

The future of mining will be increasingly remote and risky

Deposits are quickly moving out of easy reach, requiring mining groups to either dig deeper or look further afield, far from available infrastructure, electricity and other valuable resources required to support an extractive project. With these changed circumstances in the industry comes a new risk portfolio that must be carefully managed



Resource scarcity will force miners to focus on more remote regions where the mining industry has not yet infiltrated. Photo: iStock.com/Edward Haylan

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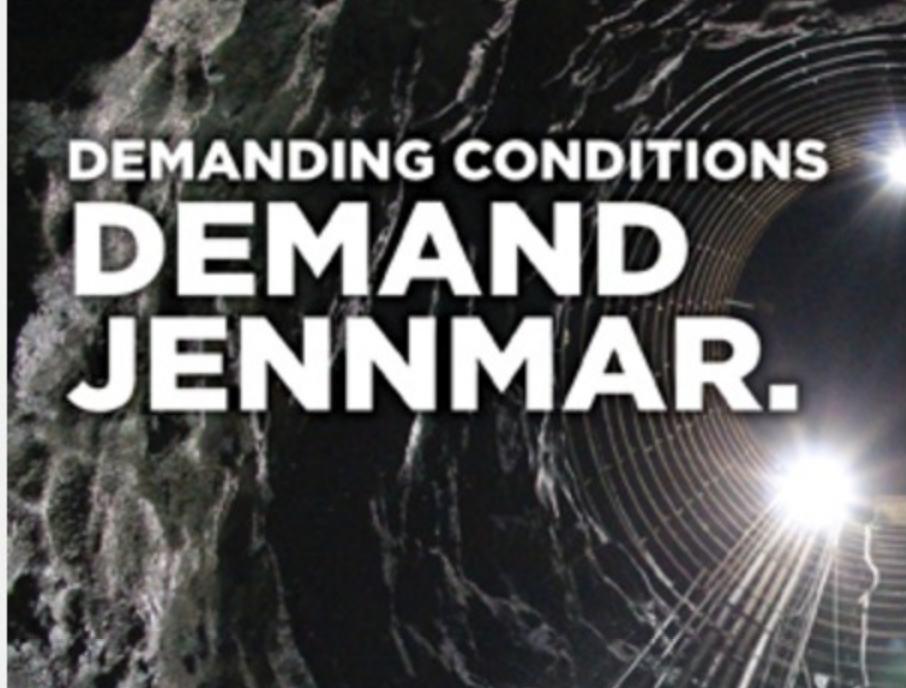
The first issue that often comes to mind when discussing remote operations is the lack of infrastructure and the expenditure required. These are going to be "inherently more complex" at remote mining sites than at less geographically removed sites, says Matthew Gooda, the global mining practice leader at Marsh, a specialist in insurance broking and risk management.

The risks are particularly heightened for those mining companies which, in addition to being in charge of operations, have also had to establish and operate their own power plant.

"Not only would there be an increased complexity of the logistics chain for normal consumables, and for moving the finished product out, there would be increased risks for miners which are operating their own power plant," Gooda says.

Mining companies also face the risk inherent in a limited number of ways into and out of the site.

"The dependency on specific infrastructure - whether it be a dedicated shiploading facility or a specific bridge where trucks come over - that is one of the key issues" facing miners in remote operations, Gooda says.



Miners also have to ensure that they are using top-quality equipment on site, he cautions.

"If there's a breakdown in a remote location, it will typically take longer to move repair materials in," he says. "A remote location can exacerbate the repair timeline if mining operations suffer a breakdown ... just the basic fact that being further away from port can mean that a small problem is a slightly larger problem."

Production

The question that has perplexed the industry for the last decade is how to improve efficiency. "What mining's doing at the minute, it's not really had the efficiency gains it's needed, and they're producing [the] same amount; it's just costing more," Inmarsat's director of mining innovation Joe Carr says.

While the global mining houses have taken steps to adopt new technologies and try to find ways to skirt the risk of stagnating output, junior and mid-tier companies haven't quite kept up. "Mining has to do more [to innovate], not just the majors," Carr says.

Cost is the inhibiting issue for any of the juniors, he notes. "We see mid-tiers and juniors incredibly interested in IoT, and they see it is a leveller, creating efficiency systems and allowing them to have a much lower cost point."

While major mining houses can often afford to throw a billion at the problem, Carr notes, juniors just do not have that type of money to spend.

Miners are increasingly aware of how improving worker safety can sidestep the risk of unplanned shutdowns and buoy production levels, particularly in remote locations, Carr says.

"In our recent research project, we found that 68% of mining companies said they wanted to use IT to improve worker safety," he says. "That's what's going to shut your mine down and stop you producing."

Social licence

Of all the risk factors facing remote mining operations, establishing and then maintaining a social licence to operate may be the trickiest.

Most remote locations are lacking in vital infrastructure and resources, such as schools and hospitals, and local residents may see the arrival of an international mining firm as responsible for these types of investments. Some companies pour money into communities in the hopes of diminishing opposition to the product, but this approach can create problems down the line.

"The point is to be really careful about what the company can realistically offer and ensure it's in line with the company's priorities in terms of supporting the community, while also meeting genuine local development priorities," advisory firm Critical Resource's senior associate Charles Pembroke says. "You do need to be very careful not to allow an expectation to form of providing everything to everyone."

Mining companies run into problems when they attempt to fill a hole left by government, Marsh's Gooda says.

When mining companies find themselves as the provider of wider services to the community, such as providing healthcare services and having a greater degree of responsibility for providing basic services, it opens companies up to greater risk exposure on several fronts, including the risk of committing medical malpractice.

"If you're the provider [of medical services], and these fall short of standard, you may have risk exposure associated with providing healthcare services," he says.

The key to securing a social licence without overcommitting is for mining companies to focus on improving the livelihoods of those who are closest to the operation, says Robin Bolton, the executive head for sustainability at IsoMetrix, a South African firm which helps businesses manage their business risks and governance

"There has definitely been an improvement," he says, adding that most big mining companies have come on board in regards to the importance of maintaining a social licence. "There are still companies that will take chances, but they do so at their own peril."

Digital advances

Among mining practitioners and analysts, there's a divergence as to how big a risk, if any, the increasing digitisation of mining processes presents for the industry.

Deloitte mining leader Tim Biggs in London points out that the digital risk in practice has been significantly reduced in the past.

"Uncertainty about the reliability [of technology] has been probably reduced a lot," he says. "Reliability of sensors that are on various equipment, the reliability of connections between the mine and remote operational centres, everything works very well."

As mines become more digitised and decrease the number of human staffers on location, companies have learned to adopt new practices to ensure greater safety, he says.

"Companies have updated predictive maintenance," he says. "They know they can predict when something is likely to need maintenance." By forecasting when equipment is going to need an overhaul after a certain number of hours or kilometres, they repair it in advance and ensure it doesn't break down, he notes.

Marsh's Gooda concurs. "I wouldn't see cyber security as an issue that is notably more severe for remote mining operations," he adds. "It's a risk for mining, but not as exacerbated by remoteness."

But some in the mining space are more cautious about the steady encroachment of digitisation. IsoMetrix's Bolton is one of them.

"With technology improving and mines trying to be more digital, with that come other risks," he says. "As more systems come into place, how well will those systems integrate and talk to each other?"

Bolton is also concerned that the lack of human oversight could be problematic for continuous mining operations.

"Especially in remote locations, there could be power challenges" that could disrupt technologies, he says. "You jut have to be careful that you don't rely totally on digital technology; you need a balance."

Worker expectations and challenges

One of the biggest changes in terms of risks on remote mining sites is how mining companies attract a new class of workers who have much more elevated expectations of what a workplace should be, Deloitte Australia national consulting lead on energy and resources Steven Walsh says.

"The standard that mining companies are being able to provide in terms of lifestyle and environment is increasing, and new generations want flexibility and want their working life to be a positive experience," he says.

There's also a greater need to revisit standard working hours on remote sites, he adds.

"There's not been a massive shift in remote operations in the hours that people work and the rosters that are done. The accepted wisdom is that it makes sense to go to site and work [long hours]," he says.

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There is an opportunity to challenge that, and to potentially deal with some of the complexities and being more flexible, by changing hours and rosters."

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These changes are most necessary for operations that have trouble attracting staff, he says.

Speaking from the perspective of mine workers, Ross Wert emphasises that safety remains the biggest risk.

Wert, president of Alberta-based Rosco Mining Solutions, says that "safety is always in the forefront of your mind, and the consequences are a little more acute when working in more remote locations".

Working at a remote location makes mine staff take safety a little bit more seriously and forces workers to think more critically about potential disruptive situations which could impact mining operations and create injury or worse, he says.

Generally, mine safety now holds to a very high standard, he says.

"There's probably a bit better technology as far as communications goes, and there's a better awareness of what can go wrong," he says.

However, that high standard doesn't apply to all sites, he points out.

"I was visiting some smaller mines and very remote mines in North America, and it's a bit concerning that there are smaller mining companies that just don't have the same safety requirements."

Remote mining also means that employers have to be scrupulous when choosing staff for their remote operations.

"The people you have, and the leadership you have, are so important, because there isn't a bunch of foremen looking over your shoulder," he says.

"You have to make sure you have the right people with the right skills who are out there," he says. "Sometimes you get the cowboys who want to go to the remote sites and not have anybody looking over their shoulder, and you can't afford that."

Future risks

In coming decades, mining will face different challenges as it works to meet the world's growing demand for natural resources.

One of these will be how to coexist with artisanal miners, Bolton says, particularly because resource scarcity will force miners to focus on more remote regions where the mining industry has not yet infiltrated.

"It's always tricky - how do these artisanal miners get a livelihood when the big miners move in?"

Further complicating this rapprochement will be that artisanal miners will be much more aware of their rights and will know that they can't be forcefully relocated without a fight, Bolton says.

For mining services provider Wert, mining's big challenge will be in weathering what he believes is imminent: more scientific proof that silicosis is widespread among mineworkers throughout the world.

"We don't know a lot about the health risks that we've caused," he says. "There's been a massive effort and expenses to dispel any sort of connection between cases of pulmonary illness and death, and linking it to silicosis and black lung."

Wert points out that the US government has recently halved their recommended silica exposure guideline.

"In the years coming, we're going to have the science and the transparency where a lot of these things are going to surface, and we're going to realise the health problems we've been causing and refusing to mitigate for many years," Wert says.

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