

# INNOVATION FORECAST 2023/24

## MINING TECHNOLOGY TRENDS

[axora.com](https://axora.com)

**AXORA**

The technology marketplace for heavy industry

# CONTENTS

---

3 Introduction >

---

4 **Section 1** >  
Are organisations all talk and  
no innovation action?

---

5 **Section 2** >  
Are organisations their own  
worst enemy?

---

7 **Section 3** >  
What's most critical to survival?

---

8 **Section 4** >  
Environmental planning is  
taking a front seat

---

9 **Section 5** >  
Emissions and water challenges:  
How can mine sites and HQ align?

---

Dear reader

We're sharing a breakdown of some of the findings from our **2023/24 Innovation Forecast**, looking at technology and innovation across the mining sector. We're proud of the progress made in this research over the past three years, and it's great to see from our most recent results that organisations are advancing their innovation strategies.

However, innovation is no longer the top focus, as many have made a new shift, with **sustainability being high on the priority list**.

Organisations still face challenges when deploying technology. These include general barriers, an **internal disconnect, money not being spent on innovation**, and so on.

They're shifting their focus from external factors hindering organisations' progress vs those factors that are in their control, and this is where the general barriers come into play.

Disconnect between the mine site and HQ has increased, which **hinders innovative progress**.

We know that finding time in your day to read a full report just isn't realistic. So instead, we've kicked off with our key takeaways, followed by a snapshot of what we found across the mining industry, around the globe.

We hope you find it useful. Axora is here to help you take action on innovation – see the final page for more information on how we can help.

**Nick Mayhew**  
*CEO, Axora*



**NICK MAYHEW**  
CEO, Axora

## YOUR TAKEAWAYS

We've seen a shift in innovation towards sustainability and an emphasis on long-term goals.

For organisations to reach their innovation goals, the following needs to now be addressed:

- › Internal barriers should be broken down – let's not be stuck in the age-old mining mindset and instead build upon the sector's newfound love for innovation to tackle this from the inside out.
- › Work out how to bridge the disconnect between the two largest facets of each company (HQ vs mine site) and align their goals.
- › Focus on short-term wins while working on long-term goals. Taking direct action now on both could impact short-term and long-term priorities, while projects that provide benefits in the short term can contribute to the long-term goals. Both are so strongly interlinked.

→ SECTION 1

# ARE ORGANISATIONS ALL TALK AND NO INNOVATION ACTION?

## More organisations have advanced innovation strategies

It's evident that organisations have innovated over the last couple of years. Since we started our Innovation Forecast survey in 2021, there has been a clear increase in digital maturity among mining companies. Organisations are steadily emerging from the intermediate stage of deploying transformation and innovation strategies and moving towards a more advanced stage.

When it comes to their current progress in deploying a digital

transformation and innovation strategy, the percentage of respondents who said their current progress was 'advanced' was:

- > 67% (2023)
- > 53% (2022)
- > 47% (2021)

The percentage of respondents who said their current progress was 'intermediate' was:

- > 29% (2023)
- > 36% (2022)
- > 47% (2021)

**This change is translating to investment in innovation and more technology deployments.**

Back in 2021, the trends showed that deployments were at infancy stage.

Last year saw a steady increase, and this year's data reflected significant traction. In other words: advances at the strategic level are translating to advances in deployments.

84%

**of respondents saw an increase in the proportion of global annual revenue dedicated to digital/technology transformation and innovation in the past year**

## Top three technologies currently deployed

AI	88%
Cloud-based platforms	84%
Industrial Internet of Things (IIoT)	83.8%

## Biggest year-on-year jump in deployment

AI	↑ 23%
Robotics	↑ 14%
Digital twins	↑ 14%

→ SECTION 2

# ARE ORGANISATIONS THEIR OWN WORST ENEMY?

## Although companies are advancing their innovation strategies, they still face barriers to technology adoption

We explored how the mining industry lacks control in many key areas – like commodity, energy and labour prices – and how technology can help win greater control over elements they can directly influence.

This year’s data opens a new chapter in that story – because many barriers to innovation are

within organisations’ control. Which begs the question: are companies hindering their own progress?

### Top barriers to technology adoption are challenges that require internal action

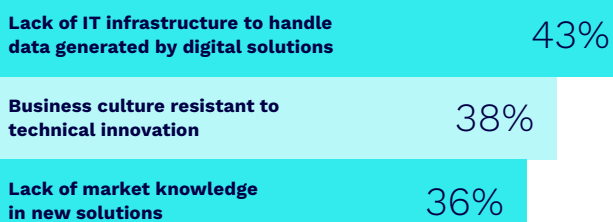
Whether the barriers relate to vision, investment or skills, there needs to be an internal drive to overcome them. Most mining companies would agree that progress in this area is hindered by a ‘this is how we’ve always done it’ mentality, which means there’s a culture of using technology to firefight immediate problems but not of focusing on the medium-term potential of proactive investment.

Overcoming these challenges involves upskilling and reskilling employees, so it’s no surprise that lack of in-house skills is another barrier that has been a recurring global theme.

*‘In my view, the objectives [between minesite and HQ] are different, and rightly so. It is also dependent on the organisation’s operating model.... There needs to be clear communication and structure in place to delineate the lines of who focuses on what type of innovation. I don’t think there is a “one size fits all” approach, but if the innovation goals are clearly defined upfront, the roles and responsibilities of the relevant key players can be identified.’*

**Mohammad Kajee**  
TechServe Consulting

## Top three barriers to technology adoption



## The growing disconnect between mine sites and HQ is a key factor

Since last year's report, the perceived disconnect between mine sites and corporate headquarters has increased significantly – especially when it comes to innovation goals and innovation progress.

Interestingly, mine site employees feel this disconnect more strongly than their corporate colleagues.

79%

of respondents in corporate roles say all (or the majority) of budget allocated to innovation is spent elsewhere

## A disconnect between corporate and mine site innovation goals

Although 84% of respondents saw an increase in the proportion of global annual revenue dedicated to digital/technology transformation and innovation in the past year, only 55% said the majority of allocated budgets were being spent in those areas.

## What our respondents reported

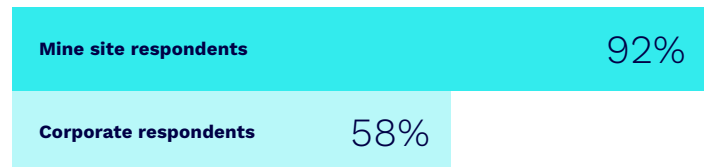
A disconnect between corporate innovation goals and mine site goals



Tensions between corporate and mine site teams hinder innovation progress



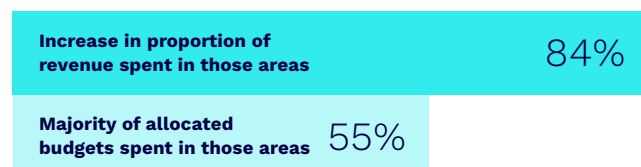
Misalignment in terms of innovation goals



Tensions are impacting innovation progress



Proportion of global annual revenue dedicated to digital/technology transformation and innovation in the past year



# WHAT'S MOST CRITICAL TO SURVIVAL?

## Perceptions of technology are shifting

100% of our respondents still believe that technology is critical to survival. However, this year, fewer said it was 'absolutely critical', with more agreeing it was 'somewhat critical', given other relevant factors.

This potentially reflects a post-pandemic change of thinking. Immediate operational pressures to digitalise have passed, meaning other areas are now rising up the agenda. And it may also tie in with why innovation budgets aren't being fully spent.

## Sustainability is now a bigger focus

Respondents cited business sustainability as their organisation's top priority for the next one to three years and three to five years.

This reflects the growing emphasis on ESG factors from external stakeholders, governments, shareholders and wider society – which has implications for mining companies' emissions reporting (scope one, two and three), tax, licences to operate and environmental permitting.

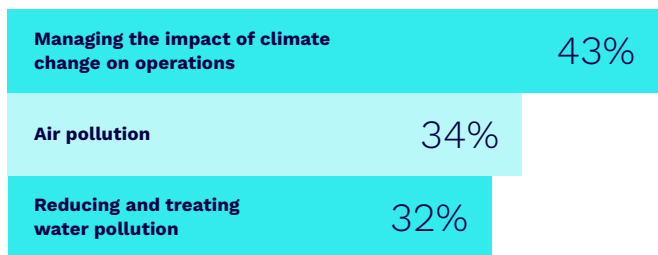
### CONVENTIONAL BIODIVERSITY SURVEYS CAN WASTE VALUABLE RESOURCES

Although biodiversity is essential to licencing, it's complex to survey – which is one reason 21% of survey respondents cited biodiversity management as a current environmental priority.

*'Water presents many tangible and growing risks to companies. Now is the time to implement innovative solutions to mitigate your everyday and long-term water-related challenges.'*

**Joe Huddart**  
Freshwater Ecologist,  
Nature Metrics

## Top three environmental priorities



*'Investors are demanding the mining industry do its part to develop sustainability goals and stewardship programmes. Innovative technology is the key to environmental protection and decreased operational expenses while increasing recovery levels of critical minerals.'*

**Tracy Kessner**  
Vice President of Business Operations,  
Avivid Water Technology

→ SECTION 4

# ENVIRONMENTAL PLANNING IS TAKING A FRONT SEAT

## Mining companies are taking a long-term view to reach environmental goals

We asked respondents what actions their organisation was taking to reach its environmental goals – within the next 12 months and over the next three to five years. The results are generally consistent, showing that (true to form for the mining industry), companies are thinking in terms of slow, steady progress.

## But is that long-term view hindering short-term progress?

The survey showed that, as with digital solutions, organisations face challenges when it comes to implementing environmental solutions. And, again, the biggest barriers are internal.

47%

of mine site respondents said lack of vision into the potential of environmental solutions is a barrier, compared with

27%

of corporate respondents

## Top three barriers to implementing environmental solutions

Lack of available funding to invest in environmental solutions	52%
Lack of vision into the potential of environmental solutions	43%
Slow decision making by senior management	43%

# EMISSIONS AND WATER CHALLENGES: HOW CAN MINE SITES AND HQ ALIGN?

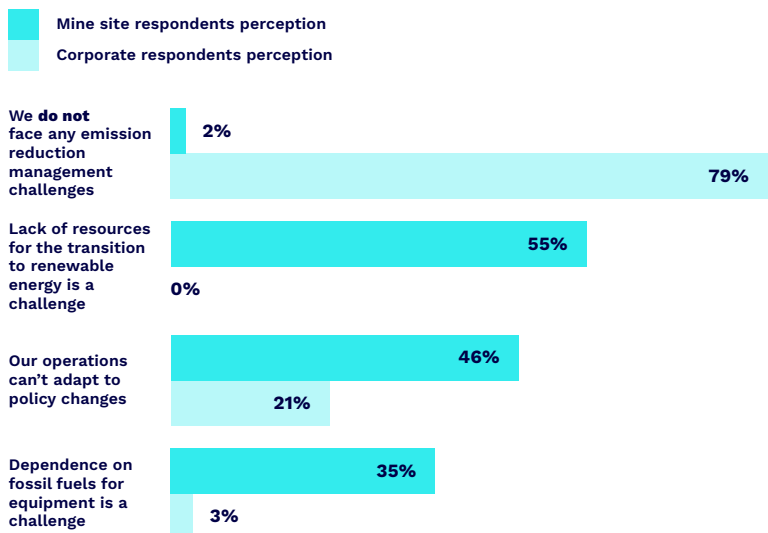
**Respondents cited managing the impact of climate change on operations and reducing/treating water pollution as two key environmental priorities. What's holding them back from making short-term progress?**

As with digital transformation, tensions between mine sites and HQ play a role. This may not be entirely surprising, given that the vast majority of emissions and water management requirements come at a site level. But there's a striking difference when it comes to how the two groups perceive the importance and challenges related to these issues.

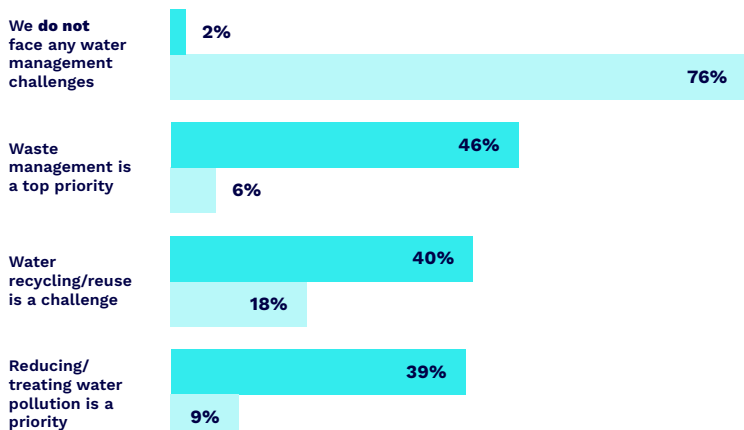
*'Reducing harmful emissions can be achieved immediately through the adoption of simple, robust, fit & forget technology.'*

**Max Lytle**  
Chief Commercial Officer,  
Fuel Active

## Emissions reduction



## Water management



## What next?

### Organisations are firefighting short-term operational problems

Despite the apparent long-term view for environmental planning, the majority of respondents (73%) said their organisation spends all (or the majority) of its time on firefighting short-term problems. The focus is on anything affecting immediate production targets – whether it's a health and safety issue or an equipment breakdown.

93%

of respondents agreed that their organisation could have more emphasis on short-term action-taking

### But is short-term action focused on overcoming barriers to innovation or ESG or both?

However, unless it's a mission-critical issue, there's a reluctance to take short-term action – as we've seen when it comes to addressing internal barriers to innovation and ESG that we mentioned earlier.

And yet again, this is reflected in a disconnect between mine sites and HQ. As a result, there was a notable difference in outlook between mine site and corporate respondents when it comes to addressing the internal barriers we've talked about.

### A clear difference in outlook: Mine sites are short-termist, HQ takes a longer view

Compared to corporate respondents, mine site respondents overwhelmingly said that time was focussed on short-term problems over long-term problems.



# Team Axora says...

Hello. We are the technology marketplace for heavy industry. We believe everyone can help decrease their environmental footprint in both the short and long term. Focus on taking action now with solutions that benefit your organisation in the immediate further, rather than embarking on large-scale and huge capital/resource-intensive projects. We have solutions sourced from all over the world that can help with sustainability, safety and efficiency. Examples include: fuel and emission reduction for any equipment or vehicle with a diesel engine, water monitoring and management, IIoT for conveyors, predictive maintenance, and much more.

Our proven process helps you discover, evaluate, procure and deploy these world class solutions quickly and effectively. Have we piqued your interest? **Get in touch** to find out how your organisation can take action right now. We'd love to hear from you.

## Who we surveyed

160 senior decision makers from metals and mining companies around the world:

## Company size

› 100–3,000+ employees

## Sectors

› Multi-commodity  
› Base metals  
› Copper  
› Gold

## Department

› Senior site management  
› Engineering and technical services  
› Operations  
› IT

*Survey conducted from  
March 2023 to April 2023  
by Vanson Bourne*



# AXORA

Groundbreaking solutions for  
groundbreaking businesses

[axora.com](https://axora.com)

