
Mining's Moment

The pathway for urgent real progress in responsible mining



Executive summary

Mining's sustainability challenges are no secret. With 2030 and beyond looming, the industry needs to hit some challenging targets. There is a bright side, however. The future of mining is undergoing a massive transformation, and the changes are filled with promise and potential.

This report aims to equip mining companies with the insights needed to reap the rewards. Collaboration is key. Through strategic partnerships, industry leaders can innovate and drive positive change for both the business and its sustainability agenda, a crucial factor in today's mining world. By focusing on people, technology, and process, this report explores the implications of sustainability and offers up some practical steps forward.

As a trusted partner, ABB is committed to supporting your sustainability journey. Our comprehensive solutions can help you achieve your sustainability goals while enhancing efficiency. Put simply, we're here to help you succeed.

Lastly, we hope this report inspires you to lead the charge toward a more sustainable future. Working together, we truly believe we can create a world where both profit and purpose go hand-in-hand.

Research summary

We interviewed 412 mining industry experts across 18 countries. Through an external research agency, we conducted 12 in-depth interviews and 400 online surveys. All our respondents were decision-makers, unaware that ABB was the company conducting the research.

This input revealed data and trends on where, in terms of sustainability, the mining industry is at now, what needs to be done, and where technology can help, all while remaining financially viable.



412
mining industry experts



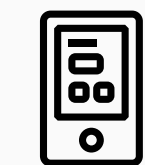
18
countries represented



400
surveyed online



67%
male

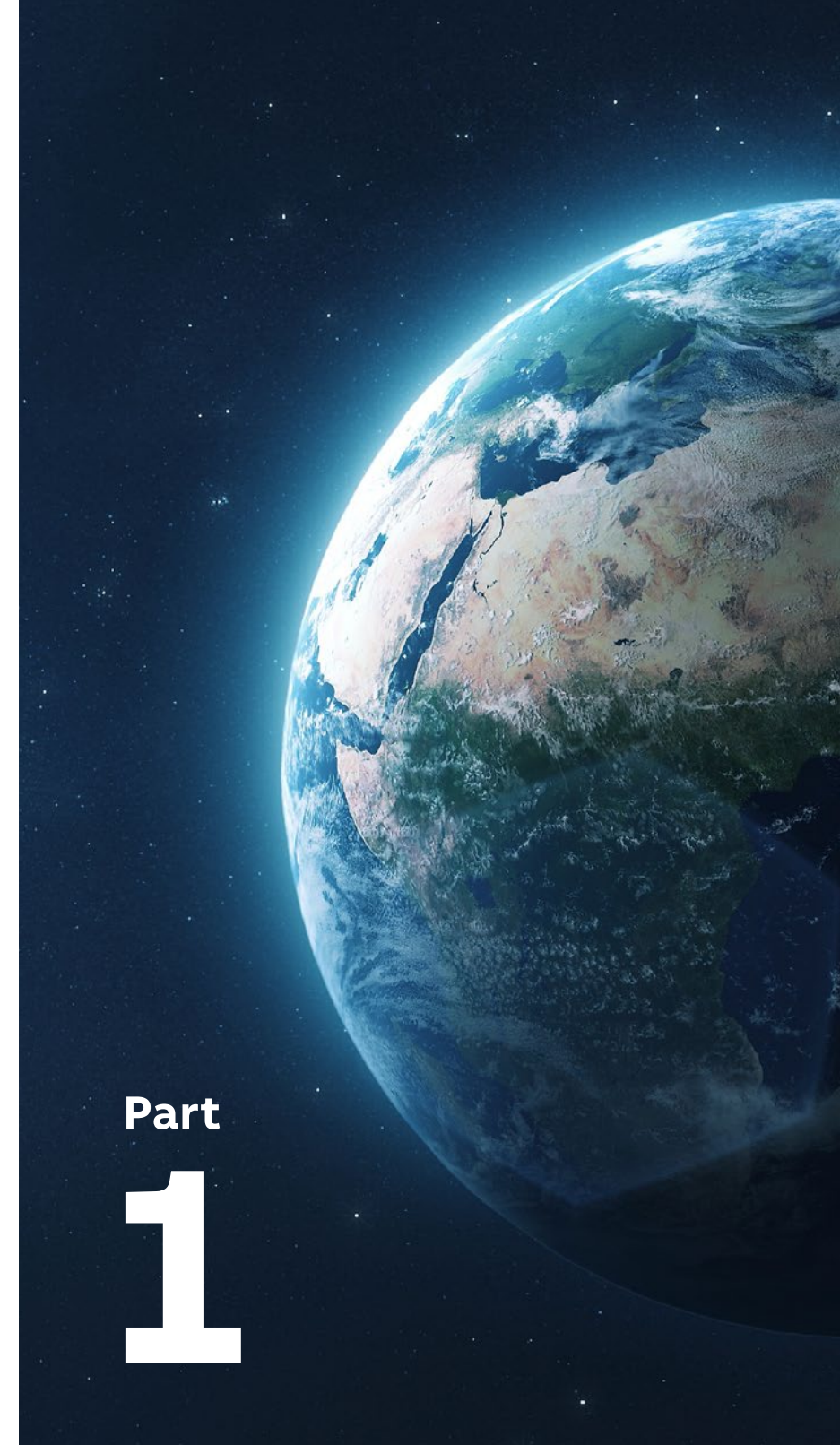


12
in-depth phone interviews



33%
Female

Contents



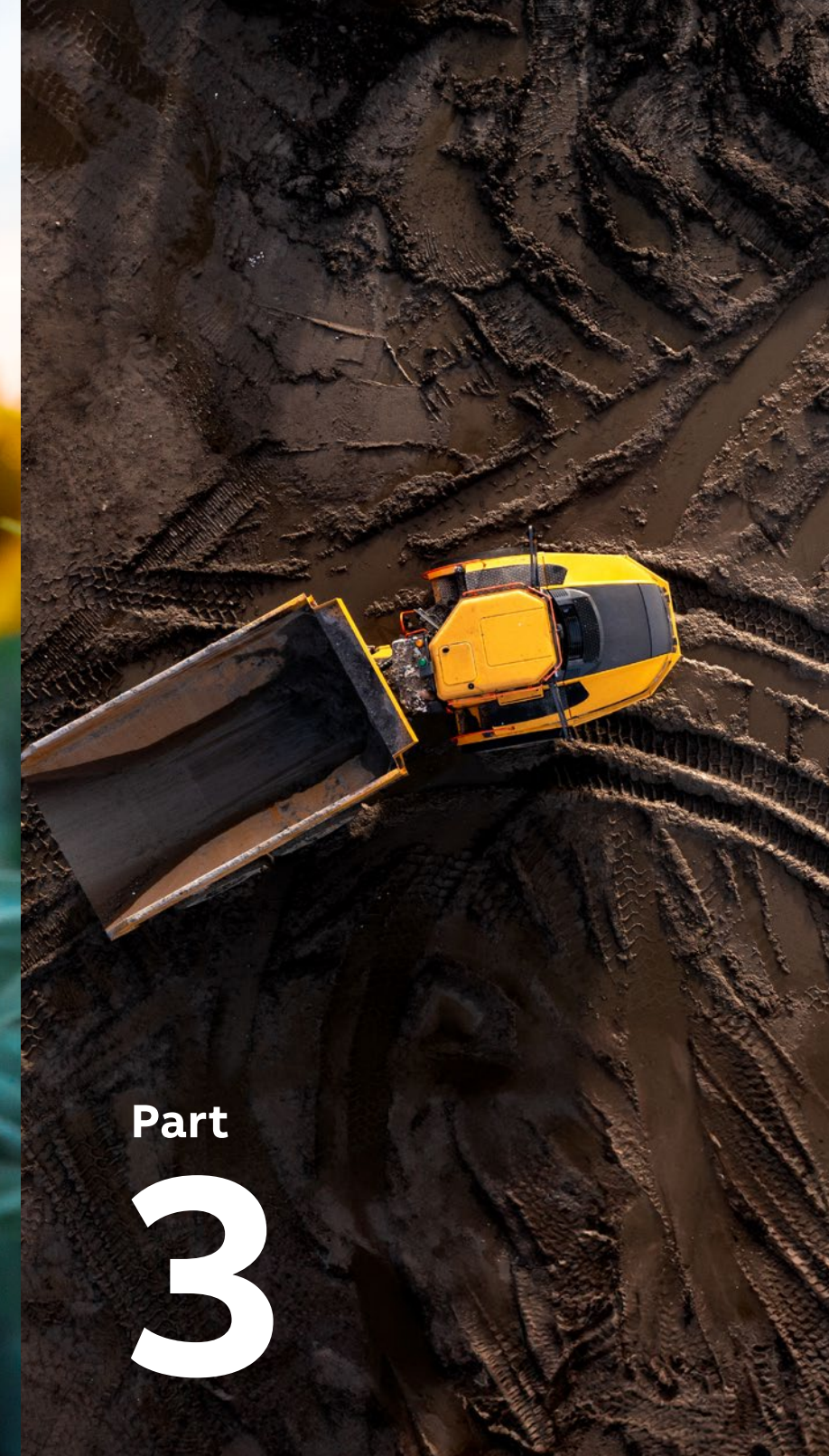
2030 urgency and 2050 vision

- Understanding the importance of the issue
- Recognizing the need for urgent change
- Key findings from the research
- Breaking the cycles that prevent progress
- Key points for immediate consideration



Making sustainability part of your plan for real progress

- The uphill battles you can't afford to lose
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Putting people, technology and process at the heart of change

- Make change management a priority
- Put people at the heart of change
- Embrace technology to shape a greener future
- Integrate processes to reduce risk and accelerate progress



Collaborating to make sure everyone wins

- Act fast to make real progress and reap the rewards
- Partner to centralize your process
- Collaborate with ABB today for net zero success tomorrow

1

2030 urgency
and 2050 vision



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“People, planet, and profit”

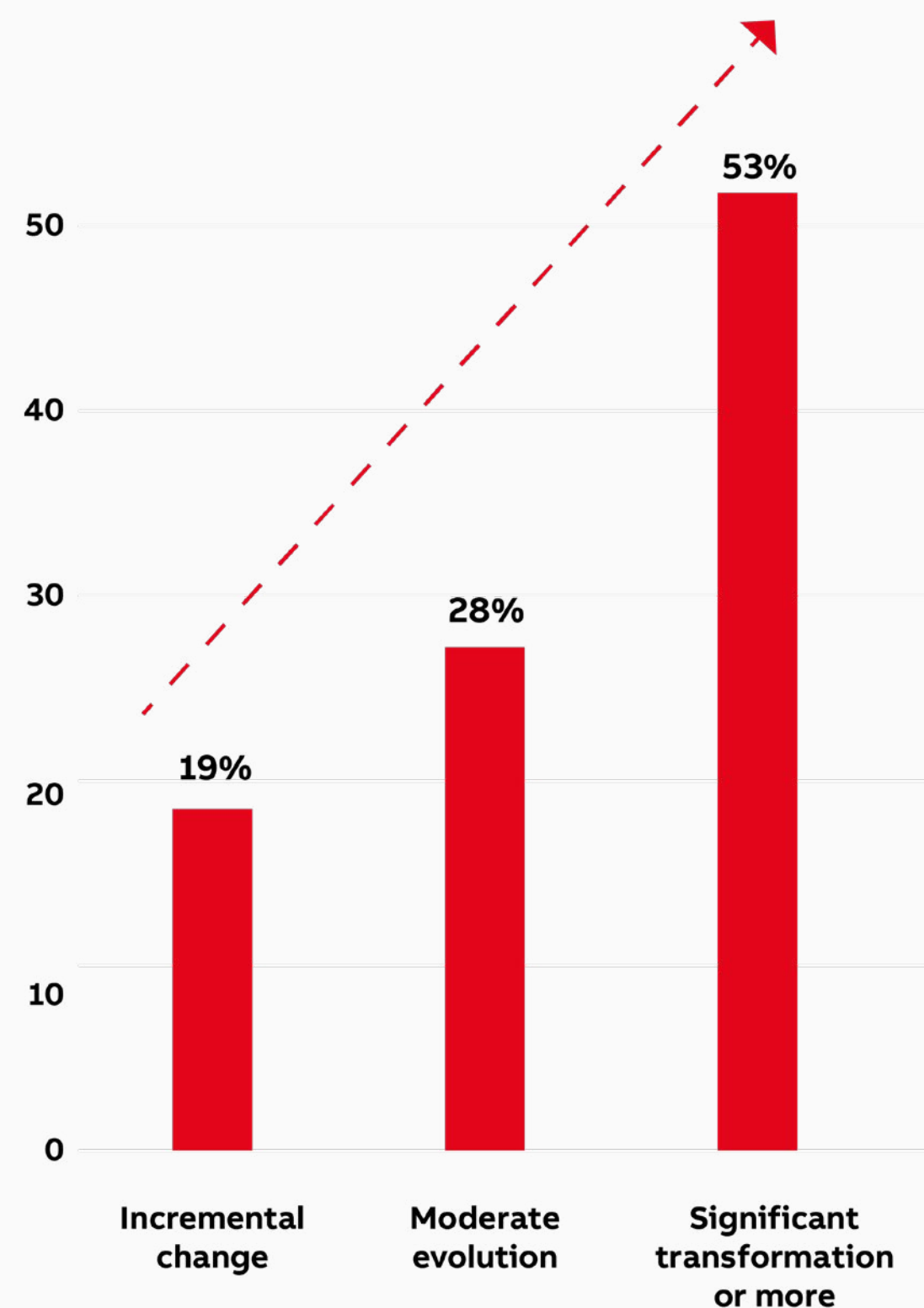
— The three fundamentals of the triple bottom line theory, coined by corporate responsibility pioneer, John Elkington

You need to understand the importance of the issue...

The mining industry is facing a daunting challenge as rapid changes are expected in order to meet global targets while remaining profitable. Whatever your personal feelings may be concerning climate change, sustainability goals have become inevitable across all industries. Particular pressures and responsibilities are being placed on the shoulders of the mining industry. And there's a limited time frame in which to make significant progress.

To understand the reasons behind these expectations, their impact on mining, and the role the industry has to play in achieving a sustainable future, you need to take a holistic view. From there, you can create a long-term plan and break it down into specific barriers and manageable actions.

53% anticipate significant or complete transformation of their mining operations over the next five years, reflecting a strong commitment to advancing technology, sustainability, and workforce management by 2030.



Reflecting on your mining operations, how would you describe the level of transformation expected in the next five years in terms of technology and sustainability?



30%

report being behind schedule with their decarbonization goals

...And recognize the need for urgent change.

Governments, communities, and individuals are all taking the issue of climate change seriously, albeit in different ways. In spite of this, the industry's confidence in its ability to meet targets and satisfy expectations by 2030 remains low, signifying a need for significant change, at speed.

There is a global commitment to total decarbonization by 2050, and other regional targets to consider. As such, mining companies need to become beacons of collaboration, cooperation, and compromise to succeed.

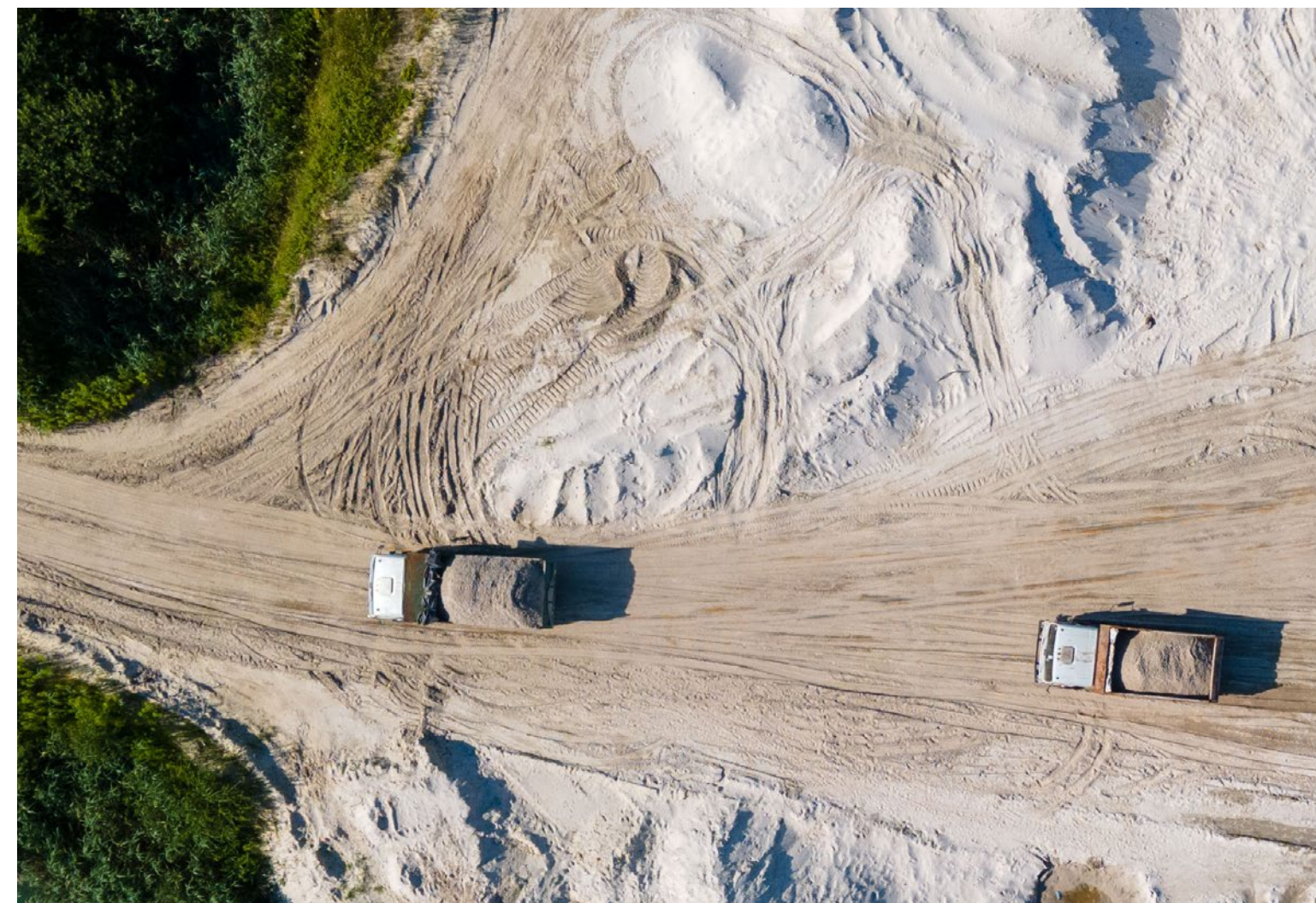
By being transparent about their approach to sustainability, and sharing insights and learnings, mining companies can elevate the entire industry and accelerate progress towards sustainability targets across the board.

Governments are taking a range of approaches to encourage industries to meet sustainability targets. They range from financial rewards and support on offer, to the threat of hefty fines and withdrawal of licenses for those who fail to meet expectations.

On a local level, some communities embrace mining for its contribution to employment and the local economy, but many are opposed to the industry for reasons ranging from social disruption to environmental impact. Mining companies need

to be seen working hard to mitigate any social and environmental upset if they want to be accepted.

Non-governmental organizations (NGOs) are also holding mining companies to account if they can prove targets are not being met, or promises are being broken. Usually, they'll use legal channels to create disruption that costs their targets time and money, while causing reputational damage.



Confidence levels within the mining industry

15% are very confident they will meet their 2030 net-zero targets

15% disclosing a lack of confidence in achieving their goals

while

48% are very confident they will meet their 2050 targets

Key findings from the research

Primary motivations for planned transformations:

48%

Safety

42%

Regulatory compliance & investor ESG demands

41%

Premium pricing opportunities, customer demand, mitigating rising costs & future carbon pricing

35%

License to operate, talent attraction, corporate net zero targets & to get ahead of change

32%

Declining ore quality

31%

Community demand



Biggest barriers to decarbonization:

57%

Capital investment

53%

Inadequate infrastructure

50%

Commodity price volatility



Breaking the cycles that prevent progress

From the research, it's clear that two major factors need to be addressed for mining to achieve its full potential in a net zero world.

The role of investors in responsible mining practices

Whether for social conscience or public perception, investors are keen to put their money into mining companies with a strong reputation for sustainable processes, meeting targets, and mitigating their environmental impact on local communities.

However, their risk-averse nature means they're wary of investing in new infrastructure and technologies with no proven track record of performance – or returning a profit. The good news is that some have been brave enough to lead the way, putting their money into progress.

With support from investors, some mining companies are leading the way, but will others follow suit at the necessary pace?

“Investors clearly have an important role to play but the drive for change doesn't start with their demands. We need to own and define our own agenda rather than being blown around by shifting expectations.”

The role of mining in a sustainable future

For true decarbonization, there is a host of metals and minerals that need to be mined. This [video](#) shows how specific minerals and rare earth elements are essential to tech we use every day, and for the infrastructure we need to capture renewable energy.

However, the mining industry must do more than just supply the essential materials for sustainable technologies. It must take advantage of the technology, infrastructures, and renewable energy, too. Rapid integration is paramount.

Every car on every road could be electric, but that's of no consequence if the processes required to manufacture them remain detrimental to the environment and continue to contribute to global climate change.

There will be no green future without mining in the present.



73%

of respondents are excited about the opportunities presented by the increasing recognition of mining's role in supplying resources for green technologies

Key points for immediate consideration

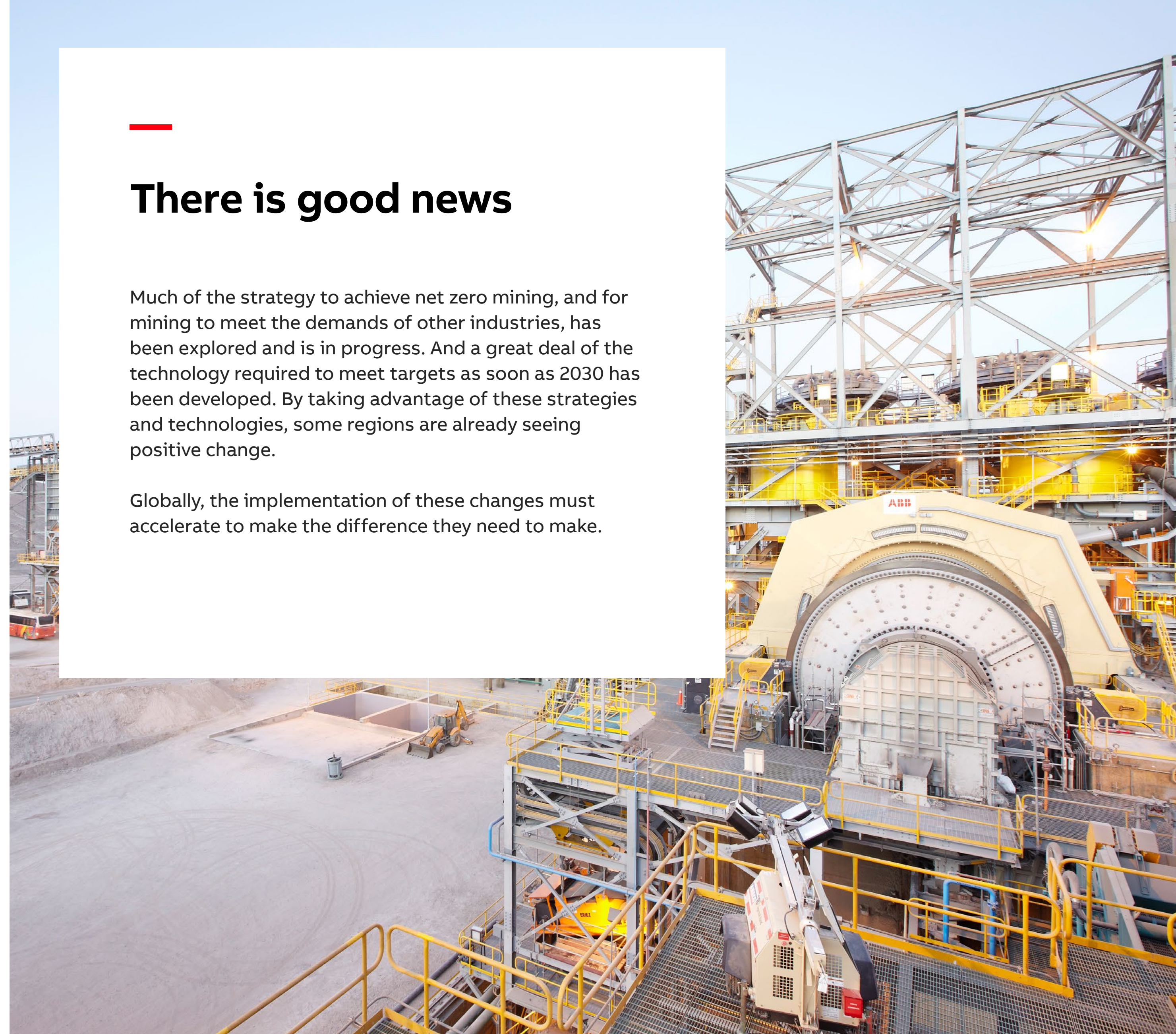
1. More sustainable, and more ethical, mining is expected.
2. Focusing on mining the raw materials needed to decarbonize other industries, such as lithium and cobalt, should already be a business requirement.
3. Investment is essential. This can be approached on two fronts:
 - Making a strong business case to existing investors that net zero mining is achievable in a safe, profitable way, at the same time as investing and testing new technologies.
 - Seeking investment from new sources whose sustainability goals align with yours.
4. Sustainability targets should align with the triple bottom line approach of people, planet, and profit.

There is a shared responsibility on mining companies to change perceptions of the industry. CEOs are putting community education high on their agenda. Raising awareness of the benefits of mining, and the role it plays in a sustainable future, will give governments the social license they need to open new mines.

There is good news

Much of the strategy to achieve net zero mining, and for mining to meet the demands of other industries, has been explored and is in progress. And a great deal of the technology required to meet targets as soon as 2030 has been developed. By taking advantage of these strategies and technologies, some regions are already seeing positive change.

Globally, the implementation of these changes must accelerate to make the difference they need to make.



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Making sustainability part of your plan for real progress

“We need to deliver on the ESG targets in a way that maintains profitability and is economically viable. The relationship between principles and costs is a very tough one to square.”

— Jonas Ranggård, Mine Electrification Program, Boliden



The uphill battles you can't afford to lose

As necessary as mining is, it has a questionable reputation among swathes of the global population who have no direct involvement with the industry. Advancements in technology, environmentally friendly practices, and productivity are widely shared internally. But, it is high emissions, environmental disasters, and tragic accidents that make headlines.

As well as making a difference to the future of the planet, the industry can change the public's opinion by addressing, and overcoming, key sustainability obstacles. As agriculture has improved public perception by demonstrating a cleaner, greener route 'from farm to fork', sharing evidence of how the journey 'from mine to market' has changed for the better can help to do the same for the mining industry. Coupled with a broader education on where resources come from, sustainable extraction practices, and how raw materials are essential for technology, people may be inspired to pay more for sustainably manufactured devices and reduce their own waste.

On top of that, taking action will make mining companies more attractive to investors. The link between profitability and sustainability seems to be growing more apparent.



52%

are reported to have little or no trust in mining companies to act in the best interest of society*

Learning from, and educating, peers on ways to meet local and global targets is essential at this juncture. Letting competition be driven by products and productivity, company culture, and visible efforts to lead the way, rather than competitors' failure to comply will elevate mining. The idiom 'one bad apple spoils the whole barrel' is particularly pertinent here. From a sustainability perspective, industry-wide collaboration will be mutually beneficial.

"There's a significant gap in the general awareness and perception of the value of mining to society—even within the industry itself. Many don't fully realize how essential mining is to nearly every aspect of our daily lives."

— **Michael Lewis, Sr. Director of Decarbonization at Komatsu**

*'Rebuilding Trust in Mining' GlobeScan & ICMM Report 2023

The ESG responsibilities of mining



Environmental



Social



Governance

The ESG responsibilities of mining – Environmental



Barriers:

Broadly speaking, many current mining practices rely heavily on fossil fuels, deplete natural resources, release toxic gases, and create potentially harmful waste.

More regulations, and greater scrutiny, require pre-emptive strategies and action.

Failure to meet regional expectations, net zero goals, and Paris Agreement targets will result in fines and sanctions.



Actions:

More in-depth surveying and planning.

Constant measurement and adjustment according to results against regulations.

Collaboration with third-party partners, experienced in implementing change.

Maintaining a clean end-to-end process from vehicles and machinery powered by renewable fuel sources to responsible waste management.

46%

of experts see climate change adaptation as a key priority

46%

see a need for waste management and a climate change adaptation to receive more focus

The ESG responsibilities of mining – Social



Barriers:

Reputational damage affects the whole industry and doesn't just need to be limited – it needs to be reversed.

Increasingly a positive human rights record and the social conscience of the workforce genuinely needs to be taken into account.

Mines don't just need governmental permission to operate, but 'social licence' too. If you're constantly facing protests and/or bad press, you can't function in a productive – or profitable – way.

While there are some regions where a living wage will be enough to entice a workforce, attracting talent to operate your mines often relies on a strong reputation for a positive approach to health, safety, and wellbeing.

Being perceived as an old-fashioned industry limits its appeal to a new wave of tech-driven talent.



Actions:

Reviewing and updating health and safety protocols, harnessing new and available technology, and equipment.

Ongoing conversations with, and representation within, nearby communities. An open-minded attitude to feedback with the flexibility to make reasonable adjustments.

Company-wide training on conflict resolution to avoid 'us and them' struggles between relocated employees, local workforce, and the wider community.

Introduce change management to smooth the transition to a greener way of working. Communicating your company's sustainability strategy, achievements, and intentions to existing and potential workforce.

Developing, testing, and adopting new technologies more suited to the next generation of workers' skills.

Leveraging technology to remove people from risk areas, operate remotely, and share experienced operators' knowledge, prioritizing safety and wellbeing.

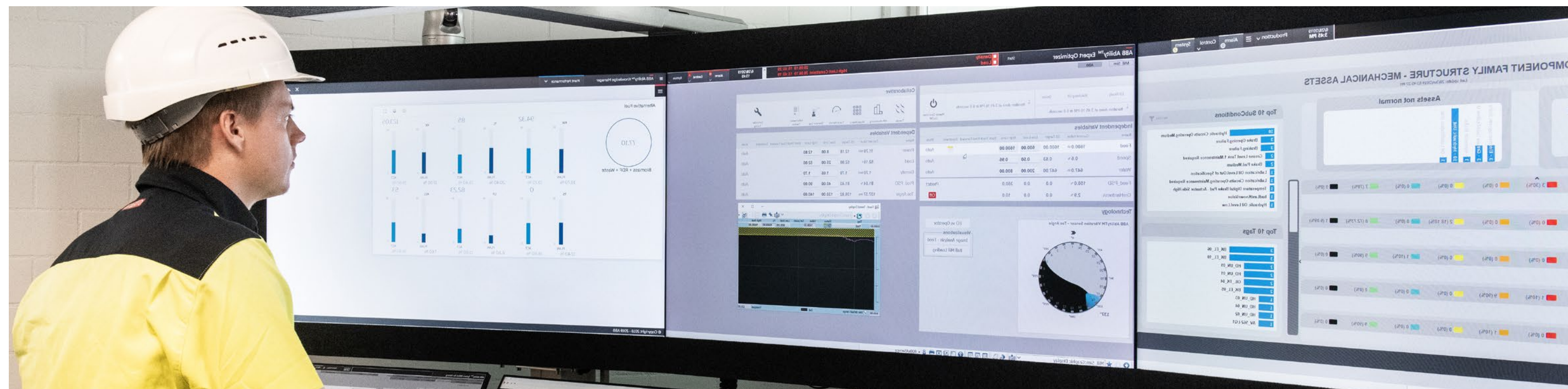
Meeting your goals while running a profitable mine relies on putting people first:

50%

recognize the importance of health, safety, wellbeing, and quality employment.

These are the highest-ranking ESG drivers across the industry.

The ESG responsibilities of mining – Governance



Barriers:

Additional pressures from consumer and investor requirements.

Commitment to a circular economy, or certainly more widespread green and ethical concerns should be driving long-term strategy.

Eradicating fraud and corruption, in all its forms, from the industry as business activity is scrutinized on a global, rather than regional, level.



Actions:

Addressing supply chain transparency. So, it's not just the mine itself that is acting in the interests of the environment and preventing climate change, but partners and suppliers too.

Preventative legal analysis of company operations, rather than reaction to litigation or the bare minimum towards mitigation.

Embracing, and encouraging, innovation as a low-cost approach, rather than purely a means to decarbonization will help you achieve sustainability and profitability.

“Cost is one of the barriers to change, but so is the big challenge of new ways of thinking. Mining is a conservative industry, by reason. A production stop is very costly”

– Anders Lindkvist, Product Manager for large mine trucks, Epiroc



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**Putting people, technology and
process at the heart of change**



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“Deploying electrification solutions brings a whole new set of skills requirements, regulations, and safety risks”

— Peter Wan, Mobile Fleet Decarbonization Manager,
Teck Resources Ltd.

Make change management a priority

In terms of running a successful business, assessing the way you manage your people, technology, and processes will offer a much clearer approach to change management.

We believe these three key pillars will enable this transformation.

People

70%

say their business is committed to reskilling and training existing employees to drive decarbonization efforts

Technology

77%

believe an integrated approach to electrification, automation, and digitalization is essential for sustainable mining transformation

Process

45%

said they are taking an incremental, step-by-step approach to decarbonization

Put people at the heart of change

Our research showed that it's people who are driving sustainability change. In fact, 3 of the 4 top drivers cited were people-focused. People can sometimes be challenging, but they are also:

- The backbone of every mining company and, as such, central to progress.
- Investors, customers, and community spokespersons.
- Evolving from being 'enablers' or 'labor' to true value drivers with broader skillsets whose talents are fully realized.

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“It's important to treat talent as a strategic pillar, rather than a resource, alongside safety, production, and cost.”

— McKinsey & Company, 2023



In order to enhance your existing workforce and attract new waves of talent, you must consider these key factors:

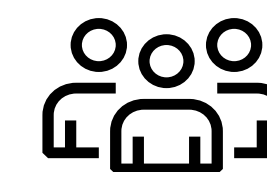


Safety

48%

of respondents see safety as the primary driver for transformation

Without worker safety, there is no license to operate. Apart from the priceless value of saving lives, innovation isn't just a crucial tool to enhance efficiency and safety, it is also seen as a value driver. This makes it almost as important to investors as it is to the miners themselves.



Social conscience

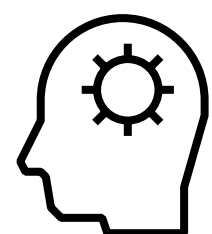
Over 40%

of Gen Z and Millennials would change jobs over climate concerns*

That number is even higher among the Gen Z respondents. Climate change is a very real concern for existing employees and the next wave of workers. Investment in green technology and methods now will help prevent the future talent pool from being a mere puddle.

*'Gen Z & Millennial Survey' Deloitte 2024

Put people at the heart of change



Skills

71% reported in a recent report from McKinsey & Company in 2023 that the talent shortage is preventing them from delivering against production targets and strategic objectives*.

44% of those we surveyed say limited expertise and skills are a significant barrier to decarbonize.

As mining becomes increasingly technology-driven, there is no need for the existing workforce to be left behind or feel obsolete.

70% of respondents indicate their businesses are committed to reskilling and training existing employees to drive decarbonization efforts.

As Elisabeth Clausen, Head of the Institute for Advanced Mining Technologies, RWTH Aachen University says, “We are teaching our engineers to be integrators across academic disciplines and industry needs”. Internal training can be bolstered by widely available courses, many of which are available as part-time studies, almost exclusively via remote learning.

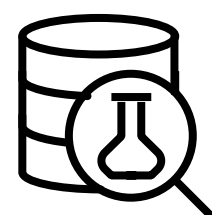
Meanwhile, collaboration between technology partners, education providers, and mining companies can make the industry an attractive prospect with everything in place to welcome the next generation.

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“There are significant implications for workforce development and skills. We established a program which addressed the automation and digital aspects of that equation... the preference is definitely to develop our own workforce rather than to attempt to recruit the skills in.”

— **Cory Stevens, President,
Freeport McMoRan Mining Services**

*“Has mining lost its luster? Why talent is moving elsewhere and how to bring them back.” McKinsey & Company 2023

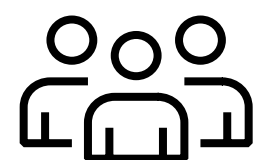
Put people at the heart of change



Technology-led solutions

68% of mining executives see technology as a driver for diversity. They also think it'll attract Gen Z talent.

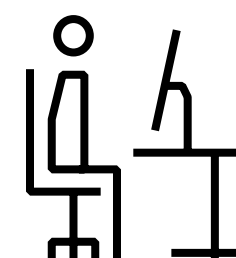
Technology is a clear nexus point in the future of mining. It's clear that, on top of the productivity benefits, the future workforce won't just be tech-savvy, but will have a tech-driven education. Using AI tools will be second nature, and expectations of automation will be at an all-time high.



Diversity, Equality & Inclusion (DEI)

46% of respondents see DEI as a powerful driver for ESG across the industry.

By promoting DEI, mining companies can appeal to a broader talent pool bringing unique perspectives, innovation, and approaches to problem solving. Inclusion and equity practices help employees feel valued and heard. Consequently, they're more attentive and engaged, and feel more comfortable raising concerns they believe could mitigate risk.

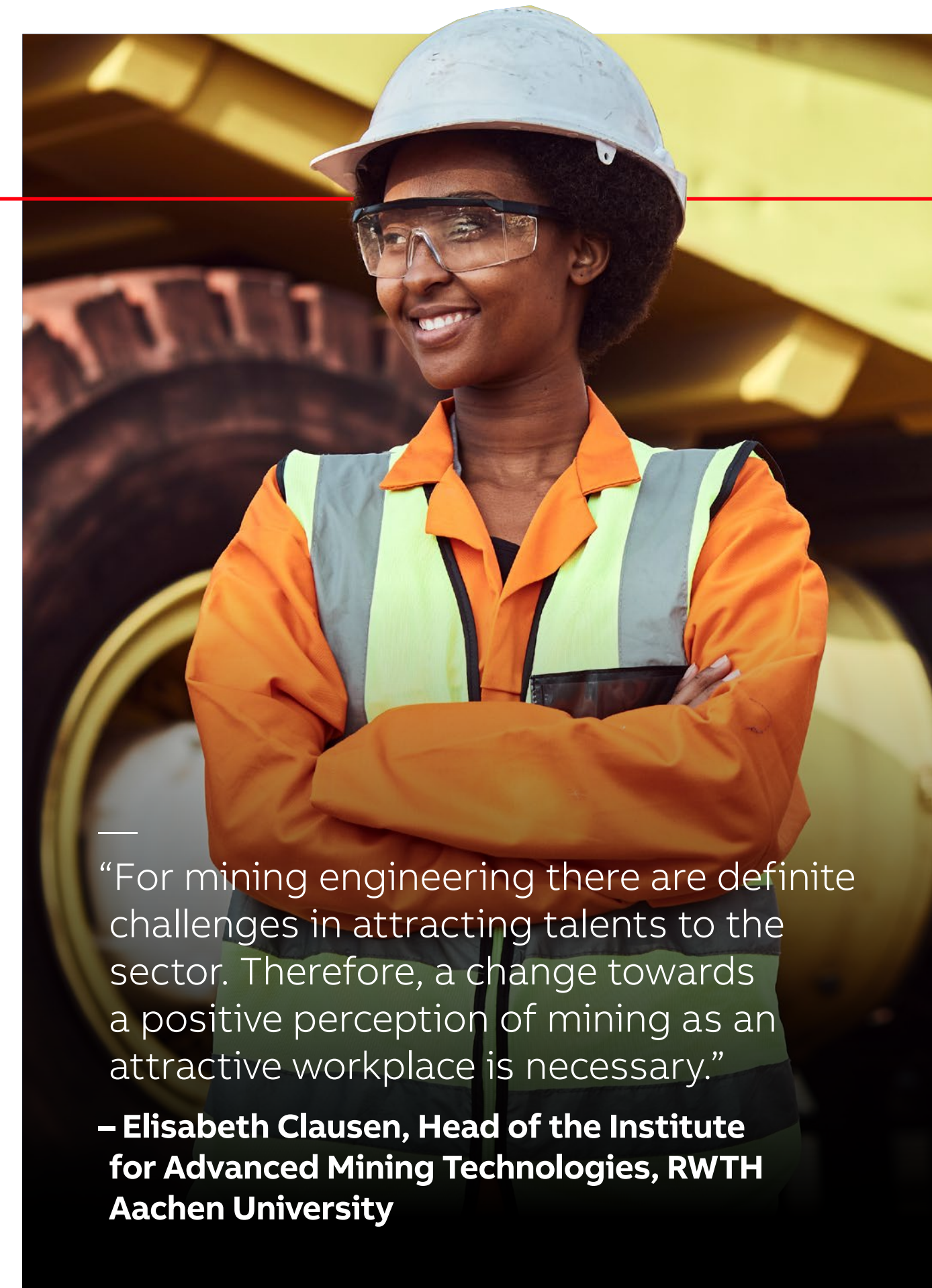


Quality employment

72% of executives say their organizations have started adopting permanent remote-working models.*

Fair pay, job security, flexible working practices, and career prospects. These are cross-generational imperatives. If the industry wants to attract, and retain, new or lapsed talent, it has to be prepared to offer incentives that support a life free of financial worry, a healthy work-life balance, and opportunities to progress (for those who want to).

*'Has mining lost its luster? Why talent is moving elsewhere and how to bring them back.' McKinsey & Company



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“For mining engineering there are definite challenges in attracting talents to the sector. Therefore, a change towards a positive perception of mining as an attractive workplace is necessary.”

– Elisabeth Clausen, Head of the Institute for Advanced Mining Technologies, RWTH Aachen University

Embrace technology to shape a greener future

Navigating the complexities of mining transformation is no mean feat. But following in the footsteps of industry leaders who have invested in, and carried out rigorous testing of, new technological solutions is paramount to progress.

44%

of respondents consider unproven technologies a barrier

BUT

70%

agree that significant decarbonization can be achieved using existing technologies

There are several challenges to change including capital investment, inadequate infrastructure, and commodity price volatility. Holistically, the concept of wholesale change can be overwhelming and, as a result, no action is taken at all.

You do not have to change everything, all at once

Yes, you need to start implementing change as a matter of urgency, but you can do this incrementally. Thus, mitigating risk while allowing the flexibility to embrace emerging technologies.

One iron ore mine in Brazil, for example, adopted new technology to centralize their operations and swiftly reaped the benefits.





“I’ve been quite impressed and even positively surprised by [OEM] agreement on common standards for vehicle charging solutions”

– Jonas Ranggard, Mine Electrification Program Manager, Boliden

Electrification

The industry is moving towards decarbonization through the biggest emitter in mining: the vehicles. By collaborating with partners, whose expertise includes the electrification of mining vehicles, many mining companies are finding the transition to be much easier than expected with multiple returns.

42%

of respondents plan to invest in the decarbonization of their haulage fleet by 2026

68%

plan to electrify at least 25% of their fleets by 2030

76%

consider vehicle electrification as having the greatest potential to increase efficiency and sustainability of mining operations

As well as helping to reduce CO₂e emissions, they are seeing higher speed on the grade, and reduced maintenance cost. With investment and risk aversion being barriers, electrification is an ideal entry point to make real progress with experts in the field offering collaborative solutions, and case studies full of success stories to support such change. **50% of respondents believe that OEMs show a strong commitment to open standards and interoperability of assets.**



Automation

Making the switch to electric-powered vehicles is one piece of the puzzle. Taking a broader view, advances in automation are also playing a major part in the drive towards sustainability. Automation inherently helps improve safety by taking direct human interaction out of the equation. In other words, putting machines rather than people in high risk environments. It can also pay for itself in the long term by saving energy and, in turn, costs. One area where automation can make a significant difference to mining is ventilation.

50%

are prioritising innovation in ventilation over the next 5 years

74%

see ventilation solution as having the greatest potential to increase the efficiency and sustainability of their mining operations

Digitalization

As recently as 2021, the BCG Digital Acceleration Index found that **the metals and mining industry was 30% to 40% less digitally mature than comparable industries**, such as automotives or chemicals*. As well as being a fundamental component of automation, the benefits of digitalization in mining reach further than you might imagine. Digital sensors and cutting-edge monitoring solutions can help analyze and optimize energy use, while a connected workforce can warn other teams of potential dangers and request help with ease when challenges arise.

Remotely controlled robotics can remove workers from dangerous working environments. Meanwhile, away from the mine itself, advanced digital analytics and AI tools can underpin strategic decisions and highlight which processes are making real progress, and which need review.

* <https://www.bcg.com/publications/2021/digital-acceleration-index>

Integrate processes to reduce risk and accelerate progress

As Head of the Institute for Advanced Mining Technologies at RWTH Aachen University's Elisabeth Clausen says, "The next evolution of mining has to start with an integrated system perspective. Taking a holistic approach requires a clear roadmap and it is important to identify where change is needed and where the biggest impacts can be achieved."

There is a circle that needs to be squared if the industry is to make real progress. As much as experts and industry leaders recognize the many reasons change is needed, they remain apprehensive about taking action. Their reasons vary from health and safety concerns to the more economic drivers of production and profit.



73%

of respondents believe mining transformation requires a new approach to technology and risk management

YET

46%

say the risk of disruption to operations and production is a key barrier to transformation

Again, this is where a step-by-step approach will make a world of difference in achieving a long-term vision. Lives don't need to be put at risk by the use of under-developed, or untested, machinery and technology. And profits don't need to nosedive because production has ground to a halt while your entire operation undergoes an upgrade.

45%

said they are approaching mine decarbonization with an incremental approach, focusing on individual assets and processes to gradually meet their sustainability goals

Collaborate for a smooth transition to a sustainable tomorrow

Across the industry, there's a clear consensus that nobody can achieve total, or even substantial, transformation alone. Partnerships and co-creation of solutions with OEMs, other mining companies, governments, and regulatory bodies will be the foundation on which a sustainable mining industry is built.

With this in mind, there is an increasing need for interoperability in mining. Forthcoming technological solutions need to be open-standard and vendor-agnostic for widespread adoption. Once that becomes the norm, as unique as the mines that you oversee may be, equipment and technology will last longer and be transferable from one site to another as required.

71%

of respondents deem collaborations and partnerships to be crucial across the mining ecosystem to achieve decarbonization and transformation goals

"I believe there is much wider acceptance of collaboration across the industry today. It's clear that all publicly listed operators face the same pressures and similar targets which creates a platform for the industry to collaborate."

— **Chris Reinbold, President, Products Business Line, FLSmidth**

You don't have to do it all yourself

Great minds, great mines. Intelligent collaboration will make a world of difference. It was industrialist Andrew Carnegie who is believed to have suggested for his epitaph "Here lies a man who surrounded himself with men far cleverer than himself."

That's not to say that he took credit for the work of others or was in any way incapable. He achieved many great things, not least building the Carnegie Steel Company into the largest steel manufacturing company in the world for a time.

He knew where his strengths lay and when to rely on the expertise of others. Seeking expert help to evolve the way your company operates isn't just a way of making the transition easier, it's what one of the greatest industrialists of all time would have done.

79%

are satisfied with their current collaborations, underscoring their effectiveness





4

Collaborating to make
sure everyone wins

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“Partnerships will be key
to success in innovation,
recognizing the need for
continuous learning and
improvement, demanding
complimentary competences
and skills as well as a
new culture.”

— Elisabeth Clausen, Head of the Institute for
Advanced Mining Technologies, RWTH Aachen University



Act fast to make real progress and reap the rewards

The sooner you start working with a trusted key technological supplier (KTS), the sooner you'll be able to set a long-term vision and break it down into action points. This allows you to:

- Plan ahead to minimize disruption
- Prioritize tasks based on impact and availability
- Spread the costs to keep cash flowing

69%

of respondents believe it is crucial for mining companies to appoint an expert integrator or KTS to coordinate multiple stakeholders in planning and implementing new mining technologies and processes



Partner to centralize your process

You have a number of options to choose from when it comes to KTS partners. It's important to find those specialized in very specific mining practices, with expertise grounded in the real world. For a truly – and transparently – connected approach, ABB has nurtured an ecosystem of innovators, OEMs and service providers to enable you to make real progress while making sure none of your time or money goes to waste.

By curating collaborations that meet your mine's specific and unique needs, ABB can help you de-risk your investment using proven processes and technologies, while ensuring there is minimal downtime as you adapt.

How Boliden collaborates with ABB and Epiroc to make groundbreaking advances in mine electrification

With over 130 years of experience in mine electrification, expert knowledge from first-hand dealings with mines and mineral processing plants, ABB is trusted by mining companies, manufacturers, and providers alike to curate mutually beneficial collaborations.

Together, Boliden, ABB and Epiroc deployed the first fully battery-electric trolley truck system on an 800-meter-long underground mine test track in Sweden.

Tackling the challenge of effective heavy transportation with electric-driven battery vehicles, and the integration of automation, the three companies jointly developed the electric trolley truck system. Together, they defined the standards and vehicle interface.

The system features a trolley pantograph connected to an overhead contact power line. This gives the trolley a range limited only by the power line, without needing a battery charge. Using its eMine™ solution, ABB created the infrastructure, including the electric truck trolley system design and the rectifier substation for the test track. Meanwhile, Epiroc built on their proven battery-electric Minetruck MT42 SG Trolley, highly suitable for long-haul ramps, and now for heavy transportation.



The benefits in brief

- Significantly less carbon emissions compared to a mine using conventional technology
- Enhanced safety and work environment with no exhaust, less noise and vibration
- Improved productivity through 50% increased speed up-ramp
- Reduced total cost per ton, diesel vs electricity + battery usage
- Reduced ventilation needs and costs

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“Over the past three years, we have worked in close collaboration with the ABB and Epiroc teams to bring the electric mine of the future one step closer.”

– Peter Bergman, General Manager Boliden Area, Boliden

Collaborate with ABB today for responsible, sustainable success tomorrow

Our solutions for real progress are designed to meet the operational demands of the modern mine, and they're backed by ABB's decades of real-world experience in electrifying, automating, and digitally connecting mine equipment and operations. We also recognize that, across the industry, the license to operate extends beyond decarbonization. We are the central integrator that can help you meet your sustainability goals and net zero targets, while still realizing your mine's commercial potential.

Don't pay the price for putting off what needs to be done.

"Early movers will be ahead of the market having learnt many lessons about low carbon operations."

– **Max Luedtke, ABB Business Line Manager Mining**

2030 is right around the corner and, in industry terms, the 2050 targets of the Paris Agreement don't feel too far away either. Add to those the wider benefits of focusing on sustainability, from environment to investment, and people to profit — there is momentum for change in mining.

Use it. Build on it. Let ABB help you capitalize on it.

[Find out more about Real Progress](#)





Schedule a consultation

To start a journey of discovery and transformation with ABB, and stand at the forefront of industry change, get in touch.