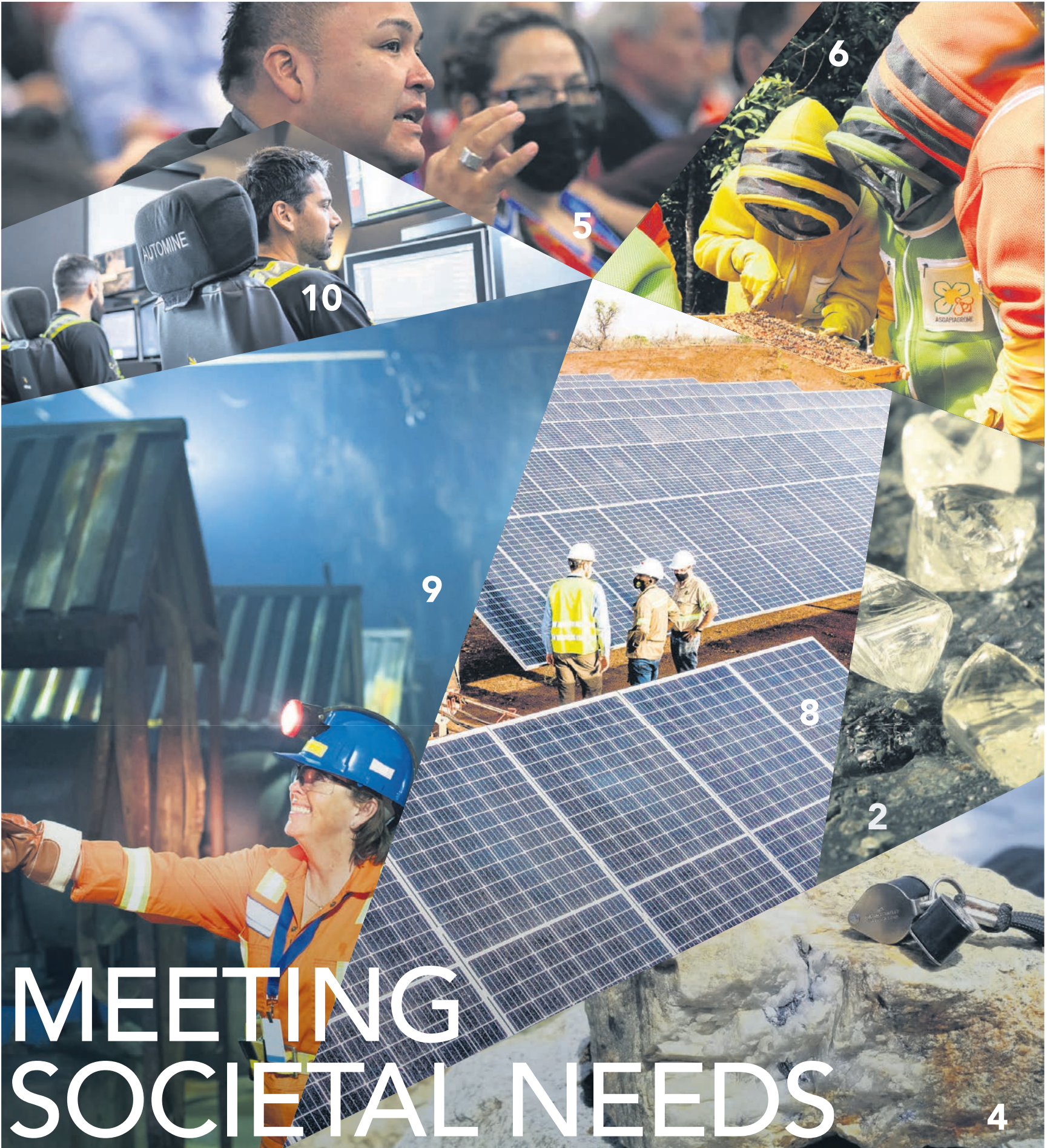


INVESTING IN MINING

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MEETING SOCIETAL NEEDS

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ABOUT PDAC As the leading voice of the mineral exploration and development community, the Prospectors & Developers Association of Canada (PDAC) represents over 6,500 members around the world with a focus on supporting a competitive, responsible and sustainable mineral sector.

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PDAC 2023
VIOLA R. MACMILLAN
AWARD



ALAMOS GOLD'S
JOHN A. MCCLUSKEY

For demonstrating leadership and a willingness to take risks in the acquisition and development of the Island Gold mine in Northern Ontario, John McCluskey, president and CEO of Alamos Gold, was recognized with the PDAC 2023 Viola R. MacMillan Award.

Based on a thorough analysis of geological data, the Alamos senior management team was confident that the Island Gold deposit, previously owned by Richmond Mines, was larger and richer than suggested by published mineral reserves and resources. However, shareholders balked at the acquisition price, resulting in Alamos Gold's share price plummeting by 17 per cent on the date of the acquisition announcement in 2017.

Since then, Island Gold has grown dramatically, helping Mr. McCluskey realize his 20-year dream of building a leading gold producer. Reserves and resources have almost tripled to 5.1 million ounces (from 1.8 million ounces in 2017); the mine life has more than doubled to 18 years at higher production rates; and the exploration potential has expanded through the acquisition of a substantial land package surrounding the mine.

Once unappreciated and misunderstood, the mine and its expansion are helping support and sustain local communities in Northern Ontario, representing another example among Alamos's string of strategically driven acquisitions.



Canada's critical minerals strategy sets out a clear pathway for increasing the country's ability to supply itself and global markets with high-priority minerals, such as lithium, cobalt, magnesium and rare earth elements. SUPPLIED

A strategy for critical minerals

The world's journey towards a net-zero future continues to advance on a momentum of joint commitments – between governments, industry and environmental organizations – powered by renewable energy and clean technologies.

For Canada's mining industry, this translates into an intensified focus on critical minerals – the building blocks for so many green-economy innovations, from wind turbines and solar panels to electric car batteries and LED lights.

"Canada is very well endowed with so many of the world's most critical minerals," says Alex Christopher, president of the Prospectors & Developers Association of Canada. "We are in a position to become a leading source of critical minerals not only for domestic use but also to supply the rest of the world."

The rollout last December of Canada's critical minerals strategy – following a federal budget that allocated \$3.8-billion to mineral exploration and mining – sets out a clear pathway for increasing the country's ability to supply itself and global markets with high-priority minerals such as lithium, cobalt, magnesium and rare earth elements.

The strategy aligns with a number of PDAC recommendations,

“

You can have all the capital in the world, but if you don't have engagement and agreement with communities, then you'll likely face challenges that could derail a project. Make sure you're transparent and working in alignment with the interests of the community. These are exciting times full of great opportunities – let's be ready for them.

Alex Christopher

President of the Prospectors & Developers Association of Canada



including meaningful investments in geoscience as well as targeted financial incentives for critical minerals exploration in Canada. The latter includes an increased tax credit of 30 per cent – double the previous credit – that can be extended through flow-through shares to investors in critical minerals exploration.

"With this strategy, and the money that's being put on the table to support it, the government is solidifying its commitment to critical minerals exploration and mining in Canada," says Mr. Christopher. "So now we need to be able to execute and move projects forward. And the better we perform, the faster we will reach our economic, environmental and societal goals."

There's a lot of work ahead. The industry today is in varying states of readiness to produce critical minerals, says Mr. Christopher. Thanks to a strong focus in recent years on minerals for battery technology, a

number of projects to mine nickel, copper, lithium and rare earth elements are at "relatively advanced stages."

"For those that are still in early stages, there must be a clear and transparent process to move viable projects forward, and we need to find ways to accelerate development," says Mr. Christopher. "For one, federal and provincial governments must streamline permitting processes to eliminate redundancies and ensure new mines are not subject to lengthy delays simply due to multiple independent and overlapping processes needing to run their course."

Canada also needs to build more downstream infrastructure to reduce, perhaps even eliminate, the need to send critical minerals produced in Canada offshore for processing. Doing this will strengthen the country's self-sufficiency in critical minerals while adding new capabilities to its minerals ecosystem.

"Power, road and water infrastructure around exploration and mining sites are also big considerations," says Mr. Christopher. "Some of these critical mineral deposits are not big, so a single operation may not be able to support the required infrastructure. We'll continue to advocate to government for public funding to advance certain critical infrastructure that will serve the public well and generate tangible economic development opportunities."

Industry and governments should also continue to revisit the definition of critical minerals to ensure that other important minerals not included in the list are not unfairly excluded from the supportive mechanisms built into Canada's critical minerals strategy.

At the same time, the country's exploration and mining companies should position themselves to make the most of this bold and ambitious plan. An important first step, says Mr. Christopher, is engagement with communities to ensure they support and participate in future projects.

"You can have all the capital in the world, but if you don't have engagement and agreement with communities, then you'll likely face challenges that could derail a project," he says. "Make sure you're transparent and working in alignment with the interests of the community. These are exciting times full of great opportunities – let's be ready for them."

SEEKING TO UNEARTH THE WORLD'S LARGEST DEPOSIT OF HIGH-VALUE DIAMONDS

Underneath the Fort à la Corne forest in Saskatchewan, about 60 kilometres east of Prince Albert, lies what may be the world's largest undeveloped diamond mine.

A Saskatoon natural resource company hopes to unearth these precious stones – and the economic benefits they'll bring to the province and country.

"We're talking about millions of diamonds of unsurpassed clarity – rare, high-value diamonds that can be produced right here in Canada," says Ewan Mason, interim CEO and chair of Star Diamond Corporation (TSX: DIAM), which is working to advance mining in the central Saskatchewan forest.

The stones are contained in a field of more than 60 kimberlites – the most common host rocks for diamonds – in the southeastern part of Fort à la Corne, where Star Diamond holds a 25 per cent participating interest in two extensively evaluated kimberlites, Star and Orion South.

The remaining 75 per cent – which Star Diamond aims to acquire, according to Mr. Mason – is currently held by Montreal-based Rio Tinto Exploration Canada Inc.

Between 2003 and 2009, underground bulk samples taken from Star and Orion South yielded 13,300 carats, including a 49.5-carat stone, from about 98,000 tonnes of kimberlite ore. An unusually high proportion of the yield was made up of Type IIa diamonds – rare stones, which can be very large and of the highest quality, that account for less than 1.3 per cent of global production.

A 2018 preliminary economic assessment authored by an independent international consulting firm concluded that, over a 38-year project lifecycle, the Star and Orion South sites could yield about 470 million tonnes of ore containing 66 million carats, at a weighted average grade of 14 carats per hundred tonnes.

The assessment also set the average weighted price per carat at \$210 (U.S.) for diamonds from Star, and \$169 (U.S.) from Orion South – more than double the world average at the time.

"Just imagine the economic benefits to Canada, in particular to Saskatchewan," says Mr. Mason.

"Preliminary studies show cash flow from this project into Saskatchewan will be at least \$25-billion over 38 years."

Beyond their abundance of high-value diamonds and mining longevity, the Star and Orion South projects – which are expected to incur just over \$1.4-billion in construction costs – feature a number of other advantages. The sites are close to existing power and transportation infrastructure, and all federal and provincial environmental permits are in place, says Mr. Mason.

The preliminary economic assessment from 2018 points to a 19 per cent internal rate of return based on a net present value, after taxes and royalties, of \$2-billion.



One of the most extensive undeveloped diamond resources can be found in Saskatchewan, Canada. SUPPLIED



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Tapping Canada's lithium potential

As governments and citizens move closer to clean economies, critical minerals are fuelling that transition, and Canada is quickly becoming a leader in this area, thanks to its rich endowment of the minerals needed for clean technology products.

Australia's Sayona Mining Limited has seen the opportunities in Canada and made large investments in Quebec's abundant lithium resource. The company obtained a Quebec lithium resource base, and it plans to move into downstream processing and examining the potential for lithium carbonate or lithium hydroxide production.

Sayona, which is traded on the Australian Stock Exchange as SYA, has been involved in developing mines globally for many years and has large lithium claims in Western Australia. That lithium focus has led Sayona to expand from what CEO Brett Lynch calls its "footprint" in Australia to a "toeprint" in Quebec.

"When I joined about three years ago, I mapped out where I thought the best business opportunities [in lithium] were, and what I saw was that the North American market, driven by the U.S., would eventually wake up and convert, and when it did, it would convert hard and fast to electric vehicles," Mr. Lynch says.

“ ... I mapped out where I thought the best business opportunities [in lithium] were, and what I saw was that the North American market, driven by the U.S., would eventually wake up and convert, and when it did, it would convert hard and fast to electric vehicles.

Brett Lynch

CEO, Sayona Mining Limited



A growing demand for lithium is fueled, in part, by the metal's use in batteries for electric vehicles, and Australia's Sayona Mining will bring its expertise to bear on Quebec's lithium resource base. [ISTOCK.COM](https://www.istock.com)

He knew the North American market would want to be self-sufficient, and since lithium doesn't travel well and Quebec is 400 kilometres from Ontario's manufacturing centres, acquiring a base in Quebec made sense.

In addition, Quebec's green hydropower, world-class infrastructure and skilled labour make it a

leader in environmental, social and governance-friendly lithium production. And Sayona is committed to supporting the local economy, with more than 85 per cent of its Quebec workforce coming from local, including First Nations, communities.

Sayona has already recruited 100 staff members and expects to add another 100 this year.

Mr. Lynch said Sayona will also spend \$100-million to refurbish the equipment and plant in Quebec. He says Australians know a lot about what you need to do to lead in iron ore and coal, and the company is bringing that knowledge to the lithium market and then adding processing to the business plan so it's more than mere extraction.

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PDAC 2023 SUSTAINABILITY AWARD

THE LUNDIN FOUNDATION

The first question country leaders often ask when a company wishes to develop a mine within their borders is how communities will benefit from the development. Leading examples of how mining revenue can be leveraged for providing lasting benefits for communities come from the Lundin Foundation, a non-profit organization supported by the Lundin Group of companies.

Among the achievements that earned the Lundin Foundation the PDAC 2023 Sustainability Award are the 2021 efforts to support 650 small businesses, which generated \$42-million in revenues and provided 2,000 well-paying jobs. Support for 79 startups resulted in these businesses launching solutions for climate change and attracted \$30-million in third-party funding.

In Ecuador, for example, the foundation developed and delivered a training program for community members with no previous experience at the Fruta del Norte gold mine, resulting in 80 per cent of trainees being employed as skilled plant and mine operators. In communities surrounding the mine, the foundation helped enable a local agricultural co-operative to establish organic farm management practices and achieve organic certification. Now, 180 co-operative producers are exporting products like coffee, cocoa, yuca and plantain to international markets.



Pampacancha is a high-grade copper and gold satellite deposit located approximately seven kilometres from Hudbay's Constancia mine and processing facilities in Peru. SUPPLIED

Boosting exploration and expansion potential while minimizing risks

With nine new streams and \$1.5-billion in deals over the last two years, Wheaton Precious Metals (WPM) finds itself in a period of solid corporate development and growth.

Sustained strength in commodity prices have single-asset mining development companies looking to fund growth plans with capital provided by the streaming business model that the Vancouver company pioneered nearly two decades ago.

"We're as busy as we've ever been in terms of the opportunities we're looking at – in fact, we're busier," says Wheaton president and CEO Randy Smallwood, noting that three of the new streams are funding development projects in Canada. The company is also involved in a number of projects currently at the review stage. "I expect at least two or three more transactions over the course of this year."

That's good news for the mining industry, for investors as well as for the sustainability initiatives that Wheaton's leadership in the environmental, social and governance (ESG) space makes possible.

Mr. Smallwood calls Wheaton "a hybrid between a financier and a mining company," combining geology, engineering, metallurgy, finance and social licence. "The market conditions are such that just about every single-asset company out there is looking at streams as a source of capital as they go into construction."

For investors, "we give access to the mining upside – the exploration and expansion potential – but we don't take on a lot of typical mining risks," Mr. Smallwood says. "It's a strong business model."

The company's current streaming agreements cover 20 operating mines

“ We have such an incredible opportunity in this country to deliver some of the most environmentally sound, most socially responsible minerals in the world. I love the fact that we're finally seeing some good substantive growth projects here. And in an ideal world, we'll continue to provide that support. **”**

Randy Smallwood
CEO, Wheaton Precious Metals



and 13 development-stage projects. Opportunities currently under review range from \$200-million to \$400-million, while from 2013 to 2018, Wheaton's average deal size was close to \$1-billion. "Companies are nervous about taking on big capital-build projects, so they're phasing things," he explains.

Many assets provide organic growth, such as the Salobo III expansion, which started up last December and will be ramping up production through the year, with an expected 50 per cent increase in throughput capacity. Owned by Vale, Salobo is Brazil's largest copper mine and Wheaton's most important asset. The gold it produces represents about 30 per cent of the company's cash flow. "With our flagship going through such a significant growth program, it's going to be an exciting year," Mr. Smallwood says, noting the mine has underperformed recently given challenges on the maintenance side that Vale has now addressed. "We think they've turned the corner." In addition, Hudbay has started mining the Pampacancha deposit at the Constancia mine in Peru, which has significantly higher grades.

He's pleased three of Wheaton's new streams are financing development projects in Canada: Sabina's Goose Project, Generation Mining's Marathon Project and Artemis Gold's Blackwater Project.

"We have such an incredible opportunity in this country to deliver some of the most environmentally sound, most socially responsible minerals in the world," he says. "I love the fact that we're finally seeing some good substantive growth projects here. And in an ideal world, we'll continue to provide that support."

Sabina in the Northwest Territories-Nunavut area "points to an important ESG role for Wheaton, elevating the standard of living of people in rural areas," he says. "For every dollar that's spent at the mine site, multiples of that flow out into surrounding communities."

Mr. Smallwood, who is also chair of the World Gold Council, is proud that Wheaton was named one of the Best 50 Corporate Citizens in Canada by Corporate Knights last year. He also points to a recent ESG report by Sustainalytics ranking Wheaton among the top 50 companies in a multisector database of more than 15,000 companies worldwide.

He notes that in 2014, Wheaton became the first of the streaming and royalty companies to start co-investing in the communities around the mine sites that it gets its metal from. Wheaton puts approximately 1.5 per cent of its average cash flow – millions of dollars annually – into the communities around mine sites to help its partners maintain a stronger social licence.

For example, in Peru, where Wheaton has investments in the Antamina and Constancia mines, it helps its partners enhance local education and provide economic opportunities.

Last year, the company set a formal commitment to achieve net zero carbon emissions by 2050, which includes the emissions from its share of the production at every one of its mine sites, the only major streaming companies to promise that.

"We're constantly trying to push the boundaries. Everything we can do to make our partners stronger will give us benefits," he says. Indeed, he feels that such initiatives are good for the industry as a whole. "We have to think more globally in terms of how we present ourselves and ensure that people understand the benefits that come from responsible resource development."

While Wheaton's focus is precious metals, it's indirectly supporting the energy transition that will help to "get internal combustion out of the equation," he says. Half of its mines produce base metals such as copper and nickel that are critical to the electrification of the world.

ADDRESSING THE SUPPLY AND DEMAND GAP FOR GREEN METALS

The rising demand for critical metals – paired with a limited number of new mining projects coming online – can create investment opportunities, says David O'Brien, president and CEO of Stuhini Exploration, a company exploring and developing base and precious metals properties with a primary focus on the advancement of the Ruby Creek molybdenum deposit near Atlin, B.C.

For the past century, the availability of resources has often been taken for granted, and this has led to scarcity of certain metals, he says. "There has been tremendous underinvestment in the sector. As a result, some of the larger discoveries over the past two decades haven't been developed yet."

An example where demand is outstripping supply is molybdenum, a key steel alloy for which no substitute is available in many applications, notes Mr. O'Brien. "The most common use, which accounts for about 39 per cent of present molybdenum demand, is for making steel products stronger while reducing their weight. Next, accounting for about 20 per cent of present demand, is use to make molybdenum-grade stainless steel."

Engineering steels, tool and high-speed steel, cast iron and superalloys collectively account for 60 per cent of molybdenum use. While demand for molybdenum is often driven by steel, output is closely linked to copper, since more than 80 per cent of molybdenum production is a byproduct from copper mining. Mr. O'Brien sees this as a disconnect that can be remedied through pure-play molybdenum projects like the Ruby Creek operation.

"There are very few pure-play deposits in the pipeline, and ours is certainly one of the more advanced projects," he says.

The World Bank recently named molybdenum "an essential green technology metal," and experts predict that relying on molybdenum as a copper byproduct will result in a significant deficit.

Many of the critical metals needed for the energy transition have undergone changes in valuation and may represent investment opportunities. Mr. O'Brien suggests investors "do their homework."

"For investing in mineral exploration, you have to trust the people involved in the project, and you have to make sure the project is real and tangible."



A rock specimen showing quartz-hosted molybdenum mineralization. SUPPLIED

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The minerals that enable a low-carbon future

There's a lot of action and buzz in Canada's exploration and mining industry, thanks in large part to a new federal-level strategy to increase the country's supply of critical energy transition minerals.

Michael Faralla took a few minutes recently to share his perspective on the latest developments, and the outlook, for Canada's prospectors and developers.



Q&A WITH MICHAEL FARALLA, HEAD OF GLOBAL MINING INVESTMENT BANKING AT TD SECURITIES

What are your thoughts on Canada's new critical minerals strategy?

When you look at the strategy, it's clear that there's a recognition that critical minerals are more than just what goes into electric vehicle batteries. There's a broader set of metals included in the strategy, like rare earth elements that go into magnets and vanadium for battery technologies more suited to power grid storage. There are also things like potash for fertilizers to support population growth. With this critical strategy, there's also a push to build infrastructure to support development of refining capacity.

What critical minerals are most in demand these days?

Lithium continues to be one of the most highly prioritized critical minerals, so much so that the price for lithium tripled to record highs at the end of last year. This demand highlighted a significant supply deficit that's expected to really grow over the next several years.

Cobalt is also in demand, but less so because supply has continued to improve. Also, because of recent issues with supply, battery manufacturers started shifting their chemistry to low or no cobalt.

At the same time, the importance of copper cannot be understated. Copper plays such a central role in both EVs – batteries and wiring – and infrastructure, where

“Lithium continues to be one of the most highly prioritized critical minerals, so much so that the price for lithium tripled to record highs at the end of last year. This demand highlighted a significant supply deficit that's expected to really grow over the next several years.”

it's used in electricity transmission grids and charging infrastructure.

Where is Canada at when it comes to building capacity to supply critical minerals?

On the mining side, there are many, many projects in development in nickel, lithium, graphite, copper and across the spectrum of other minerals. The mining pipeline of projects is growing. There's a recognition that some of these projects are more challenging – more remote areas will require infrastructure such as roads and electrical power – and will need more capital investment to advance them. This will require commitments from end users to pre-purchase products to make the projects more bankable and financeable.

Things are less clear on the refining side. Quebec has done a good job in attracting several industry participants to build refining facilities there. For example, there's a proposal from a graphite producer to locate processing there, and there are other plans for lithium and nickel refining. I think the Quebec government has made significant

progress, but other parts of Canada are still lagging when it comes to refining.

What are some of the challenges ahead for Canada's exploration and mining industry?

The overarching reason for expanding supply of critical minerals is so Canada and the rest of the world can achieve low or net zero emissions. But if we're using carbon-intensive power to produce and refine these minerals, then we're nullifying the benefits of trying to increase supply of energy transition metals. In this regard, Quebec, Ontario and B.C. are well positioned because we have significant hydro power there.

Even with government support, funding construction of infrastructure like roads and power lines will still be a challenge for many companies. What are some of the ways they can address this challenge?

In some cases it will make sense to look for joint venture partners. These partners could even be the product end users themselves. This will

help to validate the project, and the end user might be able to bring in low-cost financing. The critical minerals strategy also points to several sources of financial support, such as the new infrastructure bank.

Many institutional and retail investors have turned away from mining over the past several years. Is the sentiment changing?

We're definitely seeing more investor interest coming back to the sector. What has helped to drive this? One reason is that other sectors that have attracted a lot of attention – like crypto, cannabis or high-growth tech – have fallen out of favour with investors generally. At the same time, there's been a growing awareness of the need for critical minerals to support the energy transition, as well as a growing awareness of the energy transition itself. Layer on top of that geopolitical changes that have led to western governments' increasing focus on securing domestic and regional supply chains with friendly, like-minded governments. All of these have served to shine a bright light on the mining sector.



Copper plays an important role in the energy transition, both for electric vehicles – batteries and wiring – and infrastructure, where it's used in electricity transmission grids and charging infrastructure. ISTOCK.COM

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CHRIS TAYLOR AND THE GREAT BEAR RESOURCES EXPLORATION TEAM

Due to intermittent exploration since 1985, industry consensus was that the potential of the Dixie project in the Red Lake gold camp in northern Ontario had been investigated and found wanting.

Yet Chris Taylor, CEO of Great Bear Resources, and VP Exploration Bob Singh, along with their team, believed there was a lot more gold to be discovered. Using historical data, including a suite of more than 150 drill holes, they constructed a new model of mineralization. Convinced that previous explorers had misinterpreted the geology, Mr. Taylor used his personal line of credit to finance early exploration.

This tenacity, which earned the team the PDAC 2023 Bill Dennis Award, led to a first major discovery: the Hinge zone. It was followed by more discoveries in rapid succession: the Bear-Rimini, Yuma, Auro, Yauro, Viggo and Gap zones, all part of a larger continuous zone of gold mineralization called the LP Fault Zone. Unlike the vein-hosted gold mineralization typical of Red Lake, the mineralization was sheet-like, containing high-grade zones within lower grade haloes.

In 2022, Great Bear was purchased by senior gold producer Kinross Gold with plans to develop a top-tier, long-life mine. The discovery reinvigorated exploration in the Red Lake camp.

Delivering impact at modern exploration frontier

Best known for its use for currency and jewelry, silver has another key advantage: it has the highest electrical conductivity among all metals. This makes silver a sought-after material for various clean technologies, including solar panels, electric vehicles and electronics applications.

The resulting strong silver prices – paired with a high demand, which is expected to grow more than 15 per cent over the next five years – can inspire investor confidence in projects focused on silver production, says Joe Hebert, president and CEO of Outcrop Silver & Gold Corporation (TSXV: OCG), for whom one project stands out for its unparalleled potential: the Santa Ana Silver Project in Colombia.

The area, a top mining camp of the Spanish colonial empire during the 15th and 16th centuries, is now 100 per cent owned by Outcrop. “Santa Ana is the highest-grade primary silver district and with top-tier resource potential in Colombia. It’s a thrilling place to work,” says Mr. Hebert, a geologist with 38 years of experience.

Outcrop has drilled more than 51,000 metres (over 307 holes) and weighted average grade from 198 of 284 drill holes of 1,558 g eq Ag/t over an average width of 0.8 metres. Metallurgical testing demonstrated excellent recoveries from the processing of mineral veins throughout the project, encompassing over 60 kilometres of mapped and inferred vein zones, he explains. “The more we drill, the bigger this grows on a systematic basis. This work is part of our basic de-risking. It enables us to check off a list of investor concerns and interests.”

A FOCUS ON SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

Other advantages of working in the Santa Ana area, located about 190 kilometres from Bogota, include access to highways, grid power and water, excellent security conditions and strong community support.

During a recent trip, Kathy Li, director, Investor Relations at Outcrop, witnessed the considerable impact of the company’s community engagement. “We’ve done a lot of initiatives that contribute to the economic and social development and ecological preservation in local communities,” she says. “People were very appreciative, for example, for support with vegetable plots, organic fertilizer school, tree plant nursery and the beekeeping program.”

Access to educational and employment opportunities are also highly



valued, she adds, “with Outcrop employing 81 per cent local team members and offering post-secondary education programs to enhance people’s success in the labour market.”

Ms. Li, who describes the visit as an “eye-opening and unforgettable experience,” was especially impressed by reforestation efforts that rendered what had previously been a working platform indistinguishable from natural habitat.

Building community relations is “a collaborative process,” notes Mr. Hebert. “We have presentations, open houses and a walk-in office where people can provide feedback.” As a result, projects address specific community needs. A lack of equipment for people with mobility challenges, for example, inspired Outcrop to provide wheelchairs to community members, both children and adults, in need.

“Working with our partners helps us set a direction – and then we can move forward together,” says Mr. Hebert, adding that Canadian companies, in particular, have a good reputation for community engagement.



Community engagement at the Santa Ana project for Outcrop Silver & Gold includes delivering training and educational opportunities, a beekeeping program and support for growing food. SUPPLIED

COLOMBIA: A MODERN EXPLORATION FRONTIER

Another attribute that sets Santa Ana apart is its location in “Colombia, which is at least as well endowed as Peru or Chile were four decades ago,” says Mr. Hebert. “This is reflected in the quality of Outcrop’s portfolio, which includes Santa Ana and two other projects with extremely high potential.”

Since the end of the decades-long conflict, Colombia has become a top destination for mining and exploration and ranked second in Latin America and the Caribbean Basin for mining investment in 2021.

“Modern mining is new to Colombia, which is now seen as one of the world’s last true frontier exploration areas,” says Mr. Hebert. “With the importance of silver in the energy transition being recognized as an exploration and mining priority, we are very much aligned with the mandates of the new federal government in Colombia.”

With so many factors contributing to favourable conditions, he believes Outcrop is in a solid position to deliver exceptional benefits to shareholders and local communities, the host nation and society as a whole.



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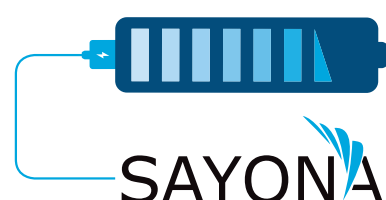
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Partnerships enhancing outcomes for northern communities and resource development

How can northern and remote communities go about improving economic outcomes, for example, through meaningful employment and business and education opportunities? How can they create a better economic reality while staying true to their values and traditions?

Mineral exploration and development can provide answers to these questions, especially when the voices of community stakeholders are included in the decision-making process, proposes Glenn Nolan, VP, Indigenous Enterprises, Ring of Fire Metals, a mining company involved in multiple projects in the Ring of Fire area in the James Bay Lowlands of northern Ontario.

"I've seen many communities – including my community – change for the better when they participate in resource projects," says Mr. Nolan. "Since these projects are typically tied to a specific geographic area, it is important to build long-term relationships between mining companies and communities.

"When there is mutual support, all parties can prosper."

COMMUNITY ENGAGEMENT, DONE RIGHT

The engagement process has to start with an exploration of "common areas of interest," says Mr. Nolan. Understanding how communities are impacted by a particular project – and exploring how companies can work with communities to advance their vision related to the land – can help to build consensus.

For a recent Ring of Fire project, for example, community feedback inspired the organization to pivot plans from an open-pit operation to an underground mine, he notes. "Although an open-pit mine was feasible for our project, we decided to design an underground mine instead, because that's what the community wanted to see."

Inviting community input for resource projects has become common practice in Canada, and Mr. Nolan, who is a former Chief of the Missanabie Cree First Nation



Through engagement between mining and exploration companies and community stakeholders, mineral projects in Canada's northern and remote communities can help to enhance socioeconomic well-being. SUPPLIED

It goes beyond having Indigenous people participate – the industry has to make an effort in supporting the role models of the future.

Glenn Nolan
VP, Indigenous Enterprises,
Ring of Fire Metals



and volunteers with the Indigenous Affairs Committee of the Prospectors & Developers Association of Canada (PDAC), welcomes this development.

"Even 25 years ago, discussions around Indigenous participation were rare. At the time, companies were more interested in just telling communities what they were planning to do rather than having an actual dialogue," he says, adding that notable exceptions included a historic impact benefit agreement (IBA) in 1992.

Today, communities are becoming "much more aware of the potential impact of resource exploration and development on their traditional territories," he notes, "and how outcomes can be enhanced through careful planning."

THE POWER OF ROLE MODELS

The increasingly collaborative approach to resource development has

also led to a change in how community members participate in the industry. "Mining companies have always hired local people, but their work was traditionally limited to entry-level positions," says Mr. Nolan. "Compare that to today, when we have many Indigenous men and women in professional roles, including engineers, scientists, accountants, lawyers and executive leaders, all working in this industry."

Role models also played an important part in Mr. Nolan's choice of career. "My first role model was my father," he says. "He was a hunter gatherer who started working in the industry on occasional projects. He then completed his grade 10 education, which enabled him to train in welding and mechanics, and move to a full-time position."

Another mentor introduced Mr. Nolan to field work during his

post-secondary education in geology. "From my family, I knew what working in a mine could look like," he says. "But now, I understood that I could do my work while being out in nature, which has always been important to me since I was young."

An avid reader of National Geographic, Mr. Nolan has always been mesmerized by images of wild places, like "jungles, deserts and the Arctic.

"I wanted to explore environments like these, and my career in mining allowed me to do that," he says. "I spent time in all kinds of areas, including the high Arctic."

Increasing diversity and inclusion can also serve the mineral industry in efforts to attract and retain talent, he adds. "It goes beyond having Indigenous people participate – the industry has to make an effort in supporting the role models of the future."

TOWARDS A BRIGHTER FUTURE

Going forward, communities will have an even greater stake in working with resource exploration and development companies as a means of enhancing socioeconomic well-being, Mr. Nolan says. "Long-term benefits go well beyond the operation of a mine to include education and training and business opportunities on the supply and service side of things."

Windigo Catering, for example, started as a catering service for the Musselwhite mine, a gold-mining operation located approximately 500 kilometres north of Thunder Bay. Since then, the award-winning First Nations business in Sioux Lookout has expanded services to other mining camps, hospitals, lodges, correctional facilities, youth centres and more.

"Windigo Catering is no longer 100 per cent reliant on the Musselwhite mine, which incidentally was part of that first IBA in 1992," says Mr. Nolan. "Thirty-one years later, the mining operation is still going, the catering service is still hiring, and both are creating impact for the community."

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Acquisitions and Divestitures

<p>US \$580 M</p> <p>AGNICO EAGLE</p> <p>Subscription of 50% Interest in San Nicolás Project from Teck</p> <p>Pending</p> <p>Sole Financial Advisor</p>	<p>US \$176 M</p> <p>ESV GoldStandard</p> <p>Sale of Gold Standard Ventures to Orla</p> <p>August 2022</p> <p>Financial Advisor</p>	<p>\$310 M</p> <p>UFX</p> <p>Sale of UFX to UEC</p> <p>August 2022</p> <p>Financial Advisor</p>	<p>\$625 M</p> <p>lundin mining</p> <p>Acquisition of Josemaria Resources</p> <p>April 2022</p> <p>Advisor to the Special Committee</p>	<p>\$686 M</p> <p>NORONT</p> <p>Sale of Noront to Wyloo Metals</p> <p>April 2022</p> <p>Sole Financial Advisor</p>	<p>US \$207 M</p> <p>centergold</p> <p>Acquisition of the Goldfield District Project</p> <p>February 2022</p> <p>Sole Financial Advisor</p>	<p>\$343 M</p> <p>Evolution</p> <p>Acquisition of Battle North Gold</p> <p>May 2021</p> <p>Sole Financial Advisor</p>
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PDAC 2023
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AWARD



CHALICE MINING'S
KEVIN FROST &
MORGAN FRÉJABISE

The discovery of nickel, copper and platinum group elements (PGE) at Julimar represents an extraordinary development, given how deposits near Perth, the capital of Western Australia and a well-established mining jurisdiction, had already been extensively explored.

Since extensive regolith cover obscures the region's geology, previous explorers were blind to the deposit. Yet when the Chalice Mining team of Kevin Frost and Morgan Fréjabise studied publicly available airborne magnetic surveys, they spotted the hallmarks of rich deposits of metals hidden beneath the cover, later confirming this through applying electromagnetics on the ground and multi-element soil geochemistry.

Subsequent drilling uncovered one of the most significant nickel sulphide discoveries in recent global history, and the largest PGE discovery ever in Australia. Now known as the Gonneville deposit, it is particularly significant because of its scale, its shallow starting depth and its range of valuable metals that are critical to decarbonization and green technologies.

The discovery, which earned the team the 2023 Thayer Lindsley Award, has helped establish a new mineral province along the western edge of the Yilgarn Craton (the West Yilgarn Province) with over a thousand kilometres of unexplored potential.

Decarbonization pathway powered by renewable energy

For organizations to continue to thrive against the backdrop of climate change, they are charged with reducing their environmental footprint while ensuring operations can withstand the impact of a changing climate. This imperative inspired senior gold producer B2Gold Corp. (TSX: BTO)(NYSE AMERICAN: BTG) to embark on an ambitious decarbonization pathway.

"At B2Gold, we recognize that climate change is one of the most critical challenges of our time, not just for our business but for society," says Ken Jones, director of sustainability. "We have a responsibility to do our part and manage our potential impacts as well as manage climate impacts on B2Gold."

In the quest to reduce greenhouse gas emissions, B2Gold has turned to renewable energy solutions. The impressive results so far have enabled the company to set the goal of reducing its scope 1 and 2 emissions by 30 per cent by 2030 from a 2021 baseline.

"That's a very strong commitment that is in line with government and industry targets – and this will allow us to make a big step towards a low-carbon future," says Mr. Jones. "For us, it is important that these kinds of commitments are achievable – and that they are based in operational realities and available technologies."

What gives B2Gold the confidence to reach this emissions reduction target is its longstanding commitment to managing its climate risks and continuous improvement in its climate performance, says Mr. Jones. "Since we started issuing annual reports on greenhouse gas emissions in 2016, we have expanded our reporting significantly to accurately capture and understand our carbon footprint. Last year, we reported on our scope 1, 2 and 3 emissions."

According to the Greenhouse Gas Protocol, greenhouse gas emissions are categorized into three groups, where scope 1 covers direct emissions from owned or controlled sources, while scope 2 includes indirect emissions from the generation of energy purchased by the company. Scope 3 encompasses all other indirect emissions that occur in the entire value chain.

One measure that has made a big difference for B2Gold was bringing a significant percentage of solar power into the energy mix: operations at the Otjikoto mine in Namibia and the Fekola mine in Mali both maintain fully autonomous hybrid power



A solar installation at B2Gold's operation in Fekola, Mali, is enabling the organization to significantly reduce its reliance on fossil fuels. SUPPLIED



We made a commitment to not only manage our climate risk for the company, but to also keep all stakeholders informed of our performance, including shareholders, government and society.

Ken Jones

Director of Sustainability, B2Gold

plants consisting of 6 megawatt and 30 megawatt solar-installed capacity, respectively.

Beyond increasing the percentage of renewable energy, the Otjikoto facility also represents a landmark project in sustainable power generation as the hybrid solar, fully autonomous system is the first of its type in Africa, according to Mr. Jones. "We've been pioneering an innovative use of renewables in our operations."

Last year, B2Gold's operation generated 15 per cent of its electricity from renewable sources. This number is projected to increase to approximately 20 per cent in 2023, taking the company closer to the 30 per cent emissions reduction goal, says Mr. Jones. "Currently, we are primarily focused on decarbonizing our electricity supply, but going forward, we will also explore technologies that can help us reduce emissions in our mine fleet and the rest of our operations."

Measures under investigation include building wind energy capacity, using LNG as a bridge fuel, emerging energy storage technologies and hydrogen fuels, as well as electrifying the movement of mine materials through overland conveyance or trolley-assisted haulage systems, he adds.

Underpinning these steps is a dedication to incorporate climate risk management into all business decisions, says Mr. Jones. "In 2022, we issued our first climate strategy report, which aligns with the recommendations of the Task Force on Climate-Related Financial Disclosures."

"We made a commitment to not only manage our climate risk for the company but to also keep all stakeholders informed of our performance, including shareholders, government and society."

For B2Gold, environmental impact considerations are embedded in the firm's environmental, social and governance goals – and the commitment to "achieving and maintaining our social licence," says Mr. Jones. "It's our priority to make a positive contribution to our host communities and host countries."

In addition to reducing emissions, this includes reclaiming and restoring disturbed areas, collaborating on water solutions and making a contribution to social and economic well-being, he adds. "All this is received quite favourably. It shows our stakeholders that yes, we care about the environment and are committed to creating long-term value for communities."



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From pickaxes to cutting-edge technology tools: changing the image of mining

In coming years, the mineral exploration and mining industry will face a major labour shortage. Enrolment in engineering and STEM-related university degrees is high, but focus on geology and mining is comparably low.

It sounds like a problem, but it's also an opportunity for students and young professionals who are looking for an interesting and rewarding career.

The mining industry, says Lisa McDonald, executive director of the Prospectors & Developers Association of Canada (PDAC), has suffered from a perception problem, but perception is the key word there.

"We've been evolving and moving forward, but haven't done a great job at communicating that," Ms. McDonald says. "There's a perception that there's a misalignment of values."

In fact, joining the mining industry can allow new graduates to become part of the answer to global problems such as climate change.

"To achieve the low-carbon future we're all looking for, we need to find, extract and process the minerals that will get us there," she says. "And our members will always be working in close proximity in Indigenous communities, which is another chance to make a difference."

The opportunities are indeed vast, explains Ryan Montpellier, executive director at the Mining Industry Human Resources Council.

"Today we have more than 10,000 job vacancies in mining," Mr. Montpellier says, adding that the unemployment rate in mining is under four per cent.

Contributing to that is the fact that the industry is expanding – there were 3,000 new jobs added in 2022 – and the labour market isn't expanding at the same speed. There's also the fact that the current workforce is aging.

"We're feeling the demographic challenge," he says. "Just over 18 per cent of our current workforce is over 55 years old and only five per cent is under 25."

Mr. Montpellier says the industry has to attract young people, women

“To achieve the low-carbon future we're all looking for, we need to find, extract and process the minerals that will get us there.”

Lisa McDonald
Executive Director,
Prospectors & Developers
Association of Canada



“We have a number of initiatives to try to communicate to youth what the modern mining industry is all about. It's not a guy with a pick ax...”

Ryan Montpellier
Executive Director, Mining
Industry Human Resources
Council



The mineral industry offers a host of employment opportunities. For example, there are currently 10,000 job vacancies in mining. SUPPLIED

and immigrants to its field.

"We have a number of initiatives to try to communicate to youth what the modern mining industry is all about," he says. "It's not a guy with a pickaxe, we track occupations from scientists to data analysts to analytics. There are jobs for engineers and metallurgists, too."

Mr. Montpellier says women occupy 15 per cent of the sector's jobs, but when you look at the skilled trades in mining, that number drops to two per cent.

"It's clearly becoming a priority

for all of our sectors to be more supportive, inclusive, open and able to attract, recruit, retain, develop a more diverse workforce," he says.

PDAC has several initiatives, including a robust mentorship program. At its annual convention, it also offers students a chance to have their resumes reviewed by prospective employers and, through the "student mineral colloquium," it allows students to showcase their research to the more than 25,000 convention attendees. Further, the next-generation explorers award is a

competition that brings the world's geoscience students together. The student industry mineral exploration workshop is a two-week, all-expenses-paid program through which participants visit mines, attend workshops and take part in field exercises.

"We're running it for the 13th time in 2023," Ms. McDonald says. "And we're starting to see former participants now running for the association's board of directors and coming back as leaders in our industry."

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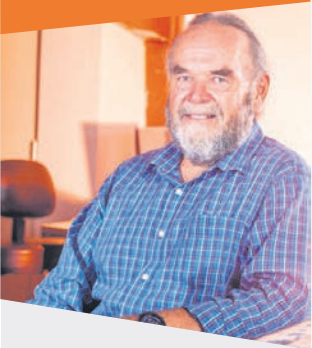
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GLENN NOLAN

Known as an accomplished bridge builder between Indigenous communities and the mining industry, Glenn Nolan received the PDAC 2023 Skookum Jim Award for his leadership in fostering meaningful engagement and consultation between industry and Indigenous communities, and for his long history of volunteerism. He was elected as director of PDAC's Indigenous Affairs Committee in 2005 and went on to serve as the association's first Indigenous president from 2012 to 2014.

As former Chief of the Missanabie Cree First Nation and executive of Ring of Fire Metals (formerly Noront Resources), Mr. Nolan understands both the struggles and aspirations of Indigenous peoples as well as the challenges faced by exploration companies.

This perspective informs his vision of advancing economic opportunities for Indigenous peoples worldwide, and he continues to support the Shuar people of Ecuador and Peru to help establish better relations with government and the mining sectors. In addition, Mr. Nolan was chair of the Canadian Executive Service Organization (now Catalyze+).

A modern mining case study

The changing face of mining owes much to technology – and efforts to adopt digital mining tools are fuelling an industrial shift towards efficient, safe and sustainable operations. Agnico Eagle (AEM), a Canadian gold mining company that also has operations in Australia, Finland and Mexico, is at the forefront of that shift.

The company is increasingly using automation, electrification, 5G and the internet of things to improve operational efficiency and productivity, boost employee safety and reduce its environmental footprint.

Jean Robitaille, executive vice-president, chief strategy and technology officer, says deposits are increasingly complex and more challenging to mine, so that has necessitated adaptiveness.

"A miner of today is not the miner of my father's time," he explains. "It's completely different. Some miners can now remotely operate more than one piece of equipment at a time using a joystick and a keypad."

One area that has seen progress throughout the years is environmental management. For its part, Agnico has started integrating new technologies and real-time monitoring to improve water treatment and tailings management and energy efficiency – and to reduce impacts on the land and neighbouring communities. Biological treatment facilities, for example, use live bacteria to treat water and eliminate contaminants before returning it to the environment.

Interconnected monitoring systems onsite and in neighbouring communities monitor seismic activities in real time and allow for preventive planning and management of activities to minimize risks for Agnico's employees and operations. Heat recovery and recycling systems improve energy efficiency, while reducing greenhouse gas emissions and costs.

In its efforts to fight climate change and reduce its overall emissions, Agnico is also looking at innovative ways to move away from fossil fuels. It is focusing on electrification, including battery electric vehicles and electric hauling systems such as the Trolley-Assist



Agnico Eagle has progressively integrated automated mucking, hauling and drilling to its different operations since 2017 for improved efficiency and safety. AGNICO EAGLE MINES

“

The goal is to connect all equipment and data. They need to talk to each other in real time to help make better decisions operationally ...

Nancy Guay

Vice-President, Technology, Optimization and Innovation, Agnico Eagle

(similar to a city tramway system) and the Railveyor, as well as use of alternative and more sustainable fuels and other renewable energy solutions. In Nunavut, Agnico has partnered with a consortium to implement a wind-energy solution at its Hope Bay operation, and, in Mexico, it is working on a solar power purchase agreement.

The company is also assessing the use of small modular reactor (SMR) technology. Nancy Guay, vice-president, technology, optimization and innovation, believes SMR technology is an interesting alternative to fossil fuels, especially in remote locations, as it generates a lot fewer greenhouse gas emissions. "It's

considered a key technology in the future of mining," Ms. Guay says. "We are working with universities, governments and suppliers on the development of this technology."

In terms of digital mining, the company has made great strides in recent years. At many of its operations, it has implemented 4G-LTE and 5G private wireless networks, which are the backbone for connectivity of all assets.

"The goal is to connect all equipment and data," says Ms. Guay. "They need to talk to each other in real time to help make better decisions operationally, improve efficiency, reduce operational risks and impacts, and motivate our people."



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