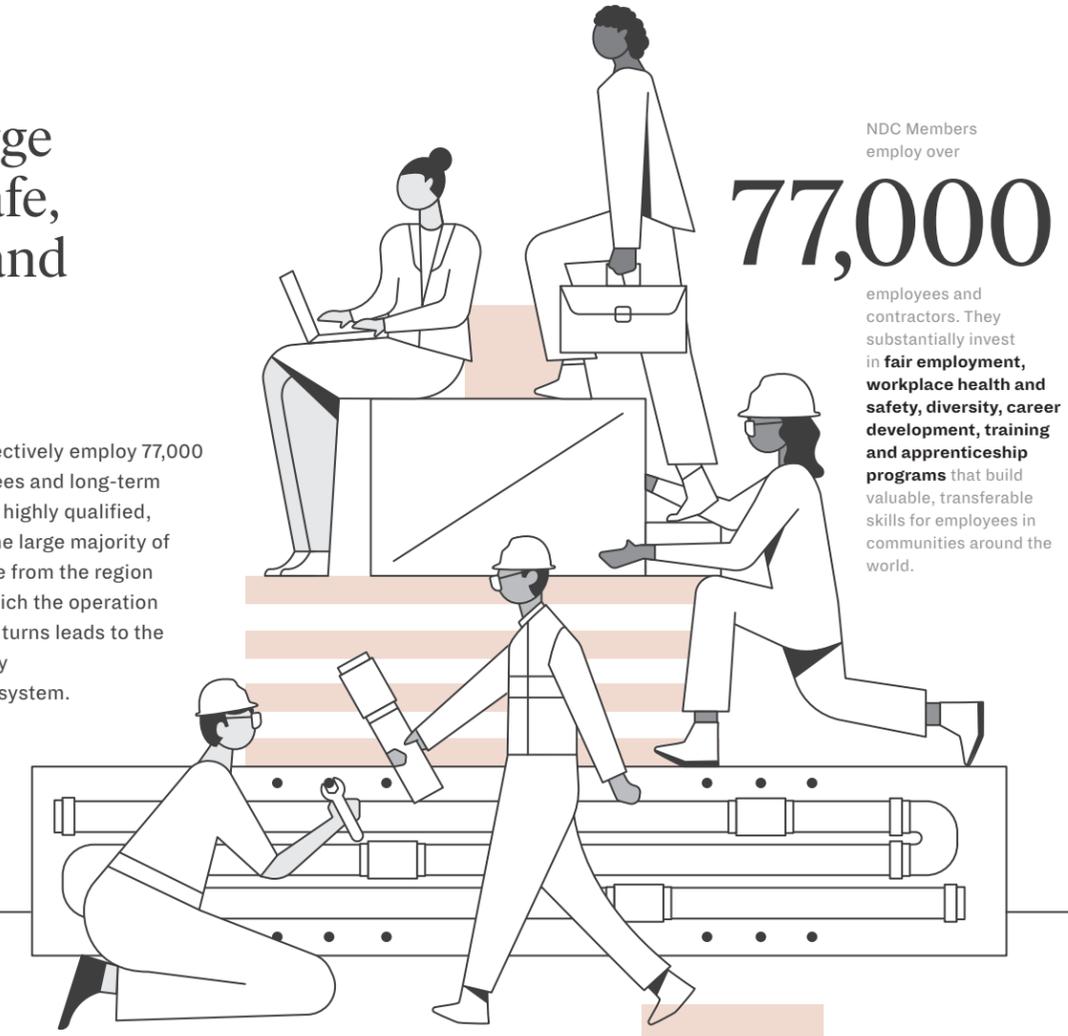
### NDC Members employ large workforces and provide safe, high-quality jobs to local and Indigenous people.

Building and operating a diamond mine over several decades in often remote regions of the world requires making long-term commitments to local communities in education, skills development and employment. A successful mining operation is always the result of strong mutually beneficial partnerships with local communities. This is why NDC Members work with local communities and governments to maximize employment from local populations.

As Members shape professional workforces with a long-term view in mind, they invest significantly in career development, training and apprenticeship programs, and in building transferable skills for employees and local community members. It is not unusual to see several generations of the same family working at

the same site.

NDC Members collectively employ 77,000 permanent employees and long-term contractors in safe, highly qualified, high paying jobs. The large majority of these workers come from the region or community in which the operation is located, which in turns leads to the creation of a healthy local economic ecosystem.



NDC Members employ over **77,000**

employees and contractors. They substantially invest in **fair employment, workplace health and safety, diversity, career development, training and apprenticeship programs** that build valuable, transferable skills for employees in communities around the world.

**MODERN-DAY DIAMOND MINING PUTS WORKER SAFETY FIRST**

Diamond mining involves operating large pieces of equipment and dealing with geological risks. This is why NDC Members put the safety and wellbeing of their employees and contractors ahead of any other consideration.

Keeping employees safe is a never-ending journey and the responsibility of everyone on site. It requires a strong safety culture in which no shortcuts or compromises are acceptable if they could result in an injury. It also requires following strict rules and processes, wearing the appropriate protective equipment, analyzing every task for its safety risk before performing it and continuously training teams to employ safe behaviors.

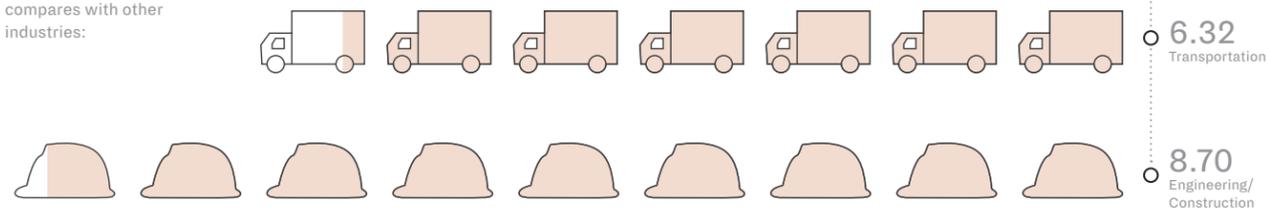
At NDC Member companies, every new work shift starts with a safety review of the last shift and a discussion of risks associated with the next shift. Leaders engage continuously with their teams on the ground to coach, train and correct them. New technologies are continuously introduced, such as vehicle proximity detection equipment or geological movement monitoring devices. The safety performance of every operation is closely monitored and is a very important driver of a leader's performance evaluation. No leader with a poor safety record will be promoted.

The journey to zero harm is still long though and in 2016, NDC Members reported nine fatalities and 118 lost-time injuries (injures requiring treatment that resulted in time off-work) across their workforce, most often attributable to human errors.

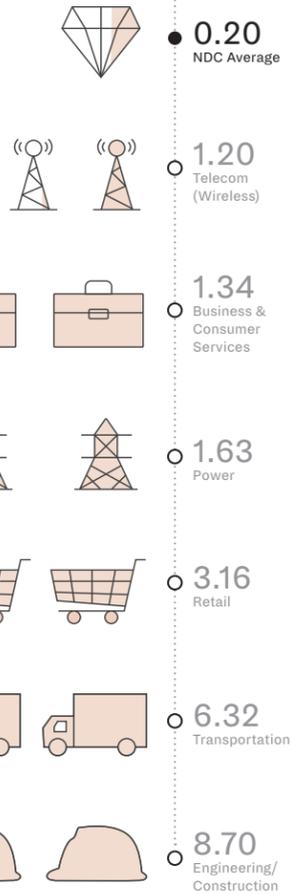
In 2018, NDC Members initiated Program LIFE, a program aimed at improving safety performance through the sharing of best practices.

There is one diamond mining incident per 1,000,000 hours worked.

Here's how modern diamond mining compares with other industries:



Lost Time Injury Frequency Rates per 200,000 hours worked



Two drill operators at Koffiefontein. On a daily basis, leaders conduct "safety interactions" with their crews to ensure they appreciate the risks associated with the task they perform and verify that all safety procedures are duly followed.

**Member Health & Safety Commitments**

Creating a strong safety culture in which "safety comes first" is a prerequisite to implementing effective safety programs and initiatives which will lead to tangible results. Effective programs can generate spectacular results.

ALROSA invested over US\$18 million on industrial health and safety initiatives in 2016 alone. Their strong focus on workplace safety has led ALROSA's injury rate to fall 20% since 2012.

Petra Diamond's Occupational Health and Safety initiative has led to an 82% improvement in rates of lost-time injury over the seven years to 2018.

Rio Tinto's critical risk management program has led to a 35% improvement in the injury rates across its sites worldwide between 2013 and 2017.



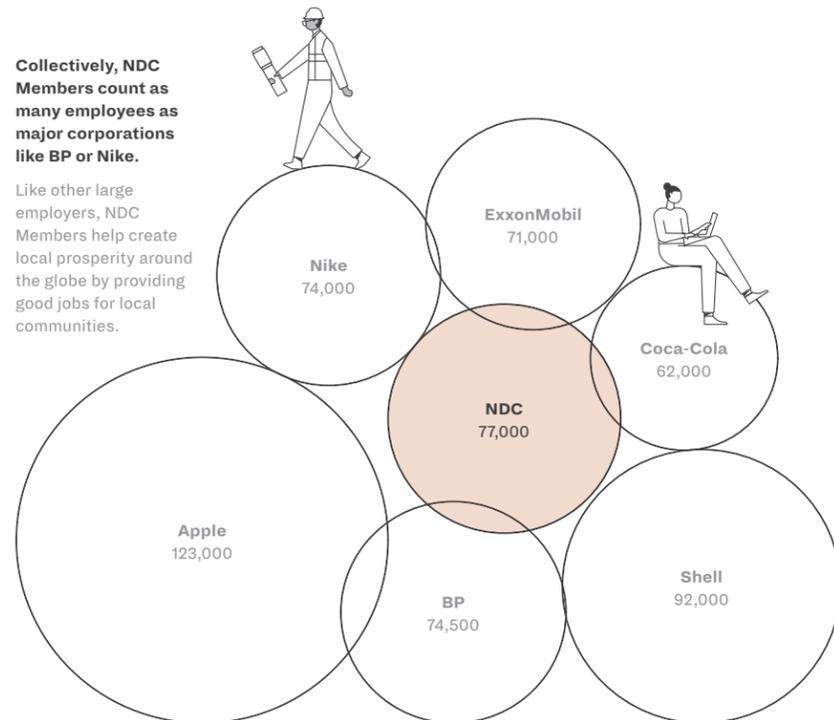
**JOB CREATION AND FAIR EMPLOYMENT PRACTICES**

NDC Members offer attractive training and employment opportunities as they require a highly trained and skilled workforce—employing engineers, programmers, haul truck drivers, mechanics, environmental scientists and support staff, to name a few. Members also invest in their employees to build a skilled workforce with practical and transferrable skills that extend beyond

mining operations. In 2016, employees and permanent contractors received a total of US\$3.9 billion in direct and indirect benefits from the payment of wages and other benefits. Wages paid by NDC Members are highly competitive due to the large number of skilled roles and the remoteness of some operations. On average they are 66% higher than the national average salary and five times the living wage in the countries of operation.

Collectively, NDC Members count as many employees as major corporations like BP or Nike.

Like other large employers, NDC Members help create local prosperity around the globe by providing good jobs for local communities.



**A Career in my Own Community**

“If you protect the land, the land will protect you,” is a common saying among Metis elders. Kimi Balsillie has carried this with her both personally and professionally. An Environmental Officer at the Gahcho Kué Diamond Mine in the Northwest Territories in Canada, Kimi says, “we have three golden rules: zero harm, continual improvement and resource compliance.” Kimi has had the opportunity to see the diamond sector from multiple perspectives as she previously worked for the local government. This has given her a holistic view of the importance placed on employee safety, environmental standards and respect for Indigenous communities.

Kimi personifies the changes the region has seen since diamonds were discovered in the early 1990s. She once believed she would need to leave Yellowknife, the remote town in northern Canada where she grew up, to find career options. The discovery of diamonds has revived the community, as the mining companies seek to hire local residents, particularly Indigenous People.

(Above) Kimi Balsilli, Environmental Officer at the Gahcho Kué Diamond Mine on site in the Northwest Territories, Canada. Since diamonds were discovered there in the early 1990s, Canada has become the 3rd largest diamond producer in the world.

NDC Members invest significantly in *career development, training and apprenticeship programs,* and building transferable skills for employees and local community members.

## Polishing Prospective Talent

Since it was founded in 2003, the Mine Training Society has supported Indigenous people and other residents of the Northwest Territories, Canada in finding long-term employment in the mining industry through its vocational training courses. Working with employers like Rio Tinto, Dominion Diamond Mines and De Beers Group, the society has been able to place over 1,100 people in long-term roles. This is equivalent to 5% of the entire labor force in the Northwest Territories.

The Mine Training Society runs a variety of programs including Underground and Surface Miner Training, Mineral Processing Operator, Safety Boot Camp and more. The programs range in length from two days to 14 weeks. Graduates of these program have gone on to positions at all three diamond mines in the Northwest Territories.

At Dominion Diamond's Ekati mine, approximately 50 individuals participate in the apprenticeship program each year, both with Dominion and through contract partners. All apprentices have the opportunity to work closely with the onsite adult educator who supports their continuing education. The program also enables participation in skills competitions, which helps develop knowledge and build confidence.

The Mine Training Society is a partnership between Indigenous governments, the Canadian federal government, the territorial government and the mining industry in Canada.



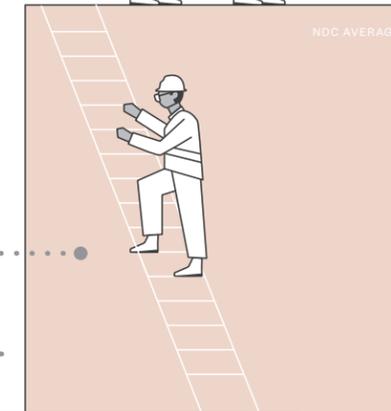
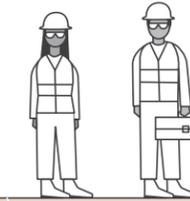
The Mine Training Society program helps apprentices develop skills and knowledge for careers in the mining industry. Aaron Campbell, shown here, is now a processing plant lead hand at Diavik and a graduate of the MTS program.



NDC Members' employees and contractors are paid on average

# 66% more

than the national average salary.



NATIONAL AVERAGE



## Skills are Forever

At Petra Diamond's Koffiefontein mine in South Africa, the Portable Skills Program was launched in 2009 to provide capabilities beyond those developed through employees' everyday work. The program aims to empower participants through training for future opportunities. Since its inception, the program has progressively added training options and now offers carpentry, engineering, agriculture and computing amongst other skills.

Josiah Mosime, an early participant in the program, was a maintenance clerk with Petra when he undertook the bricklaying course. Through the skills he acquired, he now helps support the career of his wife, a funeral director, by making headstones for her business. He has also gone on to apply for bricklaying opportunities within Petra based on the qualification he earned with the program.

(Above) Petra's Portable Skills Program teaches high value trades, such as carpentry, to help employees learn skills beyond their everyday jobs.

*“Modern diamond mining provides me with opportunities I couldn’t have imagined as an academic research scientist. My skills are valued and I put my knowledge to good use every day.”*

—April Hayward, Ph.D., Superintendent Environment, Dominion Diamond Mines

## DIVERSITY

NDC Members recognize the many benefits of a diverse workforce and aim whenever possible to employ members of local communities. More than half of all employees at the Ekati mine are Indigenous and 94% of employees at ALROSA’s operations in Siberia are residents of Yakutia. In Botswana, 98% of Lucara’s workforce is Botswanan; 84% of De Beers Group employees in South Africa are from historically disadvantaged groups.

Efforts to increase diversity also include programs to increase mentorship and leadership opportunities for women. Significant progress toward increasing the representation of women across all levels of the workforce has already been made as a result of our Members’ programs.

### Progress Toward Gender Equality

At the **Ekati Diamond Mine**, 69% of women are employed in traditionally male-dominated roles such as apprentice carpenters, crane operators, machinists, millwrights, plumbers and technicians.

40% of businesses taking part in **De Beers Group’s Tokafala Enterprise Development** Initiatives are women-owned or co-owned. The program helps people in communities near its operations in Botswana start or grow their business.

**Petra’s Women in Mining (WIM) Committee** provides a platform for women at Petra’s South African operations to share experiences, identify challenges in the workplace and promote development opportunities.

**Rio Tinto** has helped to support the development of an all-women diamond cutting and polishing factory in Ahmedabad, in the western state of Gujarat, India. The three-month training program provides women with the opportunity to double their income as they move out of jobs in lower paying industries.



## Leading Women in Mining

With a few key appointments, Lucara Diamonds has been able to make significant inroads in increasing the representation of women at senior leadership roles, now at 80%. Eira Thomas, CEO of Lucara, is one of the few women leading mining companies globally. Across the mining industry, “[T]he conversation at the top has really changed now. The evidence is in that diverse companies are stronger businesses that perform better. The question now is how do we find and attract the right female talent.”

Eira is quick to point out that these appointments were merit based and not part of a decision to hire more women. “It was a matter of availability of strong talent at the time we were looking and we were very quick to jump on it.” She does hope that this serves to encourage women in mining: “It’s so important that younger employees can look up and see that there are no barriers to what they can achieve.”

(Above) Naseem Lahri, Managing Director of Lucara Botswana, is the first woman to serve as the managing director of a diamond mine in Botswana. She collaborates with colleagues to ensure the proper running and safety of the mine.

School children in Botswana, walking to class at the Acacia Primary School near the Jwaneng Mine. Acacia was established for the children of Jwaneng's employees.



# Our Communities



## PARTNERING WITH COMMUNITIES

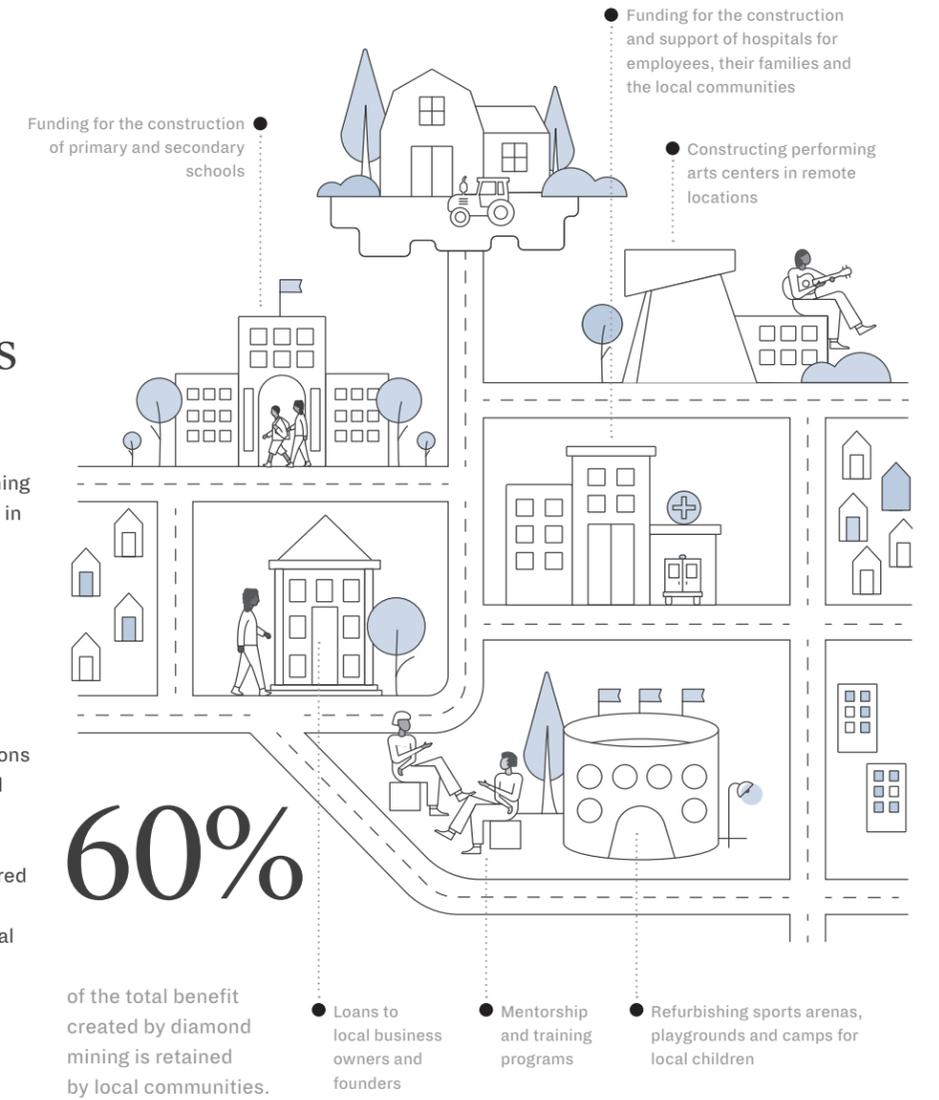
The majority of value created by our Member companies is retained by the local communities in which we operate.

Building and running a diamond mine over several decades means making a long-term commitment to local governments and communities and requires building a mutually beneficial partnership. Nowadays, no diamond can be developed without the full support and collaboration of local government and communities. These partnerships often involve making firm commitments to local employment and training, local sourcing of products and services, support of local businesses, health and education programs, environmental protection and of course taxes and royalties. They aim to ensure that local communities share in the success of the mine while in operation, but also prepare for their future after mine closure.

The Trucost analysis establishes that a very large share of the value created by

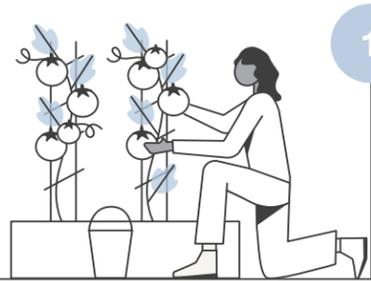
our Member companies' diamond mining activities benefits local communities in which they operate.

In the far-reaching regions where NDC Member sites are located—like northwest Canada, Yakutia, Western Australia and southern Africa—the discovery of diamonds has meant prosperity and livelihood for generations of local community members. Beyond direct employment benefits, the local sourcing by NDC Members of most of goods, equipment and services required to operate local diamond mines has led to the development of healthy local businesses that generate significant wealth for local communities.



# Local purchasing has a broader “multiplier effect” on local communities

Local purchasing not only supports businesses in the local region through demand for goods and services, but also has an economic multiplier effect on the broader local economy.



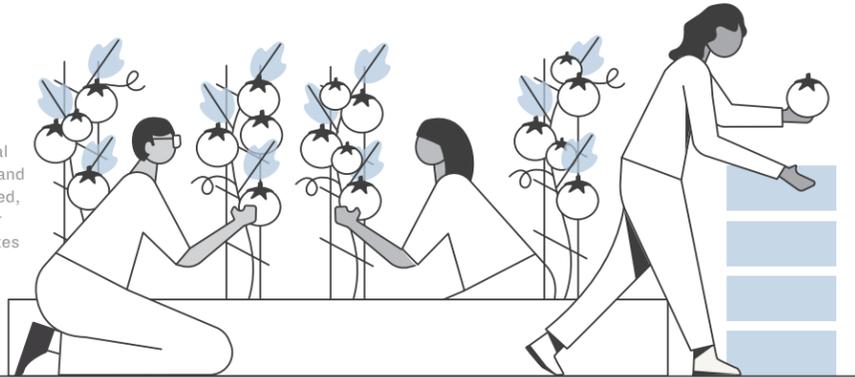
1

Members purchase the bulk of the goods and services needed for their operations from local businesses, creating a significant, lasting impact on local economies.



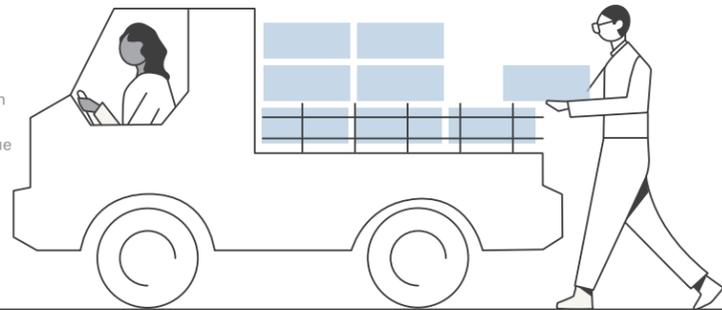
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As the income of direct suppliers increases, additional spending on goods and services is stimulated, creating a multiplier effect that propagates throughout the economy.



3

For example, when Members provide fresh meals for employees at mine sites, they source local produce which provides steady demand and revenue to local agriculture businesses.



4

This revenue to local agriculture businesses creates additional indirect benefits to local economies, like payments of salaries to their own employees (and how those employees spend their salaries in the community) and their support of other local businesses partners and vendors.



## SUSTAINABLE MINES SUPPORT SUSTAINABLE LOCAL ECONOMIES

NDC Member operations depend on the local economies for the procurement of goods and services. Each year, NDC Members infuse US\$6.8 billion in surrounding communities through local sourcing, which in turn supports the growth of small and medium enterprises.

Local purchasing not only helps small businesses, but it also has a broader ‘multiplier effect’. Local contracts deliver direct benefits, such as demand for goods and services, and indirect benefits further downstream -- such as demand for raw materials. For example, increased spending in construction to build a new health care clinic stimulates additional spending in sectors that supply the project both directly and indirectly, such as raw materials and engineering services.

Owning a small or medium-sized company brings with it a host of challenges, and our Members offer additional support, beyond financial investment and long-term contracts. For example, Petra has established an Enterprise Development Resource Centre at each of its South African operations to serve as a link between local businesses and the mine’s supply chain. Similarly, De Beers Group’s Zimele initiative provides developmental funding, training and mentoring across a broad spectrum of businesses and industries. As of June 2017, the program had supported 3,054 jobs and 262 enterprises.

Local purchasing of goods and services represent the most significant economic benefit of the NDC members at

# \$6.8 billion



## Empowering Local Entrepreneurs

Small businesses and the ambitious, hard-working people that own them are the foundations of a vibrant economy. Through business training and incubation programs, Murowa Diamonds helps local entrepreneurs turn their dreams into reality.

Miew Investments is a construction company in south central Zimbabwe that Murowa Diamonds helped form through provision of seed capital, training, incorporating health and safety and awarding repeat business through construction contracts. Company Director Tauya Chiromo and his team were able to leverage their experience to secure new clients like World Vision. Miew Investments continues to work with Murowa, helping build classroom blocks at 13 schools in Zvishavane District, among other projects. “We started with nine employees in 2006 and today with have 54,” said Tauya.

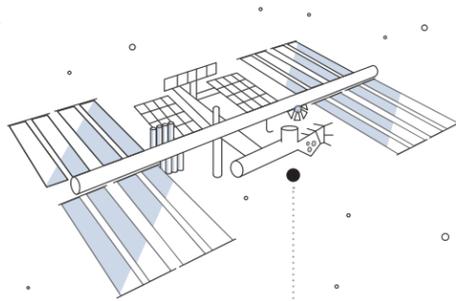
Murowa Diamonds provides development programs helping entrepreneurs build their businesses, creating ongoing employment opportunities and building local capacity. By tapping into the entrepreneurial spirit that runs through communities, local businesses stimulate sustainable growth, cultivating lasting economic development and prosperity throughout the region.

(Above) Miew Investments Company Director Tauya Chiromo and a team member on-site in Zimbabwe, building classrooms. Miew is a construction company that was formed with seed funding from Murowa.

**CIVIC PARTNERSHIPS  
BENEFITTING COMMUNITIES**

Modern diamond mining makes an important contribution to the economies of diamond producing nations. The positive benefits of these types of investments are clear from the remarkable progress that has been made in countries like Botswana over the last 50 years. In addition to local sourcing, NDC Members provide revenue to local and national governments through corporate taxes, royalties and dividends. In 2016, NDC Members paid more than US\$3 billion to local and national governments

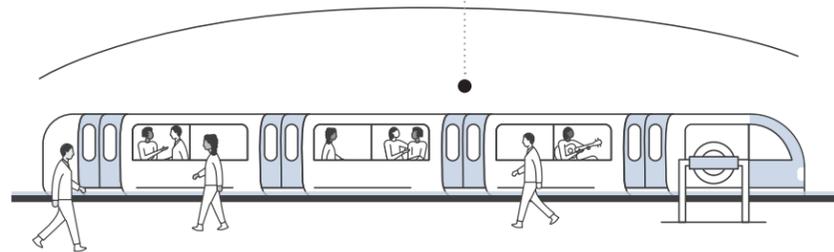
Local administrations responsibly invest the revenue generated by diamond mining into infrastructure, healthcare, education, and social security, for example. The revenue provides stable income for local governments ensuring ongoing resources for programs and services.



In 2016, Members paid more than

**\$3 billion**

to fund key needs, like roads, schools and infrastructure. That's enough to **fund the International Space Station for one year** (estimated \$3B) and nearly enough to **operate the London Underground for one year** (£2.581B or US\$3.4B).



**Building Botswana –  
Partnerships in Prosperity**

Diamonds have helped to make Botswana one of the world's great development success stories. Before diamonds were discovered in Botswana in 1967, the country had six kilometers of paved roads. It now has 7,000. Poverty has been cut in half and every Botswanan child receives free primary and secondary education. There are now more than 300 secondary schools in the country, compared with just three in 1966. Enviably GDP growth of 5.9% per annum for around 50 years since independence has seen GDP per capita surpass that of its peers and neighbors.

These developments are due, in part, to a long-term partnership between De Beers Group and the Government of the Republic of Botswana. Diamond production continues to support jobs and growth in the broader economy through local procurement strategies, development programs for small and medium sized enterprises and investments in capital works and infrastructure.

(Above) A small business owner in front of her bakery, which received an investment from Debswana's Corporate Social Investment Committee, in Khwee Village near the Orapa Mine in Botswana.

60% of the total benefit created by NDC Members is retained by local communities through *local purchasing, social programs and money paid to governments.*

**FAR-REACHING SOCIAL BENEFITS**

Diamonds are frequently located in remote environments where communities may lack basic services. As part of their commitment to creating a sustainable industry, Members recognize the responsibility they have not only to employees but also to the surrounding community. They work with communities to identify where social programs are needed and provide financial support to strengthen existing programs or develop new ones.

In 2016, Members contributed US\$292 million in benefits related to social programs. Programs ranged from education and healthcare to training and skills development, charitable foundations and cultural events.

In 2016, ALROSA, for example, sponsored 5,300 sporting and cultural events, attracting roughly 220,000 people. The company's Cultural and Sports Center organizes more than 130 clubs and classes for workers and their families.



Schoolchildren attend class in Yakutia, Russia near ALROSA's operations. ALROSA invests in education the region and 94% of ALROSA's employees are from Yakutia.

Children participate in a basketball program in Yakutia. ALROSA supports local athletic programming and sponsors thousands of sporting events each year.

**Member-Contributed Social Programs Include:**

Healthcare and health promotion programs, such as the operation of hospitals and the provision of health screening services to employees. Hospitals in these local communities are an important provider of primary health-care to employees and their dependents, as well as the surrounding community.

Training and education programs, including scholarships, apprenticeships, and professional education initiatives

Local economic development initiatives to support small-to medium enterprises, resulting in increased local employment

Charitable contributions to local organizations providing social programs





A baby entertains her elders in Kugluktuk, Northwest Territories, Canada. Dominion and the local Indigenous groups often meet to discuss partnerships and take advice from Indigenous stakeholders.

### CARING FOR GENERATIONS

Education is one of the key areas in which NDC Members invest in local communities through their social programs. De Beers Group, for example, has founded schools that provide education to students from their mining operations' surrounding areas, regardless of whether their parents are De Beers Group employees. In Tanzania, Petra's Williamson mine owns and operates the Mwadui primary school which provides free education in English to 460 students.

The provision of healthcare services and programs are also a common feature of Members' contributions to local communities, and mine hospitals are an important provider of primary health care.

De Beers Group's mine hospitals received 88,000 community visits in 2015, making up almost half of all visits to the hospitals annually. Petra's Williamson Diamond Hospital in Tanzania pilots a number of health programs in conjunction with the Tanzanian government, including mother and child health, malaria prevention, voluntary counselling and testing and antiretroviral treatment for HIV/AIDS. Murowa supports five rural health centers which serve a population of roughly 50,000.

NDC Members partnership with the Botswana government now sustains a school system educating on average

# 452,000 children a year.



## Transforming Healthcare, Transforming Lives

In the past, people in the Mutambi community in Zimbabwe had to walk up to 12 miles to access medical care. All that changed with the setup of the Mutambi Clinic, built by Murowa Diamonds. Fitted with solar electricity to ensure the building and its equipment never lose power, the clinic is one of five rural health centers supported by Murowa to provide health services to the community. Together, they help about 50,000 local people to lead happier and healthier lives.

Enniah Bvenyura has had her life transformed after undergoing cataract surgery carried out by a Zimbabwean non-profit organisation and supported by Murowa Diamonds. "When I woke up, I was so surprised that I could see," she said. "And, since then I haven't had any further problems." Enniah's post-surgery care and reviews were undertaken at Mutambi Clinic whose cheerful staff made recuperation pleasant for her. The center focuses on the provision of improved health standards in a remote community.

(Above) A laboratory technician at work in a modern mining hospital that services the surrounding community.

**BUILDING ROADS,  
INVESTING IN LIVES**

Local communities derive significant benefits from NDC Members' investments in infrastructure development.

NDC Members created US\$42 million in benefits associated with infrastructure in 2016 (excluding the value of projects initiated in 2016 that will be completed over the next few years).



Before diamonds were discovered in 1967, Botswana had less than four miles of paved roads. It now has

**4,000+  
miles**

roughly the distance between Italy and Botswana.



**Changing the Prognosis to Hope**

Between 3 and 5% of children in the world have health limitations, including 6,000 children with disabilities in the Yakutia region. Around the world, families from remote regions often have to travel long distances to obtain the care their children require at rehabilitation centers. Not every child can withstand such a trip.

There is new hope for these families in Yakutsk, where ALROSA provided critical funding for the construction of a children's rehabilitation center in 2014. At a total cost of US\$12 million, the center now provides therapy for 3,000 children each year with sensory disorders, psychiatric disorders, and impairments to musculoskeletal system function. The center includes medical and recreation facilities, classrooms, and a hotel for those families that need to travel from other regions to receive care.

"Today my son waved his hand to me for the first time in his life," three-year-old Sasha's mother recounts joyfully. She and her son, who has cerebral palsy and hardly walks or talks, traveled a few thousand miles every year to receive care before the center opened.

(Above) A child plays with toys at the the Yakutsk Children's Rehabilitation Center in Yakutia, Russia.

An employee examines a diamond during the cutting and polishing process in Surat, India. Surat has embraced the latest and most sophisticated cutting tools, helping to create a robust industry that is one of India's greatest success stories.



**Fostering Prosperity  
in the World's  
Diamond  
Cutting Capital**

Surat is the eighth largest city in India and home to over four million people. As well as being one of the world's fastest growing cities, Surat is one of its major diamond cutting and polishing centres. Across hundreds of workshops, Indian artisans employ traditional skills and craftsmanship to add value to every stone. This attention to detail underpins the country's position as a world leader in the cutting and polishing of diamonds.

The diamond industry employs approximately one million people in India, making it incredibly important to communities and families across the country. The industry also contributes positively to society more broadly. Diamond polishing companies in India donate around 10% of their revenue to charitable causes, such as running schools, hospitals, orphanages and old-age homes.

The industry also supports long-term development by fostering skills and creating opportunities to help India's next generation thrive. They do this by providing promising careers and good salaries that allow people to provide for their families and by helping them to access healthcare and education. In this way, the diamond industry delivers more than jobs and revenue, it also fosters the things that tie communities together and help them prosper.



Students Tyler Akeagok (L) from Kugluktuk and Patrick Chinkin from Yellowknife, participate in a reclamation project in the Northwest Territories, Canada, as part of Dominion's community engagement and employment programs.

# Our Planet

## DIAMOND MINING COMPANIES EMBRACE THEIR ENVIRONMENTAL RESPONSIBILITY

### Diamond mining, like any industrial activity, has an environmental impact.

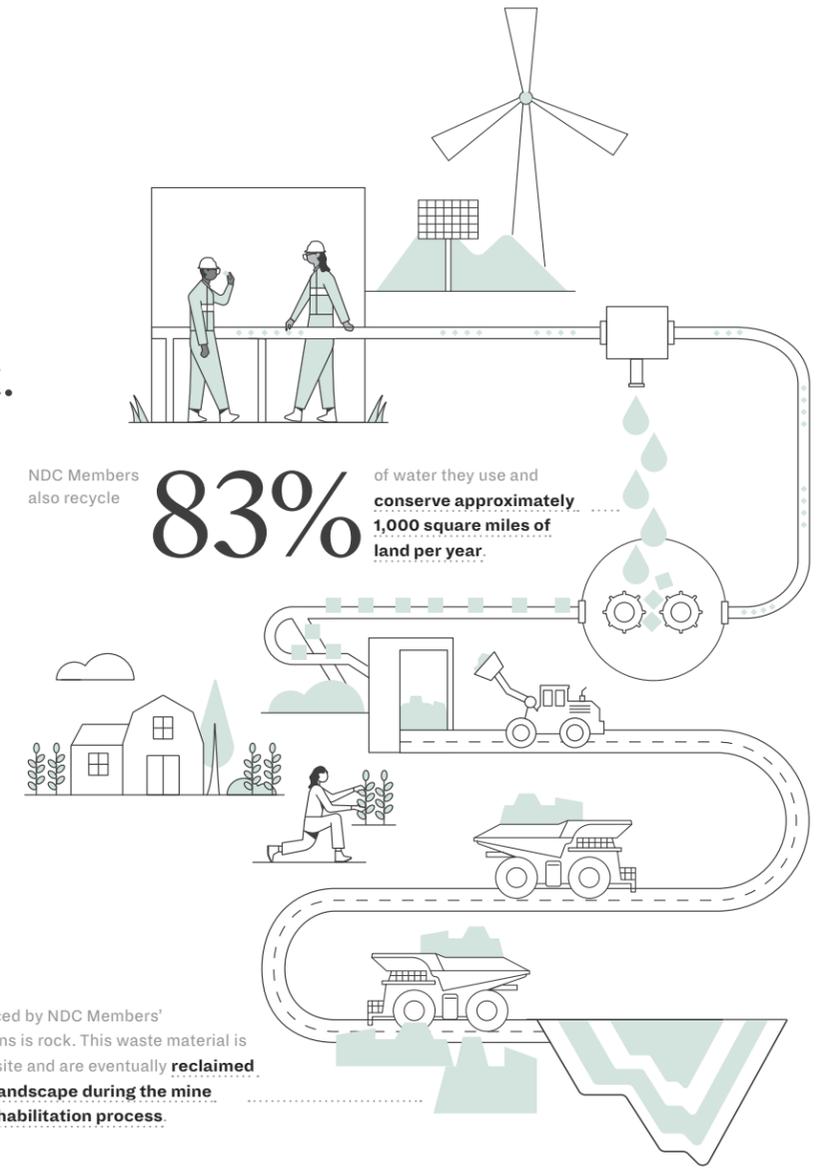
It uses and transforms land, depletes water, affects air conditions, and uses energy that releases CO<sub>2</sub>e into the atmosphere.

NDC Members recognize that they have an obligation to responsibly manage the environment they are entrusted with and do so in close collaboration with local governments and communities. Environmental permitting, including the securing of water usage authorizations, is one of the most complex and constraining stages in the mine permitting process. It involves in-depth engagement with communities whose historical living, fishing or hunting habitat are going to be impacted by the mine and infrastructure built around it. Once the mine is operating, its environmental impact is continuously monitored to ensure that

the mine lives by its strict environmental obligations. The main environmental impact of modern diamond mining is attributable to greenhouse gas emissions. The Trucost report has established that NDC Members' diamond mining activities generate carbon emissions of 160kg CO<sub>2</sub>e per polished carat. Reducing energy use and carbon emissions is a key individual and collective objective of NDC Members.

Over 99%

of waste produced by NDC Members' mining operations is rock. This waste material is disposed of on site and are eventually **reclaimed as part of the landscape during the mine closure and rehabilitation process.**



### CLIMATE ACTION AND REDUCING CARBON FOOTPRINT

Diamond mining and diamond recovery are almost entirely reliant on mechanical processes and do not require the use of large quantities of chemicals. They do, however, require significant quantities of energy. The amount of carbon dioxide equivalents (CO<sub>2</sub>e) emitted by NDC Members is driven by the use of fossil fuels in the generation and use of electricity (58%) and in running vehicles, equipment and other machinery (42%). According to the Trucost report,

NDC Members collectively emitted 160kg of CO<sub>2</sub>e per polished carat produced. This is equivalent to the amount of CO<sub>2</sub>e generated by driving 390 miles in an average passenger vehicle.

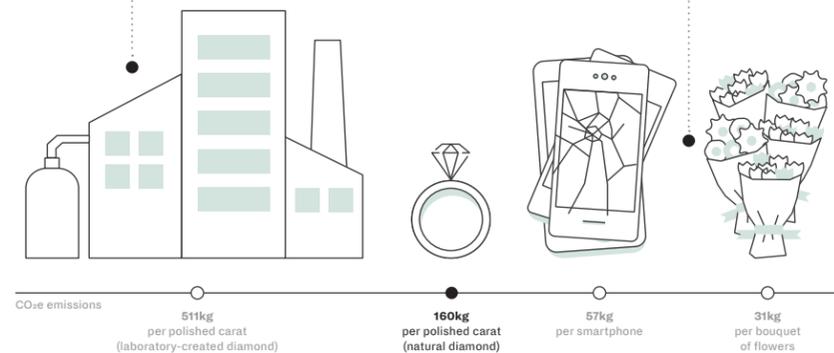
All Members are working actively on programs or initiatives aimed at reducing their energy use and carbon footprint.

The estimated greenhouse gas emissions of the mining of natural diamonds is

# 3x less

than that of **laboratory-created diamond production.**

The environmental impact of natural diamonds is also comparable to that of many **common consumer purchases** such as **2.5 smartphones and 5.5 bouquets of flowers.**



## The Future is Carbon Neutral

Geologist Dr. Evelyn Mervine and her team are working on a pioneering project at De Beers Group that aims to establish a carbon-neutral mine within five to eight years. The project is focused on capturing carbon dioxide through a process called ‘mineral carbonation’, whereby certain types of mined rock can act like a sponge, taking carbon dioxide from the atmosphere and locking it away in safe, non-toxic solid material.

Kimberlite, the rare volcanic rock that contains diamonds, has the capability to capture carbon dioxide and store it.

Dr. Mervine’s team is looking at ways to accelerate the process and make it more efficient at different mine sites. The potential for success appears high – if even 10% of a mine’s kimberlite storage potential can be harnessed, this would be enough to offset the entire mine’s emissions.

The benefits and findings will be shared with all NDC Members and could also extend beyond the diamond sector. Dr. Mervine explains: “We are working with leading academics in this field, and the insights we discover will be shared. All parts of the mining industry that have rock with carbon capture potential could use our approaches, and the project may even have broader implications for larger carbon capture projects that use mineral carbonation.”

(Above) Dr Evelyn Mervine (L) and geologist Zandile Miya examine kimberlite tailings as part of their research.

The remote locations of diamond mines present challenges in reducing fossil fuel use and greenhouse gas emissions. NDC Members, however, have a variety of robust programs in place to proactively reduce energy consumption and CO<sub>2</sub>e emissions that are tailored to the constraints of their operations and leverage wherever possible, their proximity to sources of renewable energy.

For example, the Argyle mine in Western Australia is able to source the majority of its electricity from hydro power, yielding a relatively low carbon footprint of 88 lb CO<sub>2</sub>e. Meanwhile, the Diavik mine in Canada installed a 9.2 MW wind farm in 2012. The wind farm – the most northern wind farm in the world – provides up to 10% of the mine’s energy needs and replaces about 900,000 gallons of diesel fuel per year. For this achievement, Diavik was awarded a Group Leadership Award from the Canadian Wind Energy Association.

Other NDC Members are focused on reducing the demand for energy at

their sites. For example, an industrial composter was installed at Dominion Diamond’s Ekati mine to dispose of organic waste at the site. As a result, roughly half the organic waste generated at the mine, which is located in a remote area of Canada’s Northwest Territories, has been composted. From October 2015 to the end of 2016, the transition to composting is estimated to have saved about 16,278 gallons of diesel and 231 tons of CO<sub>2</sub>e. Dominion Diamond’s composter project won the Toward Sustainable Mining 2016 Environmental Excellence for Transforming Waste Management in Canada’s Northwest Territories award.



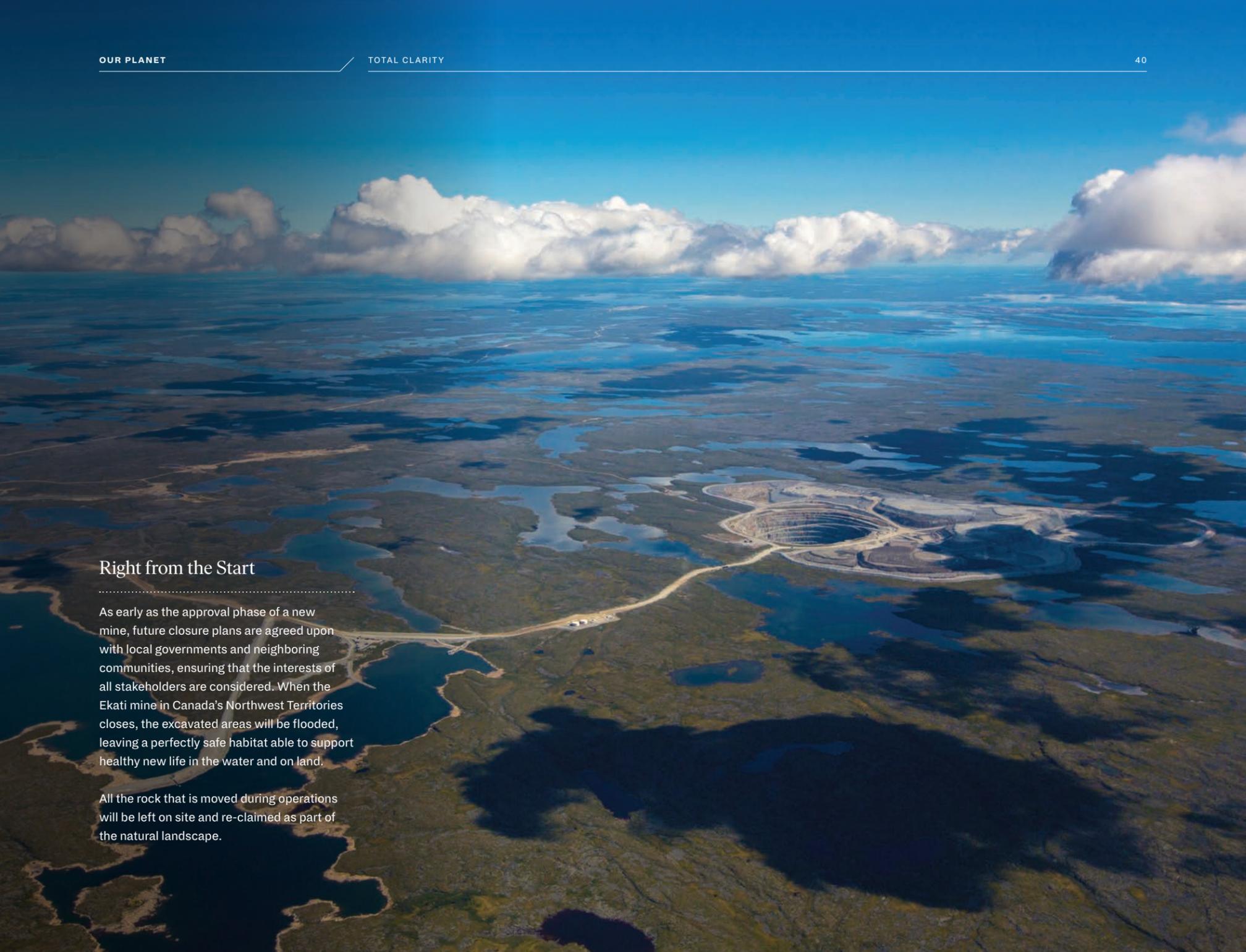
## Embracing Nature’s Power

Perched on a sub-arctic lake in northern Canada, the Diavik Diamond Mine is only accessible by land for eight to ten weeks each winter when the ice road from Yellowknife, the nearest town (over 200 miles away), is open. “The challenges of operating a mine in a sub-Arctic environment are many and varied, dominated by extreme weather conditions and a lack of year-round road access to the site,” explains Patrick Boitumelo, President and COO.

“The way we operate reflects an empathetic relationship with the land, its people and their legacy,” according to Patrick. Powering the mine is no exception. Looking to decrease its dependency on diesel, Diavik explored renewable energy options. The best solution for the location, which lacks sufficient sunlight for solar power, was to build the first large-scale wind farm. A local supplier, Yellowknife-based Det’on Cho Nahanni Construction, was awarded the contract for the wind farm’s foundation and concrete work.

Since its installation in October 2012, the 9.2 MW wind farm has exceeded expectations, offsetting 26.559 million litres of diesel fuel and reducing the mine’s CO<sub>2</sub>e emissions by almost 74,000 tons.

(Above) The wind farm at the Diavik Mine in Canada’s Northwest Territories provides up to 10% of the mine’s power needs.



### Right from the Start

As early as the approval phase of a new mine, future closure plans are agreed upon with local governments and neighboring communities, ensuring that the interests of all stakeholders are considered. When the Ekati mine in Canada's Northwest Territories closes, the excavated areas will be flooded, leaving a perfectly safe habitat able to support healthy new life in the water and on land.

All the rock that is moved during operations will be left on site and re-claimed as part of the natural landscape.

### PROTECTING OUR LAND

NDC Members have a relatively small footprint on the land due to the compact size of mining operations. Globally, Member diamond mining operations use a combined area of 325 square miles—an area about the size of New York City.

In parallel, NDC Members invest significantly in conservation efforts, protecting over 1,000 square miles of natural land in Australia, Botswana, Canada, Russia, South Africa and Tanzania. The total area of land protected by NDC Members is equivalent in size to Yosemite National Park.

NDC Members also ensure that land used is reclaimed at the end of mining operations. Closure plans are agreed upon in collaboration with local governments and neighboring communities before mining begins, and take several years to execute following the end of mining activities. This ensures that the land is safe for wildlife and people to use once mining is complete.



## LEADING IN CONSERVATION

NDC Members are global leaders in advancing initiatives to protect wildlife and wilderness. These initiatives include their own monitoring and conservation programs, as well as partnerships with local governments, communities and conservation organizations. Through these efforts, NDC Members help protect vulnerable wildlife, including thousands of caribou, grizzly bears and elephants. At all mine sites, wildlife has the right of way.

A prime example of successful land protection is The Diamond Route, a network of eight conservation sites

established by De Beers Group. The network spans over 722 square miles of critical habitats in South Africa, Botswana and Namibia. Across the huge plains of land, The Diamond Route also creates unique learning opportunities for students, scientists, and academics.

Petra Diamonds has made long-term investments in the creation and maintenance of large scale reserves, including a 67,000-hectare ecological reserve in South Africa and another 906 hectares in Tanzania.



## Leaving a Lasting Legacy

Most of ALROSA's mining operations are located in Yakutia, a remote region of the far east of Russia with a stunning landscape of forests, rivers, mountains and valleys and a harsh climate. To help preserve this unique environment, ALROSA established the Yakutia Diamonds Live natural park in partnership with the Ministry of Nature Protection of the Republik of Sakha (Yakutia). The 79,073 square mile park was established in 2009 and is home to thriving populations of musk sheep, yaks, deer, Yakut horses, bears, reindeer, rabbits and peacocks. In 2016, ALROSA funded wildlife preservation programs, including a reindeer migration program and a fish biodiversity initiative.

The park has become a leading tourist destination where the public can learn about conservation and animals. It has also emerged as a community gathering place and has hosted a festival of local clans and summer camps for children.

(Above) A reindeer protection program has been implemented by ALROSA to help preserve the bio-diversity of local ecosystems. Reindeer are monitored with satellite-tracking collars and when scientists report that reindeer have entered the production area or cross the site access road, the division is brought to a standstill so as to ensure that reindeers pass freely.

Our Members *recycle*  
83% of the water they use to  
recover diamonds from the  
kimberlite rock.

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## RECYCLING AND WASTE REDUCTION

Diamond recovery does not require the use of large quantities of chemicals; processing is reliant on water and pressure. The majority of waste generated by NDC Members is waste rock, material that is removed from the mine and placed in nearby storage areas. Once mining is complete, waste rock is reclaimed and becomes part of the natural landscape again.

The remainder of waste generated by NDC Members is comprised of industrial waste (e.g., construction materials, food waste, exhausted machinery) and waste

generated through emissions to air, land and water that are associated with energy use, water use, transportation, the incineration of waste and other operations on site.

NDC Members are committed to reducing all waste. On average, Members recycled approximately 26% of all industrial waste by weight, with approximately 5 kilograms per polished carat recycled in 2016.



## The Compounding Benefits of Compost

Located in a remote area of Canada's Northwest Territories, the Ekati mine was driven to develop novel strategies to manage waste. In 2015, it became the first mine in northern Canada to install an industrial composter. According to Joe Poirier, one of the Facilities and Waste Management Team Leaders, the composter reduces diesel use by 66,000 gallons and 750 tons of carbon emissions per year. "We have definitely gone above and beyond our initial expectations. Today, over half of the waste generated at the Ekati mine is composted," he says.

Joe and his team take their role as environmental stewards very seriously and have made great efforts to involve the local community. "We get a lot of support from the local elders and chiefs whenever they tour the facilities," he says. "They are very happy with what we have achieved here in terms of keeping the environment clean." With approximately half of employees at the mine living permanently in the Northwest Territories, there has been a lot of support from workers. "There's a real sense of collective achievement," says Joe. "The success of the project depended on changing how everybody handled and separated their waste."

## WATER CONSERVATION AND RECYCLING

NDC Members understand the importance of protecting the water supply and the quality of the water in the areas where they operate. In 2016, NDC Members used 7.3 cubic meters of water per polished carat, with most mines recycling the water they use in the processing plant (where the greatest demand for water occurs). The Members have an average water recycling rate of 83%.

Recycling and reuse initiatives are a key focus for reducing overall water consumption. Petra Diamonds achieved a 10% increase in water efficiency in 2015 by implementing recycling and reuse initiatives and a water conservation awareness program. ALROSA reduced its water consumption by 10% in 2015 alone, and by 25% over the last five years. Ninety-eight percent of the water required for Dominion's Ekati mine is recycled. Meanwhile, in an effort to help serve the needs of the community, Petra distributes potable water to the mine village and local communities through controlled water points.



←  
Environmental Technician,  
Justin Grandjambe,  
on the job in Northwest  
Territories, Canada.

NDC Members protect over 1,000 square miles of natural land in *Australia, Botswana, Canada, Russia, South Africa and Tanzania.*

### LOCAL PARTNERSHIPS TO MONITOR IMPACT

Instituting new programs and evaluating progress towards minimizing their environmental footprint is a core activity for NDC Members, who all work under close environmental supervision from local governments and communities.

They engage continuously with local community representatives to ensure their environmental and socioeconomic concerns are being adequately addressed. In northern Canada, Dominion Diamond Mines supports community-led monitoring programs like “Boots on the Ground” and “Moccasins on the Ground” that are rooted in the traditional knowledge of the Indigenous communities.



### Partners in Protection

Canadian Indigenous People have been fishing the waters of Lac de Gras in the Northwest Territories for millennia. The vast tundra's lakes and rivers are considered a precious resource by Indigenous People, essential for supporting wildlife the community relies on for sustenance. To ensure the pristine waterways are preserved, the Diavik mine involves local communities in its water monitoring program. As part of the program, the mine runs an 'on the land' fish and water monitoring camp, bringing together elders and youth from local Indigenous communities to share this knowledge.

Fish are caught, cleaned, inspected, cooked and tasted at a seasonal camp near the mine site. Chelsea Adjun, a local youth, said, “Knowledge like this is so important...we're losing elders and our elders have so much to share. I wish more youth from my home got to experience this.” Chelsea will now be able to share what she has learned with her family and friends and keep the tradition alive.

(Above) The land surrounding the diamond mines in the Northwest Territories, Canada, is comprised of boulders, tundra, wetlands and over 8,000 glistening lakes. Community members monitor the water and local fish.

A diamond is inspected with a loupe during the sorting process. Loupes allow people to view a diamond's unique inclusions, the natural markings that set it apart.



# Conclusion

## A RENEWED COMMITMENT

By appointing Trucost to collect data on the collective impact of their diamond mining operations, and by consolidating this information in its first Total Clarity report, NDC Members have shed new light on the modern reality of the diamond sector.

The Total Clarity report focuses exclusively on the impact of NDC Members' diamond mining operations and provides an important baseline for future reference as they commit individually and collectively to continuously reducing adverse impacts of their activities and maximizing local benefits.

As an organization, NDC also provides its Members with a legitimate collaboration structure through which they can exchange information and share best practices. NDC Members have together identified two key areas of collaboration on which they are committed to sharing and combining their knowledge, experience and efforts: improving workplace safety and reducing carbon emissions. Indeed, nothing is more important to NDC Members than preserving the health and safety of our teams and the future of our planet.

The NDC will be reporting on ongoing sustainability progress, in which it will follow up on sustainability initiatives and progress made by its Members independently and collectively.

## Our People

NDC Members employed more than 77,000 people in high value jobs, paying on average 66% above the national average wage.

## Our Communities

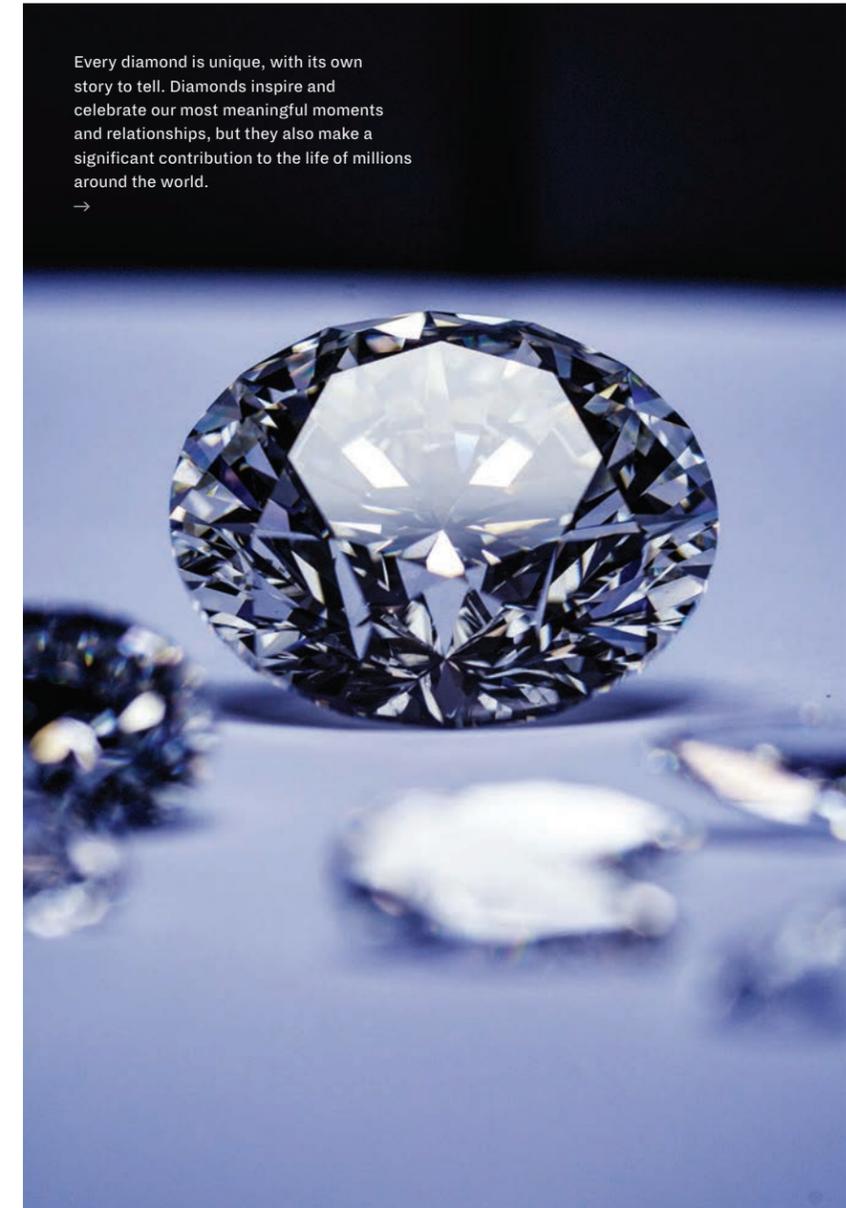
NDC Members provided a global net benefit of more than US\$16 billion, infusing more than US\$6.8 billion into local businesses in diamond mining communities and US\$292 million into infrastructure and social programs in those same communities.

## Our Planet

Committed to taking steps to reduce our footprint. To offset environmental impacts, NDC Members have implemented a range of biodiversity programs protecting three times the land they use, over 260,000 hectares of natural land in Australia, Botswana, Canada, South Africa, Tanzania and Russia.

For more information about the NDC and its mission, please visit the NDC website: <https://www.naturaldiamonds.com/diamond-industry-sustainability/>

Every diamond is unique, with its own story to tell. Diamonds inspire and celebrate our most meaningful moments and relationships, but they also make a significant contribution to the life of millions around the world.



**BUILDING A MORE SUSTAINABLE FUTURE**

The United Nations Global Compact and the 17 UN Sustainable Development Goals (SDGs) provide a guiding framework for all organizations in defining and tracking their sustainability programmes.

All NDC Members have developed specific strategies to support the UN SDGs in their operations. They have mapped their activities to each relevant SDG and established clear priorities and goals for their organization to pursue.

Collectively, NDC Members have identified the following five SDGs for focus in their individual and collective sustainability efforts. These SDGs are best aligned to the challenges and opportunities faced by today’s large scale diamond miners.

**Goals**

**Actions**



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

- Promote safe and secure working environments by sharing best practices with other NDC Members
- Promote learning opportunities that help all employees build valuable skills, especially young people and women



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- Contribute to quality, reliable, sustainable and resilient infrastructure to support economic development and human well-being



Ensure sustainable consumption and production patterns

- Promote sustainable management of ecosystems
- Raise awareness to reduce the use of non-renewable resources
- Raise awareness for recycling programs



Take urgent action to combat climate change and its impacts

- Create strategies and plans to address climate change
- Educate communities and raise awareness about climate change



Protect, restore and promote sustainable use of land ecosystems, sustainably halt and reverse land degradation and halt biodiversity loss

- Ensure the conservation of ecosystems, including biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

**AWARDS AND RECOGNITION**

Several NDC Members were recognized for their efforts toward advancing sustainable development in 2016. Awards for health and safety transformation programs, environmental initiatives, and leadership in social and environmental responsibility and corporate governance were complemented by recognition of some of our Members’ health and safety and environmental achievements. These awards reflect our Members’ commitments to our communities, our people and our planet and the effectiveness of their initiatives toward continuous improvement in these areas.

**Our People**

Namdeb was named the winner of the **Namibia Chamber of Mines Safety Competition** which recognizes a company’s commitment to safety and achievements in improving safety.

The Gahcho Kue mine in Canada was awarded the **Workplace Health and Safety Award** by the Yellowknife Chamber of Commerce. The award celebrates companies that exceed expectations or show leadership in improving health and safety.

A safety video, ‘My reason for staying safe’, shot at Voorspoed mine, was entered in the **Cannes Film Festival** and **Loerie Awards**. The video transformed De Beers Group’s safety culture by focusing on why staying safe matters so much. Over 80% of employees identified personal reasons to stay safe, with returning home safely to their families the most popular.

For the second year running, Dominion Diamond Mines was awarded the **Safe Everyday Gold Award** from the Association of Mineral Exploration (AME) and Prospectors & Developers Association of Canada (PDAC). The award honors the company with the highest number of hours worked without a lost-time incident.

**Our Communities**

Lucara won the **Prospectors & Developers Association of Canada (PDAC) Environmental and Social Responsibility Award** for “outstanding leadership in environmental protection and good community relations”.

The Association of Independent Directors and the Russian Union of Industrialists and Entrepreneurs recognized ALROSA with an **award “For the active corporate policy in the area of information disclosure”**.

ALROSA became a **top-20 company** according to the 2016 National Index of Corporate Governance, **recognized for its commitment to the principles of corporate governance**.

Petra and Rio Tinto were included in the **FTSE4Good Index**, which measures the performance of companies demonstrating strong environmental, social and governance practices.

**Our Planet**

ALROSA was ranked in the **top three in the first environmental responsibility survey of Russian mining companies**. The survey was conducted by the national rating agency as an initiative of the World Wildlife Fund, the UN Development Program, the Global Environment Facility and the Ministry of Natural Resources and Environment of Russia.

At the Toward Sustainable Mining awards, Dominion received the **top award for Environmental Excellence** for transforming their waste management efforts, including the establishment of a composting program at the Ekati Diamond Mine.

## MAKING DIAMOND MINING FAIRER AND SAFER FOR EVERYONE

While the present report details the direct impact of modern diamond mining activities as carried out by NDC Members representing 75% of world diamond output, we have to acknowledge the reality and challenges inherent to Artisanal and Small Scale Mining (ASM) of diamonds. It is estimated that ASM accounts for about 15% of world diamond production by volume and 5% by value.

According to the World Bank Artisanal Mining supports more than 100 million people worldwide, across a variety of minerals and metals like gold, precious stones, tin, and of course diamonds. Relatively easy to pick up and requiring no formal education, small-scale mining is an attractive proposition across developing countries in Africa, Asia and South America, for population with few viable alternative sources of livelihood. But with 90% of the sector operating informally with little oversight, miners face many challenges, including difficult and at times hazardous working conditions and lack of access to fair market prices for their products.

Because of their value and the relative ease with which they can be mined, diamonds and other minerals such as gold, tantalum, tin and tungsten, have become surrogate “currencies” which can potentially be used to finance rebel armies. This is why industry bodies and large organizations such as the World

Bank and the OECD have launched initiatives across the extractive sector to encourage formalization, chains of custody, transparency and codes of practice for mining companies, buyers and exporters. Like the Kimberley Process which deals specifically with diamonds, many of these initiatives include the active engagement of industry, civil society and governments.

The diamond ASM sector employs an estimated 1.5 million and impacts the livelihood of about 10 million, mostly in Africa. Challenges faces by artisanal diamond miners are no different in nature from those in other sectors and the global diamond industry is committed to working with NGOs and governments to constantly improve working conditions and access to fair market conditions to artisanal diamond miners.

The Diamond Development Initiative (DDI) in particular works closely with NDC Members and the NDC to help artisanal miners formalise their operations, improve their standards and get better value for their products through access to world markets.

## Setting New Standards with the DDI

Recognizing that the Kimberley Process was a regulatory agreement and that many of the issues in the artisanal sector were economic and social in nature, the Diamond Development Initiative (DDI) was launched in 2005 by representatives of civil society, industry and governments to address developmental issues faced by artisanal miners across Africa and South America.

DDI and its ambitious agenda were groundbreaking because relations between NGOs and industry had historically been adversarial. It rested on a common acknowledgement of the reality of the development challenges faced by artisanal mining communities, and the shared analysis that NGOs could not bring about the changes they envisaged without the participation of industry and the governments of the countries in question.

Today the organization is a testament to the importance of collaboration between the diamond industry and other groups in addressing structural issues within the sector. In 2014, the organization began a series of pilot projects to test an evolving set of standards, and in 2019 it formally launched the Maendeleo Diamond Standards, helping to further formalise the contributions of artisanal miners. As well as making artisanally-mined diamonds legal, violence-free, traceable and taxable, the standards help promote human rights, health and safety, and environmental standards for artisanal providers.

“DDI’s goal, through the Maendeleo Diamond Standards and our other programs, is to transform artisanally-mined diamonds from the liability they have been into a developmentally sound, environmentally mindful asset,” says DDI Executive Director, Dorothee Gizenga. “The easiest ones to convince of this very real potential are the miners themselves, and their communities.”

A key challenge faced by artisanal miners is their ability to secure fair market value for their responsibly mined diamonds. For this reason, De Beers Group have launched the GemFair pilot programme in partnership to DDI.



## A Digital Path to Fair Price

GemFair is a pilot program that launched in Sierra Leone by De Beers Group in 2018, that which seeks to source ethical artisanal and small-scale mining diamonds and secure their route to market through digital innovation. GemFair provides artisanal miners with traceability, empowerment and fair market value. The program is implemented in partnership with the Diamond Development Initiative (DDI) and the digital solution includes an app to track diamonds recovered by artisanal miners throughout the supply chain.

Working with miners that are certified, trained and audited to the DDI Maendeleo Diamond Standards, GemFair implements its standards and acts as a rough diamond buyer and exporter, ensuring that participating miners have the option to obtain fair market prices through the program. The pilot is currently being implemented in Sierra Leone but could be expanded to other regions.

“The scheme has proven to be very popular,” according to GemFair’s Programme Manager, Ruby Stocklin-Weinberg, PhD, of De Beers Group. “Despite some challenges inherent to any pilot involving innovative technology in remote areas, we think it’s a template that could be applied to other countries with some local adaptations.

“The benefit of a digital solution is that it can be applied to other places and minerals relatively easy,” added Ruby.

**BEYOND CONFLICT DIAMONDS: EMBRACING MODERN DAY SOLUTIONS TO MODERN DAY PROBLEMS**

The Kimberley Process (KP) is an international certification scheme established in 2003. Through the KP, 82 countries work cooperatively to prevent conflict diamonds from entering the rough diamond trade. It is an international partnership between countries, NGOs and the diamond industry through the World Diamond Council (WDC) and is supported by the UN and WTO. Over the last 15 years the KP has shown its effectiveness to date; the percentage of conflict diamonds in the global diamond trade has declined significantly from 15% to less than 1%.

Today, there is a common understanding that the KP should also help address the social and economic challenges affecting ASM diamond communities. Accordingly, NDC Members have long been advocates of broadening the scope of the KP beyond just the current conflict definition, to include cases of systemic violence and degrading working conditions. The KP could become a mechanism that contributes to the broad 2030 Agenda for Sustainable Development, and more specifically to the Sustainable Development Goals (SDGs). Moreover, the daily work of the KP would greatly benefit from enhanced management and implementation of its

decisions, leading to the strengthening of the KP Certification Scheme. Increased effectiveness could be achieved by creating a Permanent Secretariat to implement improvement programs and capacity building measures in some diamond-producing countries. The WDC, with support from NDC Members, has committed to funding 50% of the costs of a future KP Permanent Secretariat.

Other promising routes are being explored, such as the adoption and adaptation by the diamond industry of the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. This has already become an integral part of the new RJC Code of Practices, and many NDC Members will start to implement it.

These initiatives are all aimed at ensuring that the diamond mining communities can fully benefit from the trade in responsibly sourced diamonds.



**Taking Diamonds on the Blockchain**

Blockchain is the record-keeping technology underpinning cryptocurrencies like bitcoin. The technology relies on distributed and decentralized public ledgers to limit the modification of data once it is logged. This means the data is extremely secure and makes the technology relevant to a range of applications from buying real estate to tracking diamonds.

ALROSA has joined De Beers Group in supporting the TRACR pilot program, which aims to apply blockchain technology to the tracking of diamonds through the value chain. TRACR is a shared database of transactions that can give each individual diamond a unique ID that stores its weight, color, clarity and transaction history. This would mean that participating companies could trade, and consumers enjoy, diamonds with complete confidence about the origin and quality of their diamonds. The TRACR program is still at pilot stage but is another example of how the diamond industry and NDC Members are working together to provide even more transparency to diamond buyers.

**GLOSSARY**

Trucost measured the benefits and impacts of NDC Member operations (the production of rough diamonds) and the centralized support services provided remotely to the mine sites, such as human resources, finance and marketing support across 21 key metrics, summarized below. Primary data gathered from NDC Members for 2016 was supplemented with secondary information from a range of sources including scientific research papers, life cycle assessment databases and industry reports and evaluated using Trucost’s proprietary methodology. A standard conversion was used to allow results to be contextualized in terms of polished carats.

\*The value of Training and Development is included in the estimated total benefit of Social Programs.

^No incidents were found by Trucost.

**Our People**

<b>Salaries and Benefits</b>	<ul style="list-style-type: none"> <li>• Payment of salaries and the monetary value of in-kind benefits, to employees and contractors of NDC Members plus the economic multiplier effects of the spending of wages in the local economy.</li> <li>• Payment of salaries at rates below the national living wage benchmark. The living wage benchmark is the minimum income necessary to meet typical expenses for accommodation, food, basic services, education, healthcare and transport.</li> </ul>
<b>Labor Practices</b>	<ul style="list-style-type: none"> <li>• Incidence of labor by children (aged below the legal working age), forced or bonded labor at NDC Member sites.^</li> <li>• Total hours worked by NDC Member employees beyond the national standard working week.</li> </ul>
<b>Training and Development</b>	<ul style="list-style-type: none"> <li>• Estimated increased future earnings related to improved skills.*</li> </ul>
<b>Diversity</b>	<ul style="list-style-type: none"> <li>• Estimated social cost of the average difference in the remuneration of males and females in the NDC Member workforce across all role categories.</li> </ul>
<b>Worker Safety</b>	<ul style="list-style-type: none"> <li>• Incidence of workplace health and safety incidents among employees of NDC Members.</li> </ul>

**Our Communities**

<b>Local Purchasing of Goods and Services</b>	<ul style="list-style-type: none"> <li>• Total spending on procurement from local businesses (i.e., business in the same country as the operation) plus the economic multiplier effect on the local economy.</li> </ul>
<b>Revenue for Local Communities and Governments</b>	<ul style="list-style-type: none"> <li>• Total taxes and royalties paid to governments.</li> <li>• Total value of profits distributed to private shareholders via dividends and other mechanisms.</li> <li>• Total value of profits distributed to government shareholders via dividends and other mechanisms, and to communities via participation agreements.</li> </ul>
<b>Social Programs</b>	<ul style="list-style-type: none"> <li>• Total financial contributions to social and environmental causes including direct spending and charitable donations.</li> <li>• Estimated total value of healthcare programs.</li> <li>• Estimated increased revenues generated through business development programs, including employee salaries and benefits.</li> <li>• Estimated increased future earnings related to improved skills associated with training and development programs.</li> </ul>
<b>Infrastructure Investment</b>	<ul style="list-style-type: none"> <li>• Total investment in infrastructure projects associated with NDC Member mines.</li> </ul>
<b>Other Economic Benefits</b>	<ul style="list-style-type: none"> <li>• Total value of profits retained and/or reinvested by the company.</li> </ul>

**Our Planet**

<b>Energy Consumption and Greenhouse Gasses</b>	<ul style="list-style-type: none"> <li>• Direct and indirect emissions of greenhouse gasses.</li> </ul>
<b>Land Use and Preservation</b>	<ul style="list-style-type: none"> <li>• Total footprint of mine sites and support facilities.</li> <li>• Area of natural ecosystems protected.</li> </ul>
<b>Waste Generation</b>	<ul style="list-style-type: none"> <li>• Quantity of waste disposed via landfill, recycling or incineration.</li> <li>• Direct and indirect emissions of potentially hazardous substances to air, land and water.</li> </ul>
<b>Water Consumption</b>	<ul style="list-style-type: none"> <li>• Consumption of water resources.</li> </ul>

**ADDITIONAL REFERENCES**

All data contained in Total Clarity is from Trucost's report, "Total Value: The Socioeconomic and Environmental Impact of Large-Scale Diamond Mining" or NDC Member sustainability reports unless otherwise noted. Data and materials for case studies were gathered from NDC Members unless otherwise noted.

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