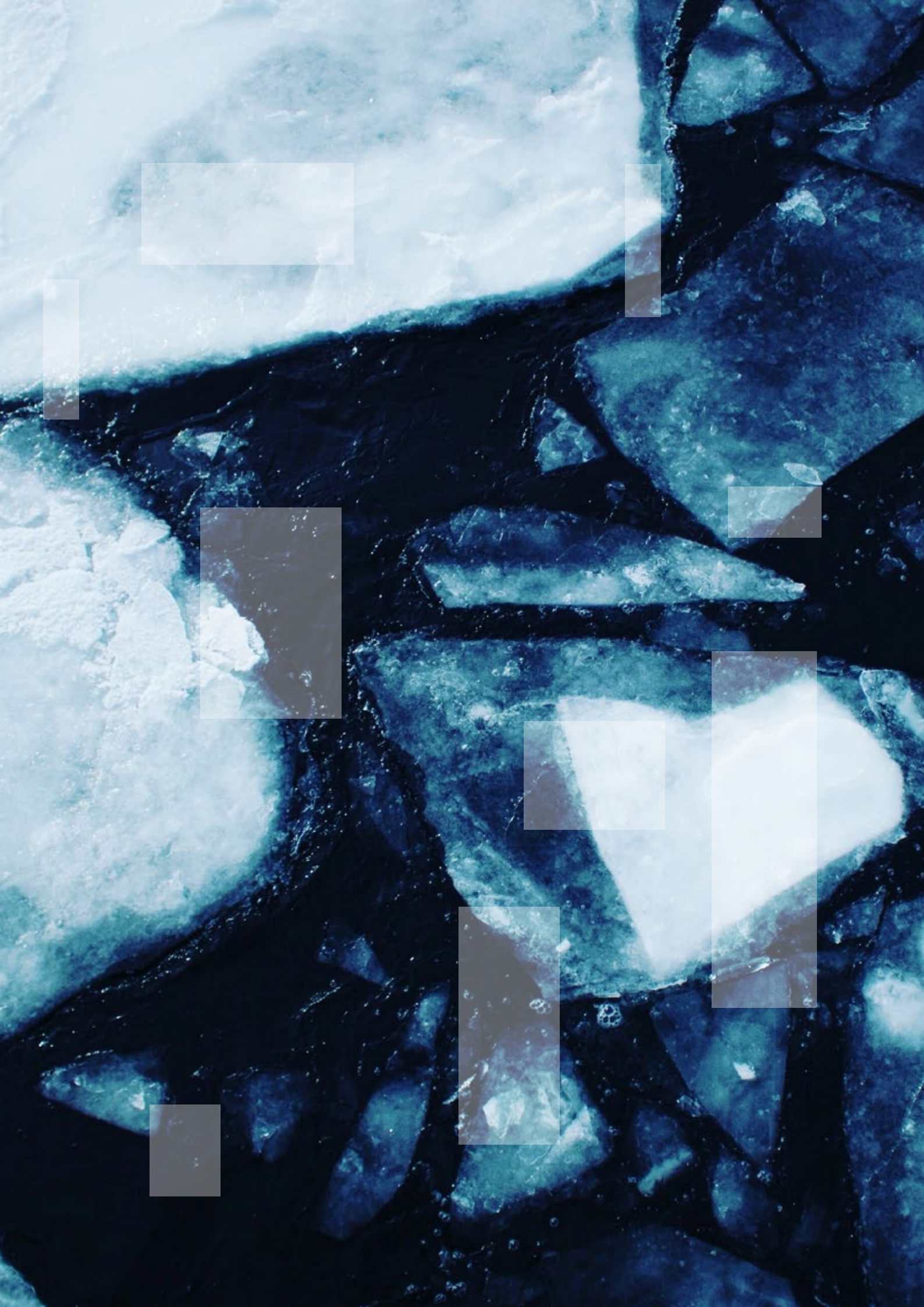


Managing the transition

Mining Risk Review 2020





Mining Risk Review 2020

Table of contents

Foreword.....	3
Introduction.....	4

Part one – managing the transition

Climate risk: transforming the mining industry.....	8
The rise of ESG: why it matters to the mining industry.....	20
ESG pressures: the rise of automation and innovation in the mining industry.....	23
Enhancing your ESG response: the strategic role of the risk manager	32
The post-COVID-19 mining industry: the thoughts of an engineer	41

Part two – risk management issues

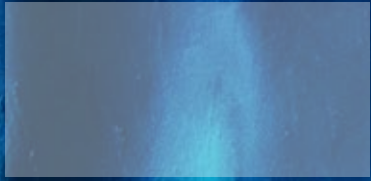
Using risk and analytics to support your risk financing strategy: the views of a former risk manager	50
Geopolitics of resources: prospecting threats to the mining sector	53
The challenge of digitalisation: troubleshooting cyber risk in the mining industry.....	62

Part three – the global insurance markets for mining risks

Property: how do you solve a problem like the market?.....	70
Liabilities: dealing with a “double whammy”	80
D&O: the worst of all worlds.....	89
Regional market commentaries.....	94

Style

Our Review uses a mixture of American and English spelling, depending on the nationality of the author concerned. We have used capital letters to describe various classes of insurance products and markets, but otherwise we have used lower case to describe various parts of the mining industry itself.



Foreword

Welcome to this year's edition of our Mining Risk Review. In these unprecedented times, the mining industry finds itself beset by challenges from all sides; as COVID-19 continues to tighten its stranglehold on every corner of the world, we would just like to take a moment to wish all our readers a safe and secure remainder of 2020.

The Mining Risk Review is one of a suite of publications that we at Willis Towers Watson Global Natural Resources publishes every year that focuses on the key industry developments and risk issues faced by our clients in each of our sectors (Oil & Gas, Power & Utilities, Renewables, Mining & Metals). We hope you will find that the issues that we discuss are the ones that concern you most; we would be delighted if you wanted to follow up on any of the issues discussed in the Review. We have included the e-mail addresses of all the authors at the end of each article, so do get in touch with them to discuss their areas of expertise in more detail.

Right now, I think it's safe to say that the global business environment is in a constant state of flux, and there is no doubt that the pandemic is the number one immediate issue for so many of us. But there is one other issue out there that will undoubtedly survive the pandemic, and that is the issue of climate change and the ensuing energy transition. I'm sure you would all agree that the mining industry is going to be significantly affected by the global drive towards net-zero emissions targets.

As part of this transition, climate change and Environmental Social Governance (ESG) pressures are likely to have significant risk implications on the mining industry of the future. Only a few months ago the Financial Times was reporting that "companies that consider environmental and social factors – and abide by good standards of corporate governance – should be better equipped to ride out a downturn and quickly get back up to speed". In the same article, the FT also commented that "investors are also still going all in on environmental, social and governance themes – and so far their bets have paid off. If anything,

the pandemic has only reinforced fund managers' belief that ESG is worth worrying about"¹.

That's why in this Review we address some of the key risk issues arising from the energy transition from a mining industry perspective. Please read on and I'd be delighted to discuss any of your issues arising out of this publication with you at any time.



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¹ "Coronavirus is strengthening the hand of ESG investors" - Billy Nauman, May 15 2020
<https://www.ft.com/content/19047cda-0648-48a9-a512-87653149026c>



Introduction

As we move towards the final quarter of 2020, the pandemic continues to be at the forefront of all our thinking at this time. This year we have included a thought-provoking piece from our senior mining engineer, Don Hunter, on the long-term effects of COVID-19 on the industry.

However, the energy transition is going to be absolutely key for miners, together with the shift in focus away from fossil fuels and towards renewable energy as the world sets its sights more firmly on zero-emissions targets. Of course, the global demand for minerals will remain during this energy transition, but the risk landscape of the mining industry is likely to undergo radical changes in the process.

That's why we have titled our Review "Managing the transition". Mining companies need to know:

- how the energy transition is going to affect their industry
- why climate change is already transforming their industry risk landscape
- which ESG pressures resulting from the rise of automation and innovation are going to affect the industry in the future
- how risk managers can play a strategic role in developing their company's response to this transition

So in Part one of the Review Margaret-Ann Splawn, who is a climate policy finance and investment consultant, sets the scene with a detailed analysis of how climate risk is impacting the mining industry, followed by our head of Mining for Canada, Katrin Hayduk, who examines how ESG pressures are affecting the rise of automation and innovation in the industry. Our experts from the Willis Research Network then show how mining industry risk managers have a vital strategic role to play in quantifying climate change risk, as well as improving their company's ESG footprint.

In Part two we examine three aspects of risk management that we think are of significant relevance to the mining industry:

- Responding to the challenging global insurance market conditions, Matthew Frost, who has recently been appointed Natural Resources Regional head for Australasia, outlines the steps that mining companies should take to ensure the creation of an optimal risk financing strategy.
- As geopolitical tensions around the world intensify, the Willis Research Network's Lucy Stanbrough describes the process by which mining companies can more accurately identify, manage and transfer their geopolitical risk more effectively.
- As the threat of cyber-attacks on the mining industry looms ever larger, our own Myles Milner outlines the latest developments in this critical sector and the options open to miners to rise to this significant challenge to their business.

As if all these challenges were not enough for the mining industry, conditions in the global insurance markets continue to deteriorate significantly from a buyer perspective. We have not experienced a truly hard insurance market for many years and there is no denying that the effects on risk management budgets will continue to be profound for a while. In Part three of the Review we have included market analyses for the Property, Liability and Directors & Officers' sectors, as well as including contributions from the Australian, Chinese and South African markets.

It's worth summarising here the advice given by our market practitioners in this section:

- Make sure your risk retention, captive participation and risk transfer strategy is based on sound actuarial principles.
- Make a careful inventory of what should be insured, and what should not.

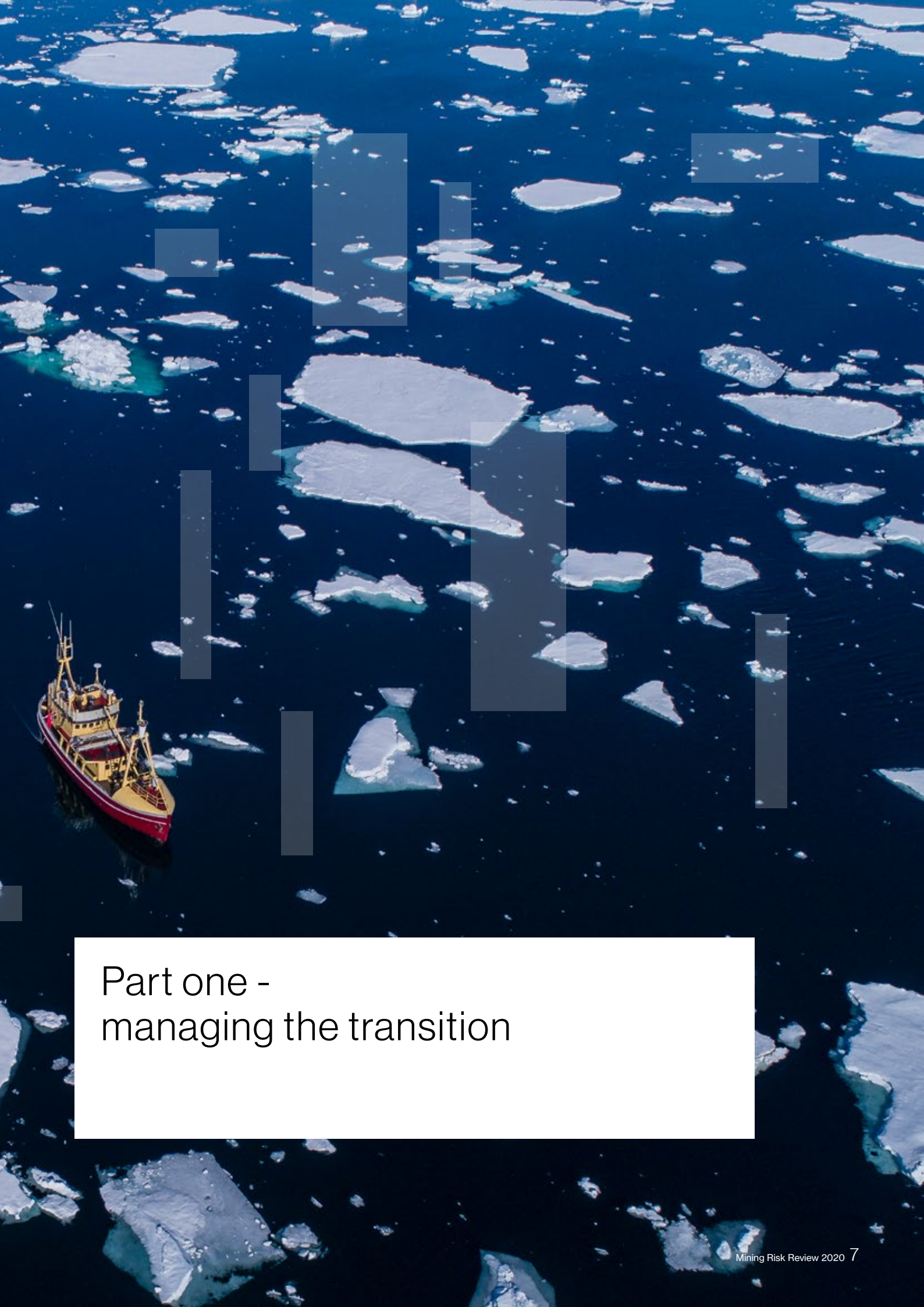
- Ensure that your values are accurate, up to date and accountable.
- Timing is everything – the placement process is now taking a lot longer than in the past, and planning the timing of your market approach is going to become increasingly critical in the months ahead.

As ever, we very much hope you enjoy reading the Review and would welcome any comments or questions that you may have.



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Part one - managing the transition



Climate risk: transforming the mining industry

Introduction: the Tolstoy maxim

To paraphrase Tolstoy: successful mining companies are all alike; each mining company is facing risk in its own way. This principle is highly applicable today, as mining's diverse geographical spread - often involving operating in remote locations, sometimes in politically instable countries - makes risk management particularly challenging for the industry. One solution doesn't fit all.

COVID-19 has been a game-changer for the world and of course mining companies have been significantly affected, with widespread outbreaks and some government-mandated shutdowns in countries such as South Africa and Peru.

However, there is another substantive risk which the mining industry is facing, and that is climate change. It exposes the industry to potential financial, operational and market shocks and, if not managed appropriately, it can have a compounding effect¹ that changes the very nature of the mining risk landscape.

Unlike COVID-19, nations and businesses can't just shut their borders to climate change, self-isolate and expect to ride out the wave. The climate crisis is a global issue that knows no borders and will have impacts over decades rather than infection waves; international cooperation is essential and will require collaboration on a scale we haven't seen before. And what the pandemic is teaching us is just how interconnected, intertwined and dependent we all are on each other.

The importance of minerals

Minerals are ubiquitous, essential for society and economic development. However, the mining industry is a heavily polluting one; it's currently responsible for between 4-7% of greenhouse gas emissions (Scope 1 and Scope 2)² globally³ and consumes up to 11% of global energy use.⁴ Regulation and legal requirements around resource management and carbon reduction are increasing; furthermore, the mining industry is a supplier to other emissions-intensive industries, which will also be subject to more downstream regulation and changing consumption

¹ <https://www.willistowerswatson.com/en-GB/Insights/2020/05/the-wicked-problems-of-pandemics-and-climate-change>

² Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from electricity purchased and used by the organisation.

³ <https://www.mckinsey.com/business-functions/sustainability/our-insights/climate-risk-and-decarbonization-what-every-mining-ceo-needs-to-know>

⁴ <https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action>

patterns. At the same time, mining industry verticals are in a bit of a conundrum - renewable/low-carbon energy is heavily dependent on the mining industry to provide the metals and minerals necessary for construction and operation.

Net-zero strategy

Under the Paris Agreement, countries collectively agreed to reduce global emissions through material climate pledges. Amidst increasing activism, the willingness to act to decarbonise is gaining traction and momentum among mining industry stakeholders, including lenders, insurers, shareholders, regulators – and even consumers. Indeed, net zero-strategy is a “basic question” for every company, says former Bank of England Governor Mark Carney.⁵

Getting ahead of impending regulation by integrating climate-related risks, mitigation and adaptation measures into business and decisions, along with climate stress testing, is smart strategy. For some mining companies, it will be easier to decarbonise because the materials they mine have a lower carbon intensity and several companies are already making public pledges of emission reduction targets. For others, technology may be unproven and require great collaboration with stakeholders to get insurance, or it may not even exist yet. The fact of the matter is that change is coming, and there has never been a better time to get up to speed.

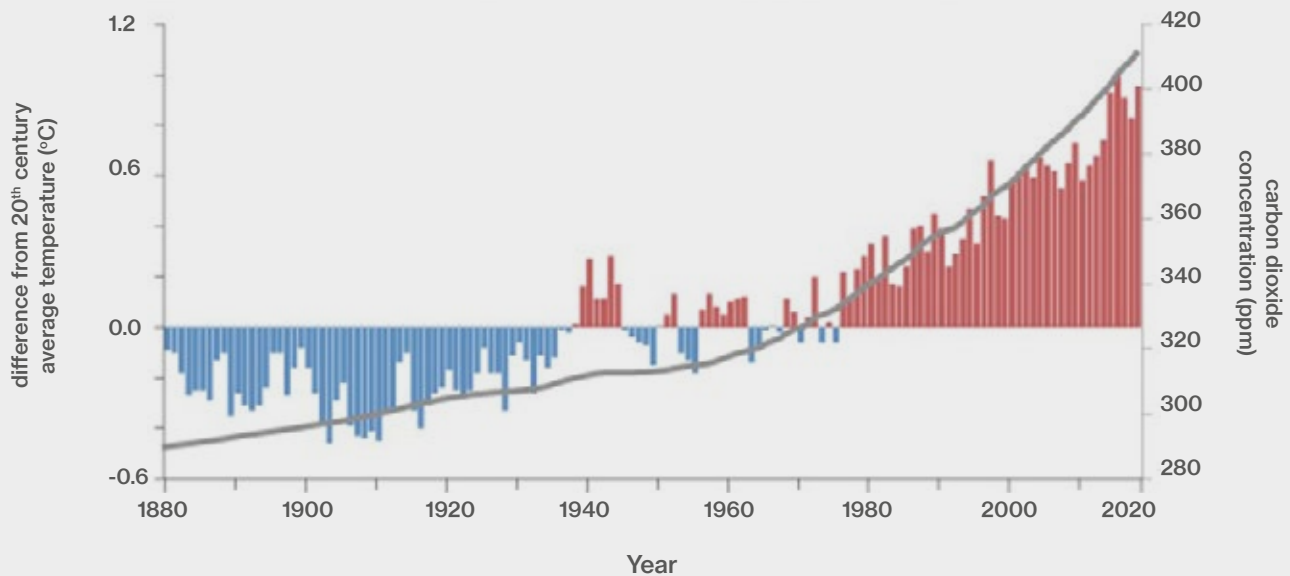
The purpose of this article is to show how climate risk is transforming the mining industry. It will provide a high-level overview of the climate risk implications for the industry, the policy and regulatory frameworks and the investor response. This is about prudent risk management for the mining industry, because choosing sustainable business practices based on the latest science is not only good strategy, it's also the route that's increasingly preferred by industry leaders. And don't forget that fundamentally sustainability is about efficiency and business resilience – words that any board of directors likes to hear.

“Renewable/low-carbon energy is heavily dependent on the mining industry to provide the metals and minerals necessary for construction and operation.”

⁵ <https://www.power-technology.com/features/net-zero-strategy-is-basic-question-for-every-company-mark-carney/>



Fig 1: Atmospheric carbon dioxide and the Earth's surface temperature, 1880 - 2019



Source: NOAA Climate.gov
Data ESRL/ETHZ/NCEI

Yearly temperature compared to the twentieth-century average (red and blue bars) from 1880–2019, based on data from NOAA NCEI, plus atmospheric carbon dioxide concentrations (gray line): 1880–1958 from IAC, 1959–2019 from NOAA ESRL. Original graph by Dr. Howard Diamond (NOAA ARL), and adapted by NOAA Climate.gov.

This is one of the most repeated graphics because it is so simple; download a copy of any one of the IPCC reports and you'll see there are thousands of pages of scientific evidence that cover all the nuanced pieces

What the science is telling us

In brief, the science is telling us that the earth is getting hotter. Figure 1 above shows that the trend of the global surface temperature of the earth; twenty of the warmest years on record were in the past 22 years. The gray line shows the rising concentration of CO₂ levels.

The scientific body of evidence from the Intergovernmental Panel on Climate Change (IPCC) is overwhelming. The IPCC synthesises the science evidence through an objective review process and summarises it to governments to support policy and decision making; it's then up to governments what actions to take, based on the scientific data.

The effect on the mining industry risk landscape

Companies determine their risk appetite by analysing their exposure to a variety of segments, such as market movements, geopolitical events and changes in counter-party risk. There is now a sharper focus on environmental threats that will emerge over the course of the next ten years, and mining industry leaders know it. For the first time in the history of the World Economic Forum's Global Risk Report 2020, environmental threats dominate the issues on senior leaders' agendas, as evidenced by the position of the green diamonds in Figure 2 overleaf – remember this is a survey asking leaders what issues are crossing their desks before the onset of the COVID-19 global pandemic.

Fig 2: The global risk landscape, 2020



Environmental threats are in the top five long term risks by likelihood and occupy three of the top five places by impact

Source: World Economic Forum

http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf



In summary: business and finance leaders know that the likelihood and impact of environmental threats to the mining industry are high. The science is clear; high carbon intensive industries are particularly exposed to three primary risks - physical, transitional and liability - all of which have significant financial consequences for the mining industry. Let's discuss each in turn.

Part 1: physical risk

Mining assets are often found in remote, barren and geographically diverse areas. The safety of workers and assets has always been a concern for mining risk managers. In addition, the environmental impacts of mining are well known via changes to land use, additional traffic infrastructure and the industrialisation of what are often remote areas.

As many readers will appreciate, climate change is not just about the world getting hotter - it's also about changes to extreme weather and climate events. Mining operations are already exposed to natural catastrophes that climate change may impact these exposures further. For example, mines in South Africa face extreme heat, while copper mines in Chile are already operating in extremely water-stressed and dry locations. Can these workers, assets and infrastructure withstand an increased frequency and magnitudes of extreme weather events, not to mention the impact on vulnerable supply chains and increased bottlenecks?

In addition, increasing temperatures and potential changes to rainfall patterns pose challenges to environmental management and risk mitigation as well as putting more pressure points on community relations. The stakeholder landscape is shifting; indeed, social 'license to operate'

is the number one rated risk in EY's 2019-2020 survey of over 250 mining sector participants from around the world.⁶ As climate change impacts deepen, the mining industry's social license to operate will need to include increased transparency, mutual value creation and respect to satisfy stakeholders and society.

Water: mining's most common casualty

Mining is a thirsty business, especially for materials such as copper and iron ore, and water (or lack of it) is one of the primary ways that the mining industry may feel the effects of climate change. It's no secret that some miners have had a major impact on water resources, sometimes depleting water supplies through high usage and, in certain instances, polluting them with discharged mine effluent and seeping from tailings or waste rock impoundments. In fact, water has been called "mining's most common casualty"⁷ and water availability is already less predictable in several regions.

Water stress & costs

It is estimated that by 2030 up to \$50bn of mining revenues are likely to be exposed to high levels of water stress risk.⁸ In other research, McKinsey's MineSpans ran and analysed a water-stress and flooding scenario on their database on copper, gold, iron ore and zinc and found that 30-50% of production of these four commodities is concentrated in areas where water stress is already high.⁹

Figure 3 overleaf shows the identified seven water-hot spots clustered into regions in Central Asia, eastern Australia, western Australia, the Chilean coast, the Middle East, southern Africa and a large zone in western North America. In 2017, these sites accounted for approximately \$150 billion in total revenues according to the McKinsey report¹⁰.

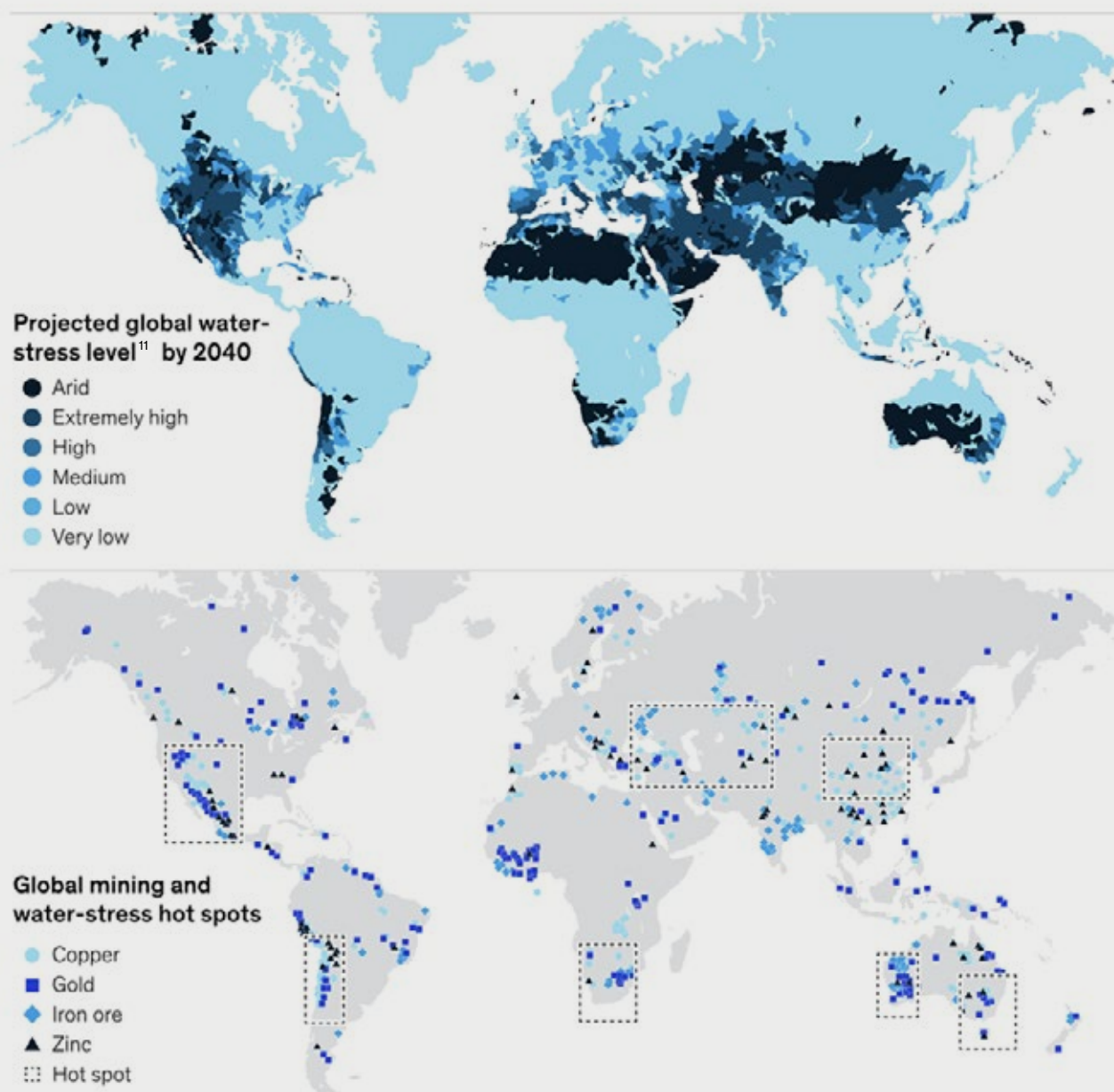
⁶ https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/mining-metals/mining-metals-pdfs/ey-top-10-business-risks-facing-mining-and-metals-in-2019-20_v2.pdf

⁷ <https://eportfolios.macaulay.cuny.edu/est2016/2016/09/12/is-our-everyday-use-of-minerals-worth-such-widespread-water-pollution/>

⁸ Digging Deep, CDP July 2017 <https://www.cdp.net/en/investor/sector-research/mining-report>

^{9&10} <https://www.mckinsey.com/business-functions/sustainability/our-insights/climate-risk-and-decarbonization-what-every-mining-ceo-needs-to-know>

Fig 3: Projected global water-stress level by 2040



By 2040, key mining regions could be increasingly vulnerable to water stress

Source: *Aqueduct Water Risk Atlas*, World Resources Institute, 2015, 2015.org; *MineSpans* by McKinsey

¹¹ Water stress defined as ratio of water demand to supply.

Water stress can impact a mining company's business operation, revenue generation and expenditure requirements. In some regions, one of the most significant variables for mining projects is the availability of water. Global water demand is expected to increase between 20-30% by 2050 above the current level of water use, which will further increase stress levels as the effects of climate change intensify.¹² Mining executives are well aware of water issues and mitigation; furthermore, adaptation plans will be crucial as our climate trajectory evolves.

Hedging against this risk can include water recycling and usage of greater amounts of seawater with desalination technology; however, notwithstanding this, water scarcity will increase in many regions. The availability and management of water is therefore one of the keys to sustainable mining activity from a carbon intensity, health and environmental perspective.

The consequences of the physical risks of climate change will impact operations and workers, interrupt business and impact vulnerable supply chains and infrastructure. Furthermore, the hardening insurance market means that some assets might not be insurable in the future.

Part 2: transition risk

Transition risks occur as societies move toward a zero-carbon economy. Some mining companies are operating in host countries that have committed to carbon neutrality by 2050. The market capitalisation of the ten largest diversified mining companies is over \$350 billion and they contribute, either directly or indirectly via their products, to annual carbon emissions of over 1.5 billion tonnes.¹³ A few large mining companies have set targets to achieve carbon neutrality across operations by or before 2050. Some companies, such as Rio Tinto¹⁴ and Anglo American¹⁵, are setting Scope 1 (direct) and 2 (indirect) emissions targets while others, such as BHP¹⁶, have announced that they plan to include Scope 3 emissions, which are the third-party emissions from the end use of products, in their targets.

However, a discussion paper from the Transition Pathway Initiative (TPI), a global initiative led by asset owners, supported by asset managers and designed for use by investors to scrutinise companies' preparedness for the low carbon transition, reveals a significant carbon performance gap between the ten largest diversified miners by market capitalisation (see breakout box overleaf).



¹² <https://www.unwater.org/publications/world-water-development-report-2019/>

¹³ <https://www.transitionpathwayinitiative.org/tpi/publications/57.pdf?type=Publication>

¹⁴ <https://www.riotinto.com/en/sustainability/climate-change>

¹⁵ <https://www.angloamerican.com/sustainability/environment/climate-change>

¹⁶ <https://www.bhp.com/environment/climate-change/>

¹⁷ <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf>

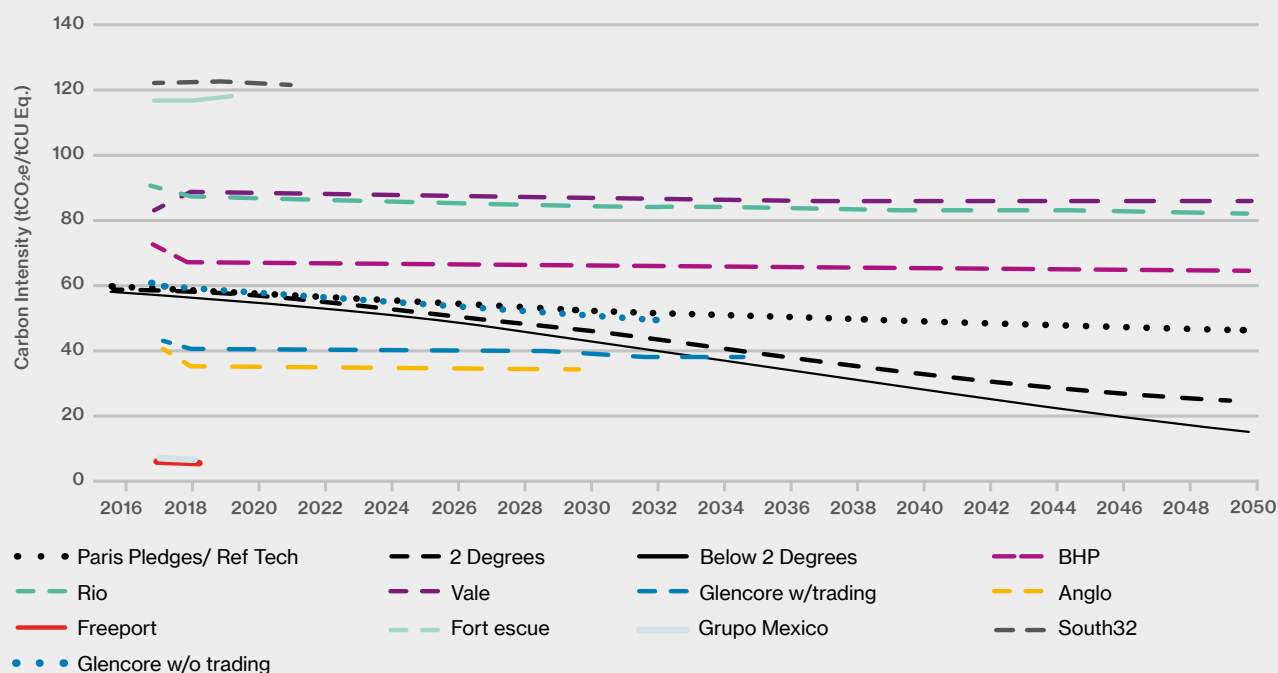
¹⁸ <https://www.transitionpathwayinitiative.org/tpi/publications/57.pdf?type=Publication>

Carbon Performance Assessment in the Diversified Mining Sector Transition Pathways Initiative Discussion Paper, May 2020

TPI released a Discussion Paper proposing a methodology to assess the carbon performance of the diversified mining sector. To accomplish this, they took the Sectoral Decarbonization Approach, which is based on estimating companies' greenhouse gas emissions intensity, with emissions and activity – the numerator and denominator of emissions intensity respectively – defined in ways that are appropriate to the sector in question.¹⁷ By applying this methodology to the ten largest diversified miners by market capitalisation, TPI is looking to answer the question: is this company, or group of companies, aligned with the Paris Agreement goals as applied to its sector?

Because some mining products, such as coal and iron ore, generate significant downstream emissions, their methodology adds estimates of Scope 3 emissions from processing and use of sold products to companies disclosed Scope 1 and 2 emissions. Figure 4 below shows their results.¹⁸

Fig 4: The carbon performance of the ten largest diversified mining companies*



Since neither Freeport and Grupo Mexico currently mine products with a high lifecycle carbon intensity, both have low emissions intensity and are already aligned with the 2050 benchmarks, including below 2°C. Only Glencore (including its trading business) and Anglo American are aligned with the Paris Pledges benchmark in 2050 but their projected emissions intensity pathways as per Figure 4 above are too flat to be aligned with 2°C and below 2°C in the future.

According to the TPI methodology BHP, Rio Tinto And Vale are not aligned. They begin above the benchmarks and their targets only cover Scope 1 and 2 emissions. Fortescue and South 32 are substantially above the benchmarks and without credible long-term targets to significantly reduce emissions intensity. MMC Norilsk did not provide sufficient disclosure to make an assessment.

Source: <https://www.transitionpathwayinitiative.org/tpi/publications/57.pdf?type=Publication>

*MMC Norilsk did not provide sufficient disclosure to make an assessment

Fig 5: Mapping minerals with relevant low-carbon technologies

	Wind	Solar Photovoltaic	Concentrated solar power	Hydro	Geothermal	Energy Storage	Nuclear	Coal	Gas	Carbon capture and storage
Aluminum										
Chromium										
Cobalt										
Copper										
Graphite										
Indium										
Iron										
Lead										
Lithium										
Manganese										
Molybdenum										
Neodymium										
Nickle										
Silver										
Titanium										
Vanadium										
Zinc										
Total	10	8	2	8	6	11	11	9	8	6

Source: World Bank¹⁹

Commodities are critical for low-carbon technologies

While decarbonisation is occurring across other industries, the mining industry is intricately linked to this because many commodities are critically important in the development of expected low-carbon technology out to 2050.

Indeed, mining companies play a critical role in the energy transition, as evidenced by Figure 5 above. The World Bank produced a data-driven report, Minerals for Climate Action:

The Mineral Intensity of the Clean Energy Transition, of how the shift to a cleaner energy system could impact mineral demand²⁰. This report is interesting because it shows how increasing demand for minerals and metals are likely to adapt under low-carbon technologies, such as renewable energy and battery technology supply chains. Global demand for minerals, such as graphite, lithium and cobalt, could increase by nearly 500% to meet the demand for clean energy technologies by 2050.²¹

¹⁹ <https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action>

²⁰ <http://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>

²¹ <https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action>

Decarbonisation strategy plan

This increased demand for minerals puts pressure on creating an effective climate risk mitigation plan for the mining industry; however, it's not impossible and there are pathways. Investors have a growing concern over the viability of high carbon business models in an increasingly carbon-constrained world. They and other stakeholders will want to see targets set and met, along with a clear decarbonisation strategy plan. While reputational risk can be hard to quantify, it can have an enormous impact on a company and the goodwill of creating and executing a transparent decarbonisation pathway will provide value for investors and consumers.

A shift in focus

However, there is not just one route for the mining industry to decarbonise. Part of this pathway is likely to be met with regulatory carbon pricing, either via emissions trading schemes or carbon taxes. The carbon intensity varies widely between commodities, so shifting the industry's focus away from the production of commodities with the highest emissions intensity presents the most obvious decarbonisation strategy.

Electrification as part of the solution

Another decarbonisation solution could come through the electrification of the mining industry. As a large proportion of mining emissions are driven by electricity supply, the mining industry could electrify operations to decrease emissions, for example with electric fleets and/or investments in renewable energy assets to power mining operations. Furthermore, lowering emissions - through increasing technological advances of mining processes - drives more efficient energy use while the use of renewables, combined with battery storage, decreases miners' reliance on fossil fuels. In this way, renewables can also be viewed as a possible mitigation to energy security risks for miners, and a way to build operational resilience.

These types of investment can pay off, according to BCG's Smart Multiple analysis. This research shows that mining companies who have been early movers in addressing climate change and who are already reducing emissions have market valuations, on average, 20% greater than their peers who are not taking climate action through emissions reduction performance.²² Furthermore, companies such as BHP are supporting the growing trend of incentivising directors by linking executive remuneration with emissions reductions.²³



Part 3: litigation risk

Mining companies are already facing the physical and transition risks of climate change and now they must confront a third risk in the form of litigation liability. New litigation cases are using science to quantify and show the relationship between emissions to particular location-based companies and climate related impacts²⁴.

Global trends in climate change litigation

According to a "Global Trends in Climate Change Litigation: 2019 Snapshot" policy publication at the Grantham Research Institute on Climate Change and the Environment housed at the London School of Economics, climate change litigation is expanding across jurisdictions as a mechanism to strengthen climate action²⁵. Indeed, climate change litigation is increasingly viewed as a tool to influence policy outcomes and corporate behaviour²⁶.

Furthermore, new climate mandatory reporting rules are on the rise - including those based on the EU Taxonomy.²⁷ Financial market participants and large companies will soon face the legal obligation to report and reduce the carbon footprint of their activities; by continuing to hold carbon intensive assets, they hold direct and indirect litigation risk. In addition, this exposure to carbon intensive assets could detract from their company's investment appeal to shareholders. Blackrock, the world's largest fund manager with nearly \$7 trillion under management, has pledged to reduce exposure to thermal coal and recognises that climate risk is investment risk.²⁸

²² <https://www.bcg.com/en-gb/publications/2020/mining-needs-to-go-faster-on-climate.aspx>

²³ <https://www.pv-magazine-australia.com/2019/07/23/bhp-to-link-executive-compensation-to-reductions-in-emissions-generated-from-the-use-of-its-products/>

²⁴ <https://insideclimatenews.org/news/04042018/climate-change-fossil-fuel-company-lawsuits-timeline-exxon-children-california-cities-attorney-general>

²⁵ <http://www.lse.ac.uk/GranthamInstitute/publication/global-trends-in-climate-change-litigation-2019-snapshot/>

²⁶ <https://climate-laws.org/>

Fig 6: High level objectives for central banks' portfolio management



The NGFS aims to address the impact of climate-related risks on the portfolio - and also on the environment and society²⁹

Source: <https://www.ngfs.net/sites/default/files/medias/documents/ngfs-a-sustainable-and-responsible-investment-guide.pdf>

Lending shifts away from high emissions-intensity materials

In Europe, there is now a growing pressure - from market dynamics, political forces and investors - for large financial institutions to green their lending portfolio. Several banks - and indeed insurers (see Part three of this review) - are responding to this tension and setting benchmarks that shift away from high carbon intensive materials such as coal.³⁰ This is likely to cause higher finance costs for mining companies as capital flees from coal; it's also causing a shift of funding to Asian banks, export credit agencies and private equity firms.³¹

Central banks are taking action

Climate-related risks pose complex challenges, not just to private banks but also to central banks, regulators and supervisors. The Network for Greening the Financial System (NGFS) is a group of central banks and supervisors who are developing guidance around climate risk assessment and scenario analysis.³² This work will provide frameworks for other regulators who are also looking to evaluate climate risks – at the end of the day, what they all want to know is that companies understand their risks and are taking concrete action.

“In Europe, there is now a growing pressure - from market dynamics, political forces and investors - for large financial institutions to green their lending portfolio.”

²⁷ https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf pg 26

²⁸ <https://www.abc.net.au/news/2020-01-15/worlds-largest-fund-manager-to-cut-thermal-coal-exposure/11869300>

²⁹ <https://www.ngfs.net/sites/default/files/medias/documents/ngfs-a-sustainable-and-responsible-investment-guide.pdf>

³⁰ <https://www.bankingdive.com/news/citibank-pledge-stop-thermal-coal-mining-financing/576451/>

³¹ <https://www.bloomberg.com/news/articles/2020-03-08/death-of-coal-financing-is-exaggerated-as-china-japan-step-up>

³² <https://www.ngfs.net/en>

Conclusion: consequences for the mining industry

The costs of physical impacts and business disruptions arising from climate change can be considerable for the mining industry. Mining still depends heavily on fossil fuels for power generation, while water stress will continue to rise and supply chains will become more vulnerable.

Transitioning to a net zero economy will be difficult, but the global financial system and the mining industry is under pressure to make a faster shift towards the alignment of climate security and sustainable development.

Some commentators have shifted their focus to physical and transition risk, grouping the two together. However, this detracts from the significance and unique challenges of litigation risk, which encompasses risks arising out of new transition reporting regimes, but also myriad potential claims affecting all aspects of mining operations; these range from permitting to licensing to environmental protection and to the continuing efforts by NGOs and citizens to seek to attribute historic climate change to mining companies. As transition continues to change the regulatory framework, that litigation risk is likely to increase without careful and focused risk management by mining companies and their investors.

Final thoughts: prudent risk management will be critical!

Capital has to be reallocated to support the just transition to a zero-carbon economy. Such a just transition means balancing society and the economy, along with managing the transitional implications for potentially stranded assets, communities and workers.

Transitioning to a zero-carbon economy for the mining sector is extremely complex, with a number of different moving parts. At the moment, financial flows and alignment are not happening fast enough to deliver positive climate impact at scale, so fundamental systemic change is required on a global level - change is coming, whether we like it or not. It can be embraced or delayed – but not avoided, so starting now is key. The COVID-19 pandemic highlights the importance and value of collective action with coordinated support and shows that long term strategies and sustainable investment approaches are required.

To conclude: as stated at the beginning of this article, prudent risk management is at the heart of this piece. For mining companies to remain a going concern in the future, action is required: be prepared, share information and work with other relevant stakeholders and governments to find solutions for the transition to a zero-carbon economy.



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“Prudent risk management is at the heart of this piece- for mining companies to remain a going concern in the future, action is required.”





The rise of ESG: why it matters to the mining industry

Introduction

There can be no denying that the single largest change affecting the corporate sector in decades is the rapid evolution of Environmental Social Governance (ESG) as a tool to measure both a company's sustainability and its risk management. Higher rated ESG companies have, generally, outperformed and proven greater resilience to those that are not - the recent period incorporating COVID-19 has further demonstrated this.

ESG History

An opportunity not to be wasted

For years, the mining industry has struggled with its image; the narrative always defaults to the negative. However, the world is transitioning to a sustainable future and its success can only be accomplished with the minerals and metals that the industry produces.

There is no hiding that many issues need to be addressed and improved. Thermal coal, tailings dam failures, energy footprints of mines, child labour and many other topics can and must be tackled. But with a world encouraging transparency and the financial community now rewarding this as a differentiator, the mining industry could use ESG reporting as a means to start owning the narrative to show the many benefits of its products and the positive impact it can have on local communities.

A not so new initiative

Socially Responsible Investing (SRI) reportedly dates back to the Quakers in the 1700s. It gained modern day momentum in the late 1990s but fizzled out until its recent and far more pronounced resurgence. Since the introduction of the Equator Principles in 2003, an increasingly structured approach to social and environmental commitments has been adopted with marked success by developing and producing mining companies. No mainstream debt provider is likely to approve lending without meeting these or similar key principles.

More recently, the growing pressure to address global warming and tackle other societal imbalances has spurred a new wave of sustainable investing. The adoption of the UN Social Development Goals in 2015 as the foundation of most ESG criteria, combined with the need for greater reporting under the Paris Accord, has formed the basis for today's structure. COVID-19 has further enhanced this development as it is increasingly accepted that the virus is just a foretaste of greater disruption from global warming.

Change is here to stay

Sustainable investing has now become mainstream, with \$12 trillion under management with an ESG theme in 2018¹ and reported record inflows in 2019. Furthermore, the leading US and Asian ESG indexes have outperformed the normal indexes throughout the COVID-19 crises, adding further weight and increasing investor focus on "company resilience".

Larry Fink, Blackrock's CEO, warned in an open letter to corporate CEOs earlier this year that he expected a "fundamental reshaping of finance" which would lead to a "significant reallocation of capital in the near future" and "we will be increasingly disposed to vote against management and board directors when companies are not making sufficient progress on sustainability-related disclosures and the business practices and plans underlying them."²

ESG, its culture, reporting and evolution is here to stay. Society has demanded it; furthermore, there is overwhelming evidence of lower idiosyncratic risk and improved performance for those companies that fully embrace it.

"The growing pressure to address global warming and tackle other societal imbalances has spurred a new wave of sustainable investing."

¹ <https://www.ussif.org/files/US%20SIF%20Trends%20Report%202018%20Release.pdf>

² https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter?cid=ppc:CEOLetter:PMS:US:NA&gclid=EAlaIqobChMI0bqUxvyD5wIVCr7ACH3Taw9aEAAAYASAAEgKSP_D_BwE&gclidsrc=aw.ds

Taking the initiative

The mining industry is at the forefront of the raw material supply chain and has mines located in many disadvantaged areas of the world; so as well as its obvious environmental impact, it has an oversized level of responsibility to act. The benefit of sustainably-mined products, from electric cars to windmills, solar energy and even health, should and can be positively recognised.

The concern from parts of the industry has been that adopting ESG is costly. While short term adjustment and investment will no doubt add to costs, these could pay off in many different ways:

- Improved ESG ratings and differentiation from peers
- Improved local community relationships, leading to improved reputation
- Fewer strikes
- Lower operating costs
- Access to finance

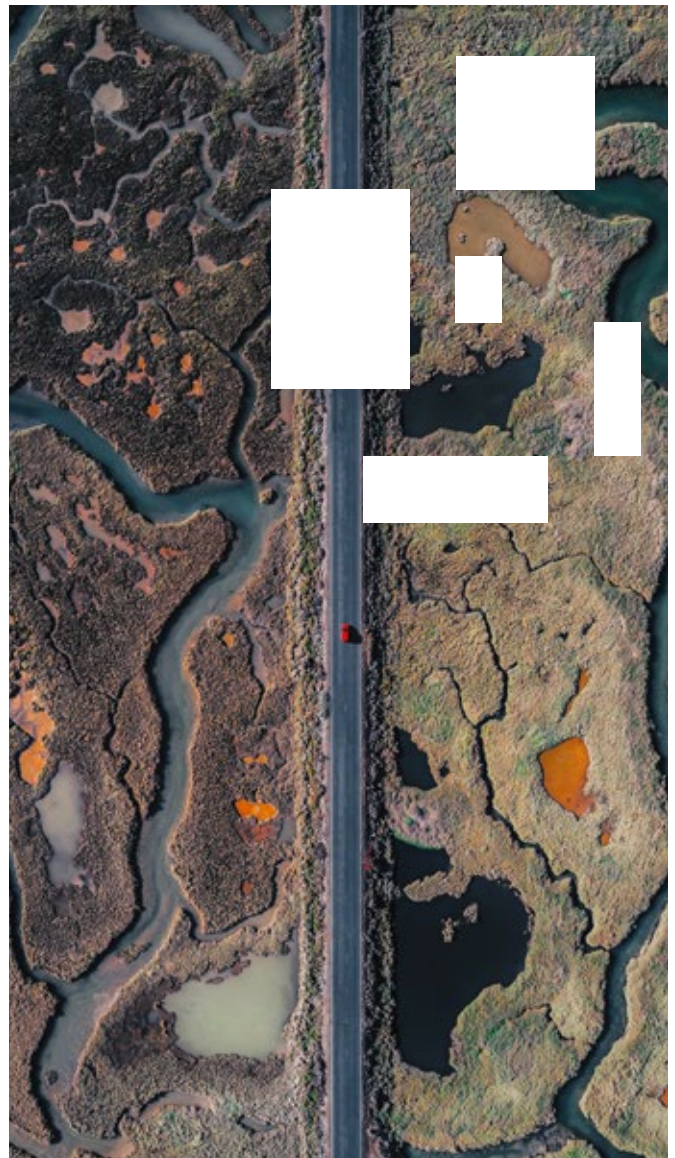
Evidence is now unmistakably supporting the proposition that higher ESG-rated companies experience lower risks and better risk-adjusted returns. This is likely to lead to lower cost of capital for those higher rated companies - or at least avoiding negative pricing for those perceived as higher risk assets/companies.

ESG vs ESG reporting

Many companies, from small explorers to large producers, have been practising ESG for decades; their license to operate is dependent on approved procedures from their host country. What is new is the sudden requirement to transparently report on many different metrics across multiple topics and, as such, to accept greater public scrutiny.

ESG reporting - the great conundrum

If society is to achieve its goals and reap the true benefits of ESG, then a uniform approach to reporting is required. This is no different to the established concept of financial reporting except that no single framework fits all sectors (let alone sub-sectors) and in the case of mining, its own peculiarities.



With over 40 initiatives applicable to the sector³ let alone companies going alone with their own self assessments, appropriate comparability between companies is virtually impossible. As Adam Mathews, Director of ethics and engagement at Church of England Pensions Board said: “The lack of consensus on frameworks and methodologies means that it’s simply not yet possible, when investing across multiple asset classes⁴. Standardisation of data, along with trust in the quality of the data, is paramount to success. If this can be achieved, applied to the 600+ operating sites globally with annual assessments, then this will drive performance improvements at scale.

³ https://www.responsibleminingfoundation.org/app/uploads/2019/12/RMI_Methodology2020_Mapping_EN_WEB.pdf

⁴ <https://www.ipe.com/what-does-aligning-with-the-paris-climate-agreement-mean/10030976.article>

Non-producing sector in need of help

The existing frameworks, themselves failing to achieve uniformity, have been constructed for the purpose of producing companies and so ignore the 2,200 publicly traded non-producing mining corporates worldwide, despite them increasingly needing to engage in ESG reporting in order to access finance.

Non-producing companies (or juniors) are critical to the ecosystem of the mining sector as a whole; much of the reserve replacement of senior producers depends on successful exploration and development carried out by these groups. Exploration risk is baked into project development, so failing to address core competencies early on only raises risk in the future, whoever the owner. In addition, social and other environmental considerations take years to develop, requiring long term planning and engagement. Ethically-managed operations are a long-term commitment and require not only a structure but also an appropriate culture from early on.

M&A

As part of the ecosystem, producing companies engage in strategic investments, joint ventures and takeovers of these juniors to support long term growth. Due diligence has now extended beyond geological resources, permitting, mine plan and financials to a thorough review of all ESG-related topics. There is increasing evidence that M&A will be constricted if risks have not been properly assessed and confronted. Why would a mining company that has worked hard on improving its credentials to its stakeholders risk this premium position through an ill-judged takeover of a junior?

It's not too late

The speed and veracity of change flowing through the financial markets towards the adoption of ESG metrics as a requirement prior to investing has driven not only the producing companies but also the largest primary financiers, private equity, institutional funds and alternative lending groups to enforce ESG requirements on any potential investee company. While this remains unorganised at present, its importance has been demonstrated by an almost competitive approach in the current financing cycle with major foundations.

The goal of all the groups is to prove necessary due diligence has been achieved; this will prove the attainment of certain minimum requirements, a positive corporate culture to adopt ESG goals and a progressive approach to enhanced performance. Is it then not beyond imagination that the financial sector, along with the producers who need to encourage ESG adoption throughout the industry, can combine and set standardised frameworks for different sub-sectors of the industry? Failure to do so will only create unnecessary inefficiency within the financial groups and the wider sector as well as a more limited form of success in achieving the goals.

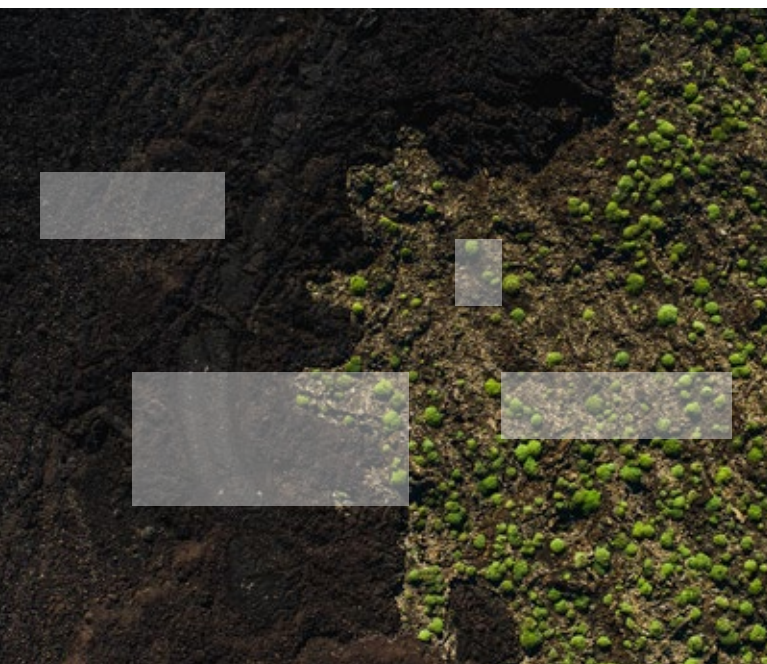
Conclusion

The emergence of ESG as a global theme is an unstoppable force. To fully benefit from this will require harmonised frameworks, together with independent and rigorous scoring that can identify lack of progress, raise awareness and effect change. Achieving this will have the additional benefit, unique in its scale to the mining industry, of winning the hearts and minds of society.

The mining industry is well known for its slow uptake of new initiatives. The longer it takes for producers to align themselves to a single framework, the greater the number of wasted days - this new means of communication is a golden gift, not to be wasted.



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ESG pressures: the rise of automation and innovation in the mining industry

Introduction: a conversion to innovation

Traditionally, there has been a widespread sentiment across the world that the mining industry has lagged behind other industries in being innovative and in adopting new mining methods, technologies and processes. Although miners are risk takers by nature, historically it seems that they often have not wanted to assume risks associated with innovation, although of course there have always been exceptions to this rule.

However, in recent times, things have begun to change as miners are experiencing increased pressures to change their ways of mining metals and minerals as part of developing more sustainable business models for the future. Indeed, what started as an increased focus on sustainability has now morphed into full blown scrutiny as far as a company's Environmental, Social and Governance (ESG) policies and initiatives are concerned.

Meeting stakeholders' expectations, while continuing to deploy conventional technologies and processes, is simply no longer possible. Therefore, out of necessity, innovation and automation will have to play a key part in a miner's long-term planning to ensure the business' viability beyond the next few quarters.

The increase in stakeholder pressure

The list of stakeholders exerting pressure on miners is not a short one. We have observed increased institutional shareholder activism, which involves carefully selecting investment choices based on a company's ESG score and sustainability reports, knowing full well that high scores and earnest efforts in running a sustainable operation often point to a well-run and successful business.

UN Principles for Responsible Investment

Representative of this change in investor attitude are the UN Principles for Responsible Investment, launched in April of 2006.¹ What started with a few hundred signatories has grown since to over 3,000, including investment managers, asset owners and financial service providers who all voluntarily committed to responsible investments to enhance returns and better manage risk by incorporating ESG issues into their investment decisions. As a result, public issuers are expected to appropriately disclose ESG issues and to proactively deploy solutions to deal with matters such as carbon emissions, energy usage, tailings management, water scarcity, labor relations and Health & Safety.

¹ <https://www.unpri.org/pri>

Investor Mining and Tailings Safety Initiative

A recent example of shareholder activism is the action taken by the Church of England Pensions Board and the Swedish National Pension Funds' Council on Ethics in response to the tailings dam failure in Brumadinho, Brazil on 25 January 2019 which killed over 250 people and caused widespread environmental pollution. Both entities initiated the Investor Mining and Tailings Safety Initiative, asking 727 publicly-listed mining companies for detailed public disclosures on their tailings storage facilities while demanding increased transparency and disclosure on how this substantial risk to the public is being managed.

Institutional shareholder action

Major asset managers, such as New York based BlackRock with about \$7 trillion under management, are voting against management of energy companies for “lack of progress” on climate concerns during the 2020 proxy season. Others, such as Norway’s \$1 trillion wealth fund, have shed holdings in miners that own coal assets, as the fund is doubling down on its climate action by making deeper cuts to its fossil fuel exposure.

Government initiatives

We also see governments around the world exerting pressure and changing their energy policies. Germany, the EU’s economic powerhouse, finally announced its planned exit out of coal energy by 2038. In response to the ongoing COVID-19 pandemic, many governments are crafting economic recovery aid packages with a focus on stimulus spending to further a green and climate focused recovery. Meanwhile the European Union announced its intention to use the COVID-19 crisis and associated economic relief packages to meet its ambitions to be a net-zero economy by 2050.

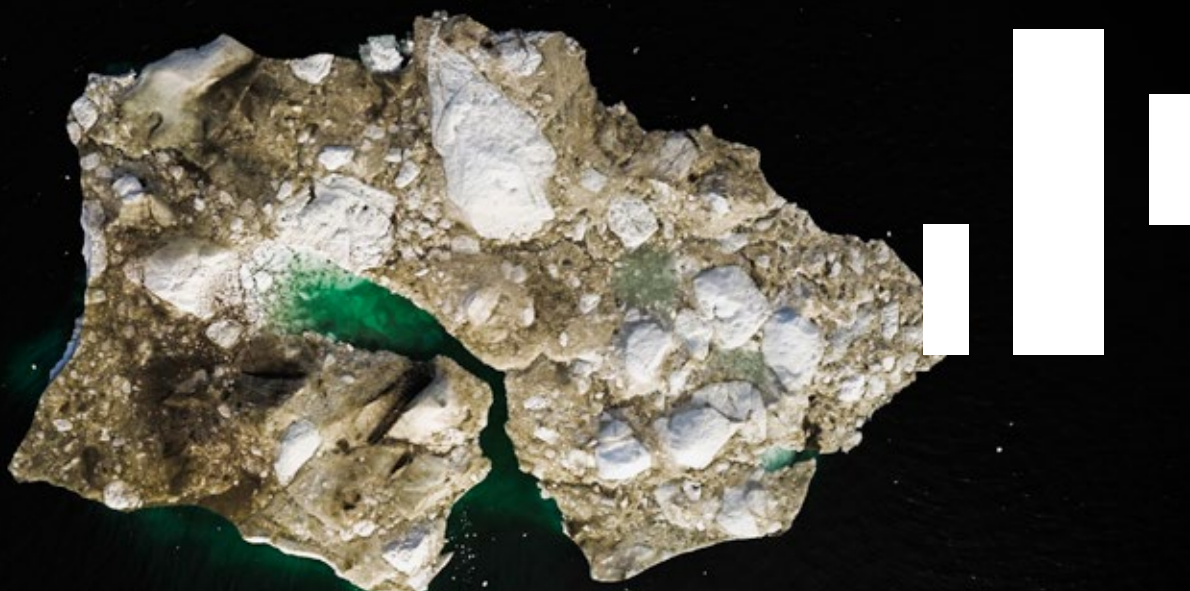
Standing behind and pressuring governments are the future generations of voters and investors demanding climate action. What started in 2018 with teenage Swedish climate activist Greta Thunberg as a single voice, has grown into “Fridays for Future”, a global climate movement of young people protesting and demanding climate action from their governments.

Meanwhile local communities and host governments are expecting miners to be good corporate citizens, respecting the environment and the wellbeing of nearby communities and the local workforce. A company’s social license to operate (SLO) is quickly jeopardized if these expectations are not met.

Insurer initiatives

Even insurers are paying closer attention to ESG policies, with some taking decisive action in what companies they are willing to insure going forward. In the past two and a half years, seventeen insurers have restricted insurance services to coal projects. A dozen insurers have adopted policies to stop all direct insurance coverage to new coal projects – among them are Allianz, AXA, Generali, QBE, Zurich, SCOR, Munich Re and Swiss Re. Liability underwriters are starting to pay closer attention to ESG policies, realizing that companies with solid ESG scores and strategies are less likely to produce losses and are therefore more desirable candidates to insure.

“Standing behind and pressuring governments are the future generations of voters and investors demanding climate action.”



The mining industry response

Many miners have now listened and responded to the call for action. Blue chip companies such as BHP, Rio Tinto and Anglo American are offloading all or parts of their coal assets, while several large miners made public pledges to heavily invest in new technologies to cut greenhouse gas emissions along their value chain.

Select pledges to date

While some pledges only address Scope 1 and 2 emissions - those directly generated by a company or indirectly stemming from the power that miners buy - others are including even Scope 3 emissions, caused when a company's product is being used:

- **BHP**, the world's largest miner, has committed \$400 million over the next five years to reduce greenhouse gas emissions from operations, including Scope 3 emissions²
- **Rio Tinto**, the world's second largest miner, is planning to spend \$1 billion over the next five years to target "net zero" emissions by 2050 with a focus on Scope 1 and 2 emissions³
- **Vale** recently announced that it is allocating \$2 billion to achieve a 33% reduction in direct and indirect emissions by 2030⁴
- **Glencore** recently committed to a 30% reduction in Scope 3 emissions by 2030⁵
- **Fortescue Metals Group**, the world's fourth largest iron ore producer, is targeting to be carbon-neutral by 2040⁶
- **Teck Resources**, Canada's largest diversified miner, is planning to be carbon-neutral by 2050⁷

To date, these pledges are mostly made by large miners who are undoubtedly receiving more stakeholder attention and scrutiny than their smaller counterparts.

Other response options

In order to achieve emission and other ESG-related goals, miners are utilizing options such as renewable energy, automation/electrification of mobile equipment and hydrogen fuel technology to replace diesel fuel. Some technologies are proprietary and developed in-house, while other solutions are provided by outside engineering firms or technology providers. OEMs such as Sandvik, CAT and ABB, are also pushing innovation of new technologies within the equipment they sell to the industry.

Voluntary disclosure developments

In addition to making climate related pledges, many organizations are also supporting the need for appropriate disclosure and have voluntarily joined the Task Force on Climate-Related Financial Disclosures (TCFD). This was established in December 2015, with the goal of developing a set of voluntary climate-related financial risk disclosures; these can be adopted by companies so that those public issuers can inform investors (and other members of the public) about the risks they face in relation to climate change.

Self-regulation

Miners are also looking to self-regulate and to improve sustainability efforts beyond what is mandated by governments or investors. A good example is the International Council on Mining & Metals ("ICMM") which is an international organization dedicated to a safe, fair and sustainable mining and metals industry. The ICMM consist of 27 mining and metals companies and 38 regional and commodities associations, attempting to strengthen environmental and social performance⁸. The organization is supporting innovation in the sector, pushing for change in the way companies design, build and operate mines to reduce waste, minimize carbon emissions, improve worker safety and contribute to the development of local communities. A recent applaudable initiative of the ICMM is the Global Tailings Review, which is meant to establish an international standard for the safer management of tailings storage facilities. ICMM members include (but are not limited to): Alcoa, Barrick Gold, BHP, Codelco, Freeport-McMoRan, Glencore, Newmont, RioTinto, Teck and Vale.

It is probably safe to say that most ongoing innovation and automation efforts take place within larger producers who have the financial whereabouts to experiment with innovative processes and technologies, as innovation takes time, requires money and carries risk.

"In order to achieve emission and other ESG-related goals, miners are utilizing options such as renewable energy, automation/electrification of mobile equipment and hydrogen fuel."

² <https://www.mining.com/bhp-earmarks-400-million-to-reduce-emissions-from-its-mines-products/>

³ <https://www.nenergybusiness.com/news/rio-tinto-net-zero-2050/>

⁴ <https://www.reuters.com/article/us-vale-sa-emissions/brazil-miner-vale-to-spend-2-billion-to-cut-carbon-emissions-33-by-2030-idUSKBN22P0>

⁵ <https://www.glencore.com/media-and-insights/news/glencores-commitment-to-the-transition-to-a-low-carbon-economy>

⁶ <https://www.mining.com/fortescue-metals-targets-zero-emissions-by-2040/>

⁷ <https://uk.reuters.com/article/us-teck-resources-climate/canadas-teck-resources-targets-to-be-carbon-neutral-by-2050-idUKKBN1ZX23W>

⁸ <https://www.icmm.com/en-gb/about-us>

Case study one: Torex Gold Resources Inc.

However, regardless of size, innovation can take place across the industry, as the following example will illustrate. Torex Gold is an intermediate gold producer, based in Canada and with operations in Mexico. The company is a fantastic example of how ingenuity and perseverance can lead to truly meaningful innovation without spending tens or hundreds of millions of dollars in R&D.

Muckahi underground mining system: the two-way traffic challenge

Torex' impressive home-grown innovation is the Muckahi underground mining system, developed by Fred Stanford, Torex's former CEO and President, now Executive Chair of the Board and an industrial engineer by trade. The system is currently being tested at Torex' ELD Mine in Mexico.

Muckahi came to life about 30 years ago, when Stanford was a mine manager, running a complicated underground mine in Sudbury, 7,000 feet deep. He quickly understood that mining is a material handling business, a logistics business, conducted on a single-lane road. To Stanford, this inefficient way to run the business underground did not make much sense and at first it became a hobby, trying to figure out a way to allow two-lane traffic in tunnels less than half the size.

Changing the processes

Muckahi is not representative of ground-breaking, complicated new technology but more a clever change in processes, using some pieces of equipment that have already been in existence but were modified to fit this system. Muckahi convinces through its simplicity and hard numbers, showing substantial reductions in:

- underground mining capital expenditures (up to 30%)
- operating expenses (up to 30%)
- time between investment and revenue (up to 80%)
- underground greenhouse gas emissions (up to 95%)⁹

Monorail system copes with steeper inclines

The system is deploying twin roof mounted monorails, continuously and efficiently transporting personnel and supplies in two-lane traffic in much smaller tunnels. The system can cope with a 30-degree incline where conventional mines would require no more than 7 degrees, as rubber tires of haul trucks would start spinning at an incline beyond 7 degrees. Allowing for steeper ramps, Muckahi cuts down the length of ramps used in conventional mines to a quarter of the length previously

required. In addition, the system utilizes continuous conveyor transport of broken rock directly from the stope to surface, increasing mining rates.

Electrification benefits

The complete electrification of the mine is also possible, as the conveyors can be directly connected to the grid. Electrification has the added benefit of the mine requiring materially less ventilation as there are no hazardous diesel fumes previously associated with a haul truck fleet. Less ventilation translates into cutting costs and improving the air quality and work environment underground. Lastly, the mono-rail system allows for full automation of the transport process.

Making the miner the center of the production process

When asked about automation of the mine, Stanford confessed: "I am actually not a technology guy. I am not a fan at all of automating our workers out of existence. I prefer to make the miner the center of the production process again. They are the ones making the decisions and there is a lot of dignity in that. The joy of work has been making a decision and when the technology does it all, you may as well hire robots."

Stanford further astutely noted that: "You can automate yourself out of your social license, especially in areas where labor does not have another choice."

Stanford's initial hobby turned into an actual mining solution approximately five years ago, after figuring out a critical piece of the system that was previously unsolved. Stanford approached his Board of Directors to ask for support in implementing Muckahi; although it would mean taking a chance, the Board gave the green light to proceed.

It was then determined to identify key risks of the technology first. According to Stanford, it was agreed that "If there is a risk of failure, fail early and fail cheap! We took the highest risk piece and we built it first. We used off the shelf gear as much as we could."

"I prefer to make the miner the center of the production process again. They are the ones making the decisions and there is a lot of dignity in that."

⁹ <https://im-mining.com/2020/02/20/torex-stanford-looks-forward-to-big-year-with-advancement-of-muckahi-mining-system/>

Approaching MedaTech

In order to refine the design for the Muckahi system and its various components, Stanford first approached a major engineering company, which did not yield the hoped-for results. He then connected with Robert Rennie, President of MedaTech, a smaller boutique style engineering firm located in Collingwood, Ontario, specializing in underground mining and drilling equipment. MedaTech is a unique technology supplier, working with miners and OEMs alike, developing solutions for the mining industry while also addressing ESG concerns. Due to its size, MedaTech has the advantage of being agile and quick to develop bespoke solutions compared to its larger competitors. Unlike some of the larger engineering firms, MedaTech did not ask to own any Intellectual Property connected with the development of Muckahi. It was and is a pay-as-you-go arrangement which is working for both parties involved.

“MedaTech was really willing to be an extension of us” Stanford explained. “They designed the initial drilling machine and a service platform with a stabilization system attached to the roof, able to function on a 30 degree down ramp.” After that, Torex and MedaTech moved on to design equipment with lower associated risk. At present, Muckahi is now very much a working model of a mining method while the design of additional auxiliary equipment remains ongoing.

According to Stanford: “It has been fun to make mining an exercise of simplicity. We designed Muckahi not for commercial sale but to give ourselves a technical advantage to go with our social advantages to create a commercial advantage.”

A real solution to the operational process challenge

When Muckahi was first conceived, ESG and sustainability efforts did not receive the same level of attention as today; however, mineworker Health & Safety (especially underground) was always a focus for the industry. Breathing diesel fumes, even if diluted with ventilation, is less than ideal; using an electric method instead would provide additional health benefits to the workers underground.

Muckahi is a real solution to an operational process problem designed by someone who knows underground mining in an out and who deeply cares about his workforce. The result is good for the environment, the business, and good for the people within the business.

Case study two: Newmont Corporation

In contrast to Torex, an intermediate gold producer, stand the innovation efforts of Denver-based Newmont Corporation, the world’s leading gold company and a producer of copper, silver, zinc and lead with assets in North America, South America, Australia and Africa.

ESG credentials

Over the years, the company has been repeatedly and widely recognized by several independent organizations for its principled ESG practices, including strong climate governance and financial planning in response to climate related impacts.

With size comes responsibility, together with an awareness that a company is constantly judged and assessed by outside stakeholders. Rock-solid ESG practices are therefore not a nice-to-have, but essential for the survival and success of the business in the long-term.

Recently, Newmont was ranked 13th overall in 3BL Media’s (formerly Corporate Responsibility Magazine’s) 100 Best Corporate Citizens list for 2020¹⁰, moving up from 20th on last year’s list. Newmont was the sole mining company in the top 20 and one of only two miners to make the 21st annual list.

“Consistently strong ESG performance is inextricably linked to delivering superior business results and is a key measure of how well our business is managed overall,” said Tom Palmer, President and Chief Executive Officer. “This recognition is yet another indicator of how deeply sustainability and strong, transparent governance is integrated into our culture.”¹¹



¹⁰ <https://100best.3blmedia.com/>

¹¹ https://www2.deloitte.com/content/dam/insights/us/articles/5065_Global-resources-study/DI_Global-resources-study.pdf

2019 sustainability report: "Beyond the Mine"

Innovation and the adoption of new technologies to further sustainability goals is part of how Newmont does business and is further explained in the company's 2019 Sustainability Report, fittingly titled "Beyond the Mine", recognizing that the impact of mining reaches further than the mine itself.¹²

For example:

- Newmont's Borden mine in Ontario is using state of the art health and safety controls, digital mining technologies, and an electric underground fleet, cutting emissions.
- Across the company's haul truck fleet and heavy vehicles, Driver Safety System Technology has been installed, monitoring driver fatigue and distraction and providing instant intervention for tired operators. This technology protects human and physical assets alike.
- In order to monitor its tailings storage facilities, Newmont is using InSAR (Interferometric Synthetic Aperture Radar) satellite technology, which detects and measures movement of the dam walls in real time, so trends can be detected sooner.
- The company is further deploying solar power in Ghana and evaluating this green form of energy for operations in Australia and Mexico.
- For its Boddington mine in Australia, Newmont committed to invest \$150 million to fully automate its haul truck fleet, which would have a substantial impact on cutting greenhouse gas emissions.

The role of the Chief Technology Operator: integrating technical talent into a single team

At the helm of all things technology stands Dean Gehring, Newmont's Executive Vice President and Chief Technology Officer.

Gehring's global team is approximately 700 people strong and encompasses a broader functional scope than his title would suggest. It includes mining engineers, geologist and geotechnical engineers, metallurgists and a corporate technology group, as well as assets management and operational support hubs where real-time online monitoring of all of Newmont's fixed and mobile assets takes place. Obviously, operational technology and innovation form part of the mix, as does supply chain and IT. According to Gehring: "You will be hard-pressed to find any company that has put all of these technical groups together this way."

It is this level of integrated technical services that allows proper connectivity across the company. The deployment of innovative technologies in one part of the world is being evaluated overall to see if it can be utilized elsewhere within the portfolio.

Weathering COVID-19 and working from home

The extent of integration across functions has also enabled Newmont to successfully weather the storm caused by the ongoing COVID-19 pandemic and opened management's eyes as to the needed size and location of a specialized and technical workforce. Across the industry, miners always struggled to hire subject matter experts who are willing to live and work in remote parts of the world; a solution to this conundrum is the consolidation of fewer individuals servicing multiple assets across the globe. In order to successfully consolidate, a company requires consistency across systems; that consistency, such as a standardized IT platform, is present at Newmont, allowing employees who suddenly had to work from home to do so without missing a beat.

Gehring called it a "paradigm shifting moment" changing his own traditional views of how work can be performed in the mining industry. The concept of working remotely and working from home did not sit well with him initially. However, Newmont has now successfully worked this way for the last few months. "We do not have to have as many people at the sites as we thought we needed. Today, they are not there, and we are still getting the work done. It saves money but also allows us to attract a different more diverse workforce."

Battling cyber risk

The high level of integration at Newmont is also helpful when battling emerging cyber risks which are the unavoidable result of increased automation levels. Most technologies are being supported by IT infrastructure and networks which are growing in size and complexity, thereby increasing the potential for Cyber-attacks, breaches and leaks. In order to mitigate the company's growing Cyber risk, various functional teams support each other. For example, the team looking after operational technology (such as automated haul trucks) will connect with the Chief Information Officer who leads IT, providing operational technology support. "We recognize that the systems we are building today rely so heavily on IT backbones and infrastructure, you have to have the subject matter expertise of an IT department supporting operational technology in the field. This level of functional integration really supports cyber security efforts" Gehring said.

¹² <https://www.newmont.com/sustainability/sustainability-reporting/>

Combining internal R&D with Third-Party innovation

For innovative technologies and processes, Newmont relies on a mixture of internal R&D combined with outside third-party innovations.

Newmont itself holds over 67 patents, mostly in the processing space, far exceeding other gold miners. It has always been part of the company's DNA to invent where it makes sense and to research and develop proprietary processes and equipment where there is a void. Newmont does avoid innovating for innovation's sake; if an off-the-shelf solution is available, the company will utilize it first. Historically, Newmont has done more R&D in the metallurgical space as it is easier to find vendors or Original Equipment Manufacturers who drive innovation in the mining equipment space.

Innovation: fast follower or leading edge?

Gehring is often asked to describe Newmont's innovation posture or philosophy. Is Newmont a fast follower or leading edge? The answer is that it depends on the specific matter on hand. "We look at innovation as being new to Newmont. If something is new to Newmont, we approach it with an innovation lens, mainly to make sure that we are capturing the change management required to ensure successful implementation and rapid replication."

As pointed out earlier, Newmont's approach to innovation is deep-rooted and not a recent phenomenon that tends to yield to stakeholder pressures. Gehring recalls his first encounter with Newmont in 1989 when he was a summer intern student at the company's Nevada operations. His job was to be an ore control technician, using software to delineate the ore zones for the shovel operators; that software was developed by Newmont itself. At that time, in the later 80s and early 90s, Newmont had developed some of the most sophisticated mine planning software in the world because there were no vendors that had an equivalent product.

"30 years ago, the problems we were trying to solve for back then were different than the problems we are trying to solve for today. While they may contain similar elements, such as improving safety or productivity, we keep recognizing that there are other elements to the problems we are trying to solve. We are now trying to solve greenhouse gas emissions. We are trying to solve overall energy consumption."





Innovation: internal processes

When asked what recent innovation or automation effort he is most proud of, Gehring warned that the answer may be disappointing as it does not involve a flashy piece of technology. Some of the most effective innovations that Newmont is currently deploying are centered around how to innovate internal processes. He commented:

“Most people think of innovation as something technology related. Innovation is not limited to technology. You can innovate in how you work together and how a company solves problems. Every company struggles with replicating best practices across its portfolio of sites. Innovating in that space is huge value to a company, improving productivity and safety, as well as lowering risk.”

The “Idea Market Place”

It has become a continuous goal to identify and replicate best practices within the company. To that end, Newmont developed the “Idea Market Place”, an online platform where ideas are captured and made visible.

Newmont does not blindly adopt innovation or automation but is taking a very disciplined approach as to what technologies should be developed in-house or brought in from the outside. Any new technology adopted is subject to change management procedures and embedded across the organization in a consistent way with various technical functions supporting each other in the process.

In closing, Gehring perfectly summarized Newmont’s attitude towards innovation: “Don’t employ innovation to fix underlying foundational issues that need to be solved first. We want to sweat the assets first and then we put technology on top to make it better. That is why we are focusing on best practices, to get everyone to a high level of performance. It will take innovation and creativity to do that.”

Conclusion: embracing innovation

There is no denying it that change is occurring in the mining industry with many producers of varying sizes adopting automation and new innovative technologies. Cynics may claim that any changes are purely driven by bottom line, profit driven thinking. Even so, does the motivation for positive change truly matter? Should we not focus on the results instead?

Innovation and risk go hand-in-hand

Embracing innovation will always carry a risk; not only the risk that a new technology or process may not produce the desired results, but also the increased risk of cyber vulnerability that goes hand-in-hand with increased automation and technological advances. Globally, cyber-attacks are on the rise, although to date such attacks on the mining industry have been relatively rare. Regardless, the increased risk of Cyber-attacks is hardly an excuse to forego much needed innovation, but this very real risk needs to be taken into account when exploring and implementing new technologies.

Towards fully automated mines?

Currently, we are living through unprecedented times, with a global pandemic that is impacting the mining sector, albeit to a lesser degree than other sectors of the economy. While some producers have escaped government mandated mine shut-downs, others had to put their assets on care and maintenance for several weeks. Will this pandemic change our attitude towards automation further? Are we looking into a future where mines are fully automated with skeleton staff, nearly immune to a pandemic outbreak but with greater unemployment of local communities who used to make a living at the nearby mine?



Ignoring the issue is not an option

If operators want to cut energy requirements and resultant emissions, if they want to leave a positive legacy in the communities they operate in, things must change, and new processes and technologies will have to be developed and adopted. Innovation is therefore key. Those who deny that fact, ignoring the demands of the general stakeholder base, will most likely experience detrimental impacts to their business in the long run, jeopardizing investor support and access to financing, as well as risking their social licenses in the communities in which they operate.

Innovation doesn't have to be costly

The outside pressures miners face will vary based on a company's size. Large producers with strong balance sheets will be expected to take more decisive action compared to smaller single-asset producers with limited working capital. However, innovation does not always have to involve expensive new technologies. Every organization can do its part by rethinking processes to improve its environmental and societal footprint.

In the end, nobody knows what the future holds but it is safe to say that the mining sector will undergo lasting changes with greater adoption of innovation, automation and new technologies to meet sustainability goals dictated by stakeholders and a planet in need of a human attitude change.

“Will this pandemic change our attitude towards automation further? Are we looking into a future where mines are fully automated with skeleton staff, nearly immune to a pandemic outbreak but with greater unemployment of local communities who used to make a living at the nearby mine?”



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Enhancing your ESG response: the strategic role of the risk manager

Introduction: doing nothing is not a viable option!

Environmental, Social and Corporate Governance (ESG) factors have been around for over a decade, but whereas they were once considered “nice to have” principles or an ethical stamp of approval to show that you were a good, moral company, times have changed. ESG has now become a financial and strategic imperative; many ESG factors are now demanding Board level attention, with climate change particularly dominating recent (largely pre-COVID-19) discussions at the World Economic Forum in Davos at the beginning of the year¹.

Doing nothing is not a viable option, particularly in the mining sector; investors are demanding climate disclosure, central banks are working together to ‘green the financial system’ and expectations of employees and customers are rapidly shifting as ESG truly enters the mainstream.

In a world of potentially 9 billion people by 2030 – including 3 billion new middle-class consumers² – the challenges of expanding resource supply to meet future demand are unprecedented but will need to be considered with ESG in mind. Mining is one of the key sectors of the transition to a

low carbon economy, with materials such as lithium, cobalt and rare earth elements required for end products, from photovoltaic cells through to new smartphones.

Boards looking at operations through an ESG lens

If your CEO or CFO hasn’t been asked about your company performance through an ESG lens, then rest assured it is coming, and coming soon. It is becoming increasingly apparent that ESG performance is going to be an important driver for mining industry stakeholders - lenders, insurers, shareholders, regulators – even consumers. Indeed, it’s likely that the money will increasingly follow those mining companies with the highest proven ESG credentials, as recognition of the systemic nature of issues such as climate change and a plan to manage them increasingly become key indicators of appropriate risk management.

Add to this the idea that COVID-19 may accelerate the broader appetite towards ESG as financial markets look to build resilience to systemic risks, and there is an even stronger case for enhancing your ESG response. Much like the warning signs of the 2008 financial crisis, is it time to pay attention to the ripples before they turn into waves.

¹ <https://www.euractiv.com/section/climate-environment/news/davos-wrap-up-forum-runs-out-of-steam-as-climate-becomes-king/>

² <https://www.icmm.com/website/publications/pdfs/responsible-sourcing/icmm-circular-economy-1-.pdf>

The strategic role of the risk manager: pivoting from risk to opportunity

The good news is that risk managers can be proactive in addressing ESG; furthermore, many industries are finding that the insurance sector is uniquely placed to help them, given its experience of being on the front-line of managing the impacts of a changing climate over many decades.

As we navigate the challenges of a COVID-19 affected world, it will be critical to maintain momentum and interest in this area; the effects of oil prices dipping into negative figures and disruption to global cargo markets are placing a sustainable recovery high on the agenda and triggering new infrastructure projects in an effort to bolster GDP.

As we explain in this article, there's never been a better time for risk managers to bring together a system-wide perspective, play a critical strategic role in guiding the Board's ESG response and pivot from risk to opportunity.

ESG drivers: a changing climate, and a climate of change

Since the industrial revolution, and particularly over the last 50 years, the world has experienced significant economic growth, powered by ever-increasing use of natural resources, driven in turn by a substantial increase in global energy demand. This increase in human activity is known as 'The Great Acceleration' and has resulted in many benefits, lifting millions out of poverty and creating our modern world. However, it has also had some unintended consequences, including unprecedented changes in our climate.

Indeed, events that would have seemed unimaginable only a few years ago, such as PG&E becoming the first recognised corporate casualty of climate risks in the energy sector³, or the Chairman and CEO of BlackRock discussing climate risk and referring to a fundamental reshaping of finance⁴, are now becoming the norm and receiving Board level attention.

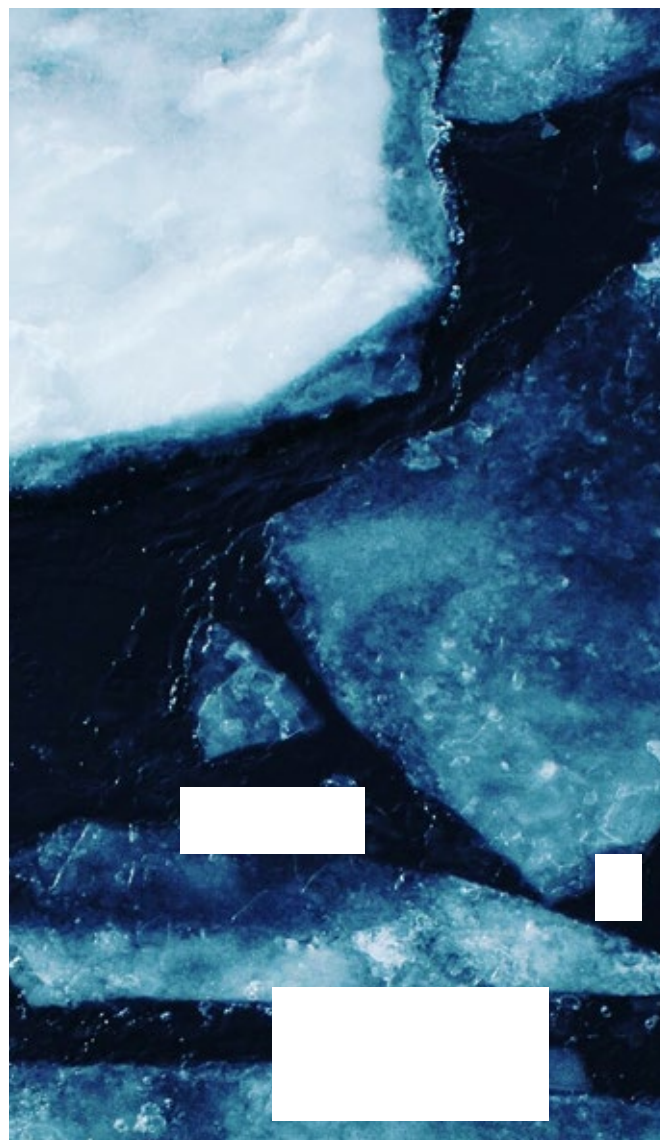
In July, BlackRock announced they had identified 244 companies that were making insufficient progress on climate risk. 53 had voting action taken against them on climate issues, and 191 were warned they would risk voting action against management in 2021 if they do not make significant progress.

Source: BlackRock⁵

Environmental threats dominate

For the first time in the history of the World Economic Forum's Global Risk Report 2020, environmental threats dominate issues on senior leaders' agendas, as evidenced by the position of the green diamonds in Figure 2 of Margaret-Ann Splawn's article earlier in this Review. To more fully understand why there has been such a significant shift in the ESG zeitgeist, it is useful to understand current views of the science, the frameworks being used and the actions that central banks, regulators and investors are taking.

These factors will have a big impact on your role as a mining risk manager, and there has never been a better time to get up to speed with the ESG landscape and help your Board develop a strategic response.

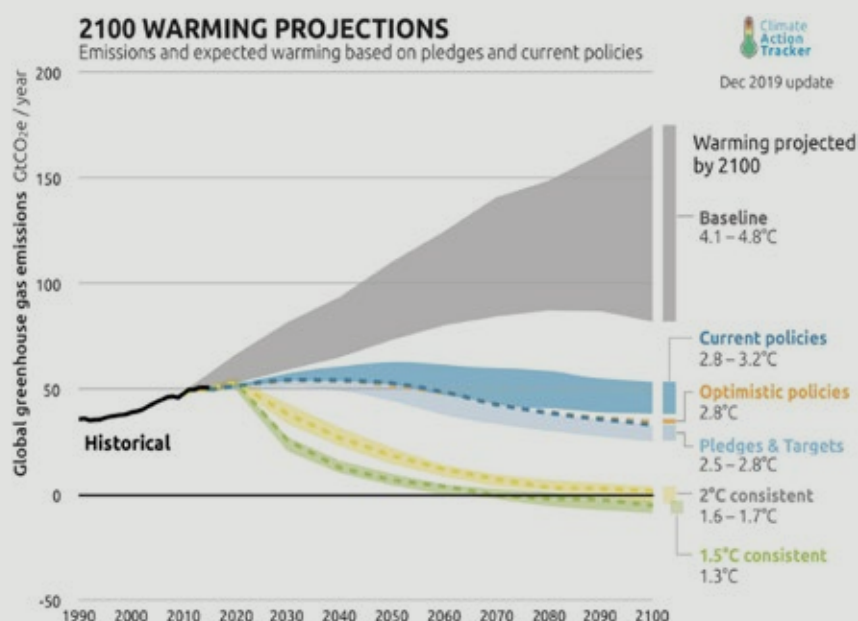


³ <https://www.wsj.com/articles/pg-e-wildfires-and-the-first-climate-change-bankruptcy-11547820006>

⁴ <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>

⁵ <https://www.blackrock.com/corporate/literature/publication/our-commitment-to-sustainability-exec-summary-en.pdf>

Fig 1: The science landscape



Source: Climateactiontracker.org

If we are to keep global temperatures to ‘well below 2°C’, the guardrail which scientists view as important to reduce the risks of severe, irreversible and pervasive changes in our climate, we need to make substantial and sustained reductions in the rate of emissions and reach ‘net zero’

As shown in Figure 1 above, 2020 represents a fundamental fork in the climate change road; the actions we take now and in the coming years may well determine the future of the world’s climate system. Views on how extreme weather events will change in a warmer world vary, depending on the type of event and its individual characteristics. This is where modelling future climate scenarios using state of the art scientific knowledge can play a key role in your strategic planning and risk management processes.

While a 2°C increase in temperature may not seem important, it’s worth bearing in mind that for the last 10,000 years it’s the relative climate stability of +/- 1°C that has, at least in part, been the foundation of our collective progress today: a climatically stable nursery for civilizations to grow. Beyond 2°C, or even 1.5°C according to a recent IPCC (Intergovernmental Panel on Climate Change) report⁶, we are going in to uncharted territory with increasing risk of climate tipping points.

There has been a significant and rapid increase in concentrations of atmospheric carbon dioxide (CO₂), especially since the 1970s, reaching levels unprecedented for at least 800,000 years, during which time we’ve been through many ice ages and warm periods (including inter-glacials such as our pre-industrial climate). In fact, palaeoclimatological evidence shows that the last time CO₂ concentrations were this high was at least three million years ago. Temperatures were two or three degrees higher than pre-industrial climate and seas were 15-25 metres higher.

CO₂ is a greenhouse gas that acts like a thermal blanket around the Earth, and it’s getting thicker every year. In response, our planet is warming, sea levels are rising and weather patterns are changing. The rapid increase in CO₂ takes time to exert these impacts on the planet, and so the emissions produced already will continue to affect our climate for centuries to come. If we continue along a similar pathway – continuing to increase carbon emissions – global temperatures could rise over 4°C by the end of the century, and this has been quoted by some as being an uninsurable world⁷.

⁶ <https://www.ipcc.ch/sr15/>

⁷ https://www-axa-com.cdn.axa-contento-118412.eu/www-axa-com%2Ff5520897-b5a6-40f3-90bd-d5b1bf7f271b_climatesummit_ceospeech_va.pdf

The current ESG landscape: a framework for climate-related financial risks

As the worlds of ESG, climate science and finance have come together in recent years, a new language of climate-related financial risk and disclosure has developed.

One framework you may be increasingly aware of is the “physical, transition, and liability” financial risks from climate change, which Margaret-Ann Splawn referenced in her article. This framework was first set out in a report by the Bank of England in 2015⁸, published alongside a seminal speech on ‘Breaking the Tragedy of Horizon’ by the then Governor of the Bank of England, and Chair of the Financial Stability Board, Mark Carney.

As illustrated by Margaret-Ann, these three channels of climate risk are highly relevant to the mining sector and are already having a meaningful financial impact across natural resource sectors.

Physical risks

Physical risks are the direct risks arising from damage, loss of business or supply chain disruption due to the increasing intensity of weather extremes and climate. For the mining sector, sites are often located in remote and climate-vulnerable areas; extreme weather events and climate variability have the potential to damage fixed assets and disrupt supply chains.

Assessment of physical risk can help mining companies understand their operational risks and respond to extreme events. Key locations may not be impacted by water stress or flooding right now, but that could change and soon. This is where the use of those IPCC scenarios is incredibly useful because they give an evidence-based frame to consider possible futures for asset management and new capital expenditure.

Transition risks

Transition risks are the financial impacts of moving towards a low or zero-carbon economy, such as the re-pricing of carbon intensive assets. For the mining sector, transition risks may arise from changes in government policy, for example through taxes to limit supply or demand or changing demand for resources through new supply chains.

Understanding how the transition to a low carbon economy could shift demand will be essential as risk managers consider how to make investments in the most sustainable way - whether this is by improving the efficiency of existing infrastructure, by investing in new technology or by committing expenditure to new projects. 49% of annual global GDP – more than \$39 trillion – is now covered by regions of net-zero targets, according to the latest analysis from the Energy and Climate Intelligence Unit (ECIU)¹¹. Investors have a growing concern over the viability of high carbon business models in an increasingly carbon-constrained world.

Creating an effective climate risk mitigation plan is not impossible, and there are opportunities such as the potential to take advantage of developments in renewable energy generation to eliminate diesel and increase electrification in mines. It is also a conversation for the whole value chain, such as the requirements for new types of transport if existing sites are retrofitted for new use – biomass and coal have very different storage requirements¹². This is where trusted partnerships to enhance research and development will become business essential.

33%

current approximate water risk of gold and copper mines around the world - this is expected to double by 2030⁹

73%

of lithium mine capacity operates in regions under high water stress¹⁰

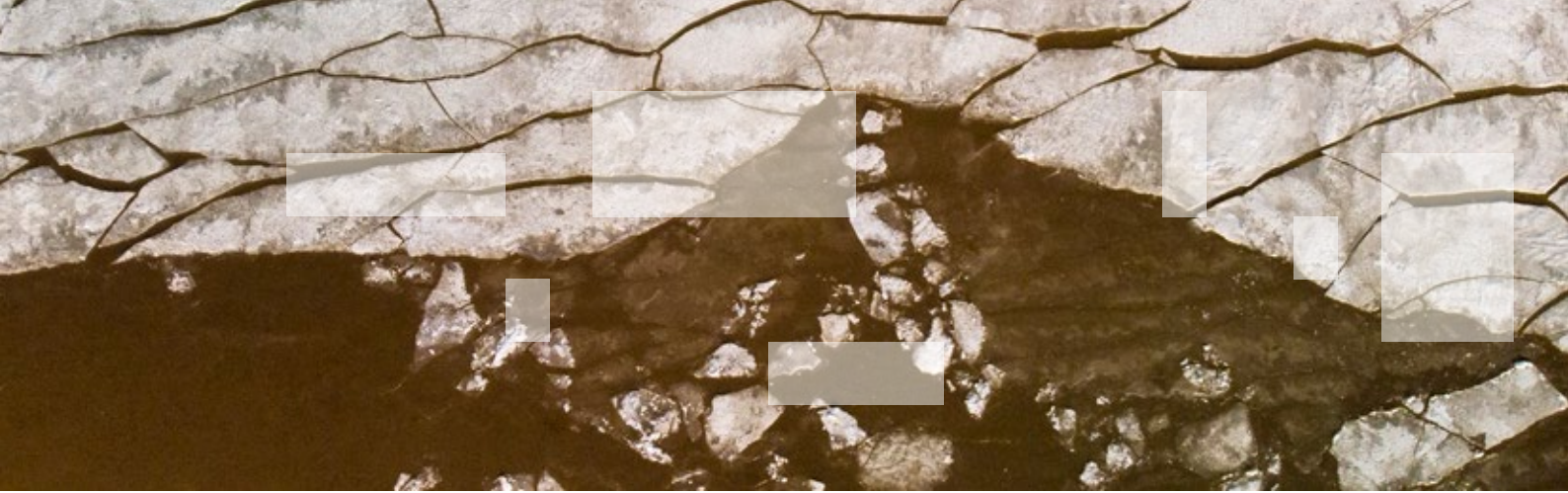
⁸ <https://www.bankofengland.co.uk/climate-change>

⁹ <https://www.spglobal.com/marketintelligence/en/news-insights/blog/climate-related-considerations-in-the-metals-and-mining-sector>

¹⁰ https://wri.org/applications/aqueduct/water-risk-atlas/#/?advanced=false&basemap=hydro&indicator=w_awr_def_tot_cat&lat=21.40449100321618&lng=50.35686492919922&mapMode=view&month=1&opacity=0.5&ponderation=DEF&predefined=false&projection=absolute&scenario=optimistic&scope=baseline&timeScale=annual&year=baseline&zoom=4

¹¹ <https://eciu.net/news-and-events/press-releases/2020/almost-half-of-global-gdp-under-actual-or-intended-net-zero-emissions-targets>

¹² P7. https://www.lloyds.com/-/media/files/news-and-insight/risk-insight/2020/below2c_insuranceforalowcarboneyconomy_deepdives_pdf.pdf



Liability risks

Liability risks include those that arise from parties who have suffered loss or harm due to climate change and seek to recover damages from those who they view as responsible. These risks could arise from a failure to adapt, mitigate or disclose the financial risks from climate change.

As highlighted by Margaret-Ann, there are over 1,800 climate laws and policies which are increasingly viewed as a tool to influence policy outcomes and corporate behaviour. Liability settlements (or costs of court cases) may well grow if such cases start to win compensation from high carbon sectors. While liability risks can be passed to insurance firms if policies allow and the market capacity is there, damage to reputation and subsequent uninsurable claims could be significant. Combine this with increasing climate-related disclosure reporting and you can see why investors are increasingly interested in asking more questions. As regulatory and legal frameworks adapt, litigation risk may benefit from much greater attention.

Not so new risks pose new challenges

In many ways, these risks are not new per se; they translate into existing categories of financial risk such as credit, market, business, operation and legal risks that risk managers have been dealing with effectively for many years. For example, physical risks such as storms or droughts can lead to operational risks in the form of risks to key infrastructure such as tailings dams¹³.

But as new sources of financial risk, they do present new challenges, not least a more extensive modelling of the natural world and developing a much more granular understanding of the transition to a 'net zero' future (see Figure 1 page on 34 for more details).

That's one of the reasons why Willis Towers Watson is now working in multiple sectors and geographies across the world to help clients manage and respond to ESG and climate risks.

What's coming next: a strategic opportunity for risk managers





Over the last year or two, there has been an equally important development which is only just beginning to filter into financial markets, and in turn, into the natural resources sector and through mining markets.

Many of the world's central banks and supervisors, through the Network for Greening the Financial System (NGFS)¹⁴, have upgraded their view on the financial risks from climate change. As highlighted in Figure 2 overleaf, the risks from climate change are now increasingly seen as having 'distinct characteristics' which means these risks need to be 'considered and managed differently'. Key areas where questions are now being asked include:

- **Board response:** regulators are setting clear expectations that managing the financial risks from climate change requires a long-term strategic response owned by the Board, with the premise of 'if you don't consider climate risk to be material, then tell us why'.
- **Individual accountability:** In some countries, such as the UK, banks and insurers are being required to nominate a specific senior executive to be responsible for climate risk¹⁵. A common home for this is the Risk Management team, with the CRO named as the individual accountable.
- **Climate stress testing:** at least 15 countries are now preparing climate stress tests¹⁶, including the need to consider risks up to 2050 and how banks and insurers are adapting their business model to a changing climate and net-zero future. Stress testing is not a new activity and Willis Towers Watson has been helping its clients explore the resilience of their business and risk management strategies for decades. However, designing stress tests to represent current and future impacts of climate change is an emerging field of climate risk analytics, and new developments are being adapted from the scientific community to support this activity. Risk managers should keep an eye on the outputs, because they are testing future lending conditions.

¹³ <https://www.willistowerswatson.com/en-GB/Insights/2020/03/tailings-facilities-and-dam-failure-from-a-risk-management-and-insurance-perspective>
¹⁴ 66 central banks and supervisors and 13 observers <https://www.ngfs.net/en/communique-de-presse/ngfs-publishes-first-set-climate-scenarios-forward-looking-climate-risks-assessment-alongside-user>
¹⁵ <https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss>
¹⁶ <https://www.bankofengland.co.uk/-/media/boe/files/speech/2020/the-road-to-glasgow-speech-by-mark-carney.pdf?la=en&hash=DCA8689207770DCBBB179CBADBE3296F7982FDF5>

Fig 2: The distinct characteristics of risks from climate change

	<p>Far-reaching impact in breadth and magnitude:</p> <p>Climate change will affect all agents in the economy (households, businesses, governments), across all sectors and geographies. The risks will likely be correlated with and potentially aggravated by tipping points, in a non-linear fashion. This means the impacts could be much larger, more widespread and diverse than those of other structural changes.</p>
	<p>Foreseeable nature:</p> <p>While the exact outcomes, time horizon and future pathway are uncertain, there is a high degree of certainty that some combination of physical and transition risks will materialise in the future.</p>
	<p>Irreversibility:</p> <p>The impact of climate change is determined by the concentration of greenhouse gas emissions in the atmosphere and there is currently no mature technology to reverse the process. Above a certain threshold, scientists have shown with a high degree of confidence that climate change will have irreversible consequences on our planet, though uncertainty remains about the exact severity and time horizon.</p>
	<p>Dependency on short-term actions:</p> <p>The magnitude and nature of the future impacts will be determined by actions taken today, which therefore need to follow a credible and forward-looking policy path. This includes actions by governments, central banks and supervisors, financial market participants, firms and households.</p>

Source: NGFS¹⁷

From understanding to action

The conversation continues to move from understanding to action. The UK's Prudential Regulation Authority recently issued a letter to the CEOs of its regulated firms – banks and insurers – requesting that they fully embed approaches to managing the financial risks from climate change by the end of 2021¹⁸. And the NGFS recently published a set of reference climate scenarios which support the economic case for an early and orderly low carbon transition¹⁹.

This step change in action by central banks is being matched by the private sector, with many companies already signed up to voluntary climate risk disclosure initiatives such as the Task Force on Climate-related Financial Disclosures (TCFD).

As of February 2020, over 1,000 companies with a market capitalisation of over \$12 trillion had expressed their support.²⁰ And there's already clear signs from multiple jurisdictions that TCFD could soon become mandatory, at least for listed companies and large asset owners²¹.

Aligning investments to the Paris Agreement

Some of the world's largest investors and banks are now going further, not only disclosing risk but also committing to align their investment or loan portfolios to the 'well below 2°C' goal of the Paris Agreement on climate change²². The Global Sustainable Investment Alliance (GSIA) estimates that ESG investments, i.e. sustainable investing, represent in excess of \$30 trillion globally, with industry research suggesting that this will double in the next three years²³.

ICMM explores climate change issues with members

Industry groups such as the International Council on Mining & Metals (ICMM) have been exploring these issues with their members, and several mining companies are already reporting against the TCFD framework²⁴. As the landscape continues to shift, the demands on firms in the wider economy to respond to ESG measures will only increase. And sectors such as mining, that underpin the resources needed for an orderly transition to a resilient, net zero future, are likely to be at the centre of the ESG storm.

¹⁷ https://www.banque-france.fr/sites/default/files/media/2019/04/17/ngfs_first_comprehensive_report_-_17042019_0.pdf

¹⁸ <https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change>

¹⁹ <https://www.ngfs.net/en/communique-de-presse/ngfs-publishes-first-set-climate-scenarios-forward-looking-climate-risks-assessment-alongside-user>

²⁰ https://www.fsb-tcfd.org/wp-content/uploads/2020/02/PR-TCFD-1000-Supporters_FINAL.pdf

²¹ For example, see the Green Finance Strategy <https://greenfinanceplatform.org/national-documents/green-finance-strategy-transforming-finance-greener-future>

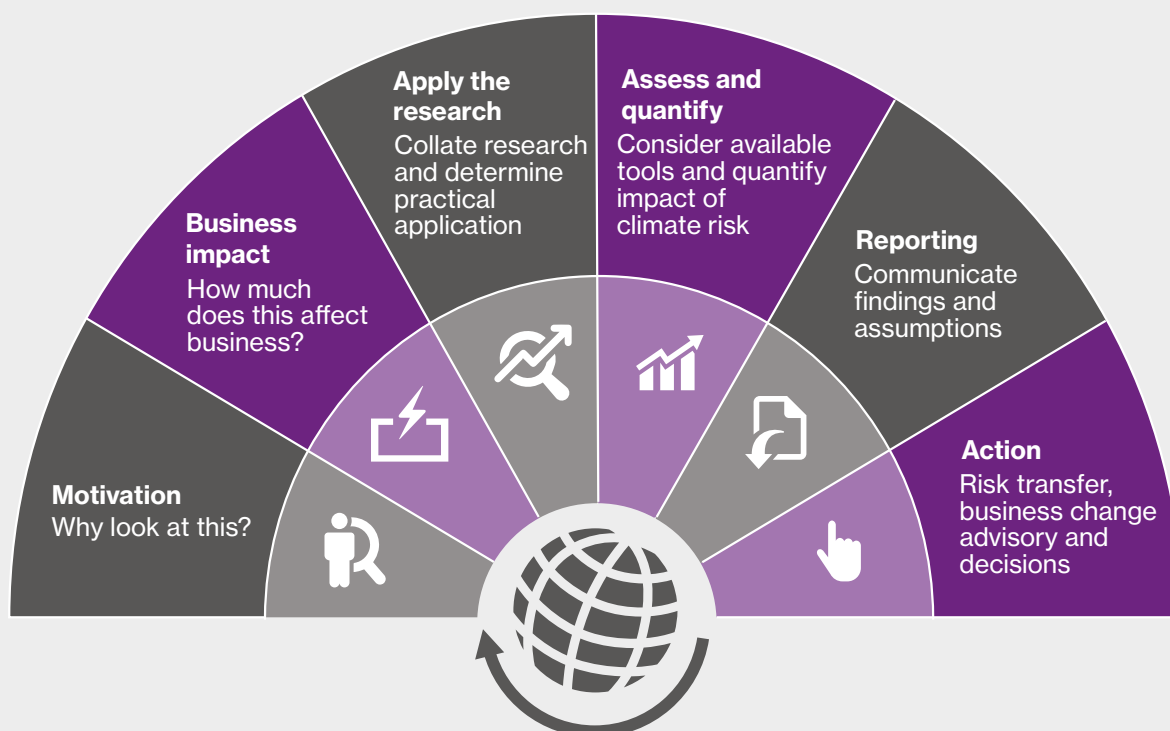
²² See, for example, <https://www.unepfi.org/net-zero-alliance/> and <https://www.unepfi.org/banking/bankingprinciples/>

²³ http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf

²⁴ <https://theintelligentminer.com/2020/01/30/investing-in-a-greener-future-for-the-mining-industry/>

Fig 3: Willis Towers Watson Climate Quantified™ framework

To turn organisational words into action, whether the drivers are ethical, legal, investors or something else, the framework below underpins the diverse ways in which we support clients.



Since the early 1990s, Willis Towers Watson has supported private and public sector organisations to enhance their approach to managing climate-related risks in response to market and regulatory developments.

Our heritage, skills and connections across markets help our clients quantify the financial risks and opportunities from a changing climate and develop a strategic response to supporting an orderly transition to a low carbon and resilient economy.

Climate Quantified™: a new way of enhancing your ESG response

Climate Quantified™ brings together our deep weather and climate analytical experience from the (re)insurance and investment markets, our extensive academic, research and institutional investor relationships, and our multi-discipline expertise and capabilities in a fully integrated service offering.

Furthermore, it embodies a proactive approach to helping shape the global community's response to climate risks. For example: through our \$50 million investment in the award-winning Willis Research Network²⁵ to support open climate and natural hazard research; insights from our Thinking Ahead Institute²⁶ to influence change in the investment world; and our founding role, with the World Economic Forum, in the Coalition for Climate Resilient Investment²⁷.

“Sectors such as mining, that underpin the resources needed for an orderly transition to a resilient, net zero future, are likely to be at the centre of the ESG storm.”

²⁵ <https://www.willistowerswatson.com/en-GB/Insights/research-programs-and-collaborations/willis-research-network>

²⁶ <https://www.thinkingaheadinstitute.org/>

²⁷ <https://www.willistowerswatson.com/en-GB/Insights/trending-topics/climate-risk-and-resilience>

Modelling physical risk impacts

We find the starting point for many clients is modelling the impact of their current physical risks from a changing climate such as storms, floods and other extreme weather events on an operational site-by-site basis. We've helped a number of clients along this journey; for example, by supporting a large bank to understand its climate risk exposure on a large rail infrastructure project. This engagement focused on physical risks to assets and the anticipated downtime following damage as part of creating a common asset resilience language.

From operational concerns to strategic imperatives

Modelling the likely amounts of damage or financial losses linked to future climate projections (e.g. the years 2030, 2050, 2100 under different climate scenarios) can help to make the impacts of possible future climate change more tangible. Knowledge fosters understanding, and then action; this might include modelling water availability to estimate potential business interruption, or the impacts of droughts or excess rainfall on the construction of different types of tailings dams²⁸. These are issues that can move from operational concerns to strategic imperatives.

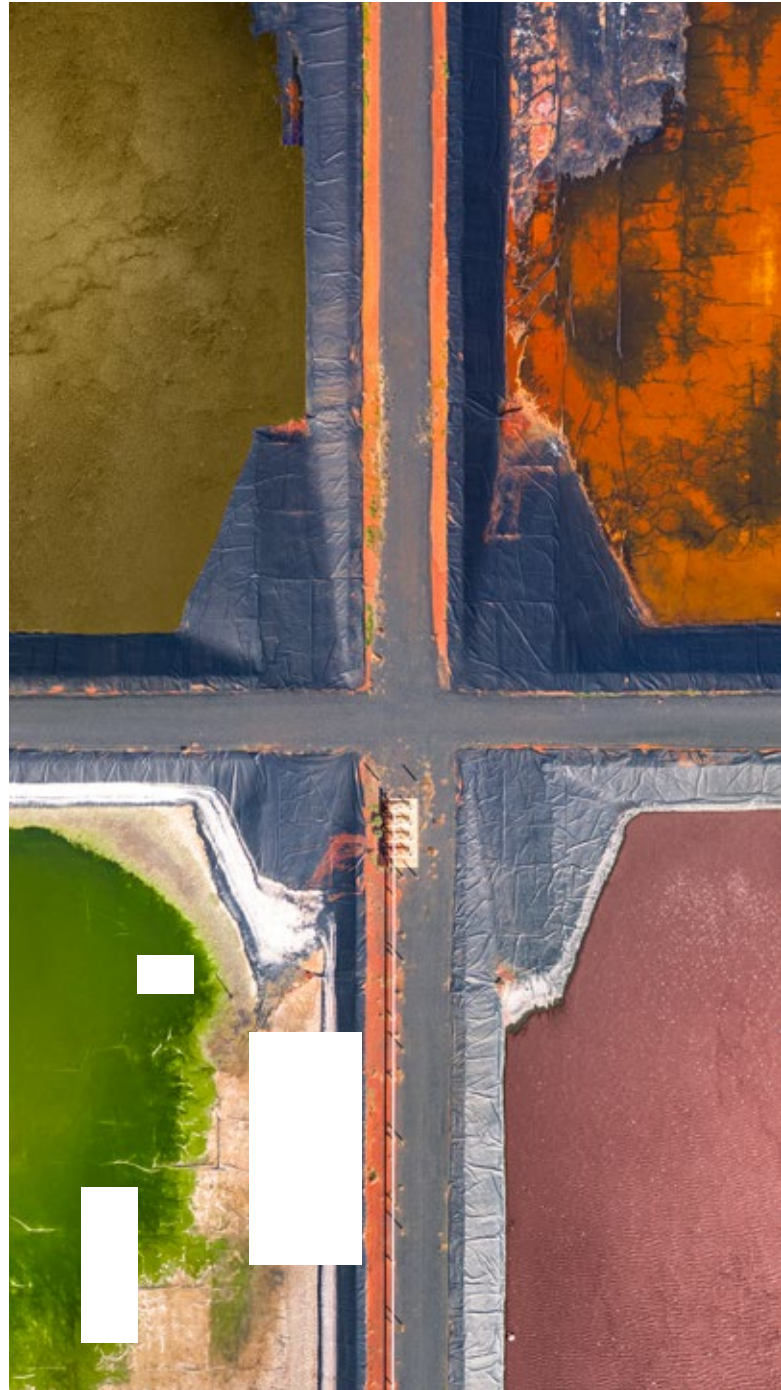
Through this type of climate risk assessment, your company will also be much better prepared to respond to increasing expectations of consumers, lenders and investors around climate disclosures and to guide future planning, risk management and strategy.

Risk managers are uniquely placed to ensure their companies are prepared to meet the increasing expectations of disclosure by investors and regulators, embed climate risk into existing frameworks and ensure Boards are taking a strategic approach.

New opportunities to deploy existing resources

A changing landscape means there are new business opportunities and the potential to redeploy existing resources for new revenue generating activity. Investment in research and development for new technologies is one option that could serve to adapt and transform infrastructure to increase the lifespan of sites through additions such as Carbon Capture and Storage, converting coal generation facilities to use biomass as feedstock²⁹ or looking at completely new uses. Companies should learn from the innovation journeys of other sectors to think outside the box to create new value in future stranded assets and establish new business models³⁰.

Transitioning to low-carbon energy technology and considering sustainability in a holistic way represents a tangible opportunity for market differentiation and talent retention; the mining sector's expertise around the long-term management and processing of assets can play a leading role in supporting the energy transition and the development of a more circular economy.



²⁸ <https://www.icmm.com/website/publications/pdfs/climate-change/adapting-to-climate-change>

²⁹ https://www.drax.com/press_release/draxs-largest-biomass-shipment-arrives-at-the-uks-biggest-biomass-handling-facility/

³⁰ <https://theconversation.com/coal-mines-can-be-closed-without-destroying-livelihoods-heres-how-124336>

The risk manager's role

There are roles for everyone, and risk managers have a unique opportunity to facilitate them in key areas, including:

- **Governance**, including the board's role in providing oversight of climate risk responses and defining management responsibility for climate risk and ESG
- **Risk identification**, identifying the key channels through which climate risks can impact the company
- **Risk appetite**, including forming a view as to whether climate risk should be considered as a separate element or part of aggregate risk
- **Risk measurement and reporting**, including how to incorporate climate risk into financial risk models and reports and deciding on relevant metrics for decision making - a key element of TCFD disclosure
- **Reputation risk**, including identifying public communications needs and a strategy for communicating a firm's climate and ESG response

Having a solid understanding within the business will not only prepare you for the changes that are already happening, but also those that are coming down the pipeline. By engaging with Climate Quantified™, risk managers can benefit from a structured, data driven and strategic approach and deeper insights into ESG issues. And by being proactive, risk managers can be far better prepared to meet the demands of their regulators, investors and Boards.

Conclusion: is it time to quantify your climate risk and develop a strategic response?

While there may be challenges ahead, the mainstreaming of ESG presents a strategic opportunity for risk professionals, particularly in the mining sector. As Boards grapple with the ESG onslaught, risk managers can play a leading role, providing not only risk quantification and analysis but also strategic insights into a rapidly evolving ESG landscape.

“Having a solid understanding within the business will not only prepare you for the changes that are already happening, but also those that are coming down the pipeline.”



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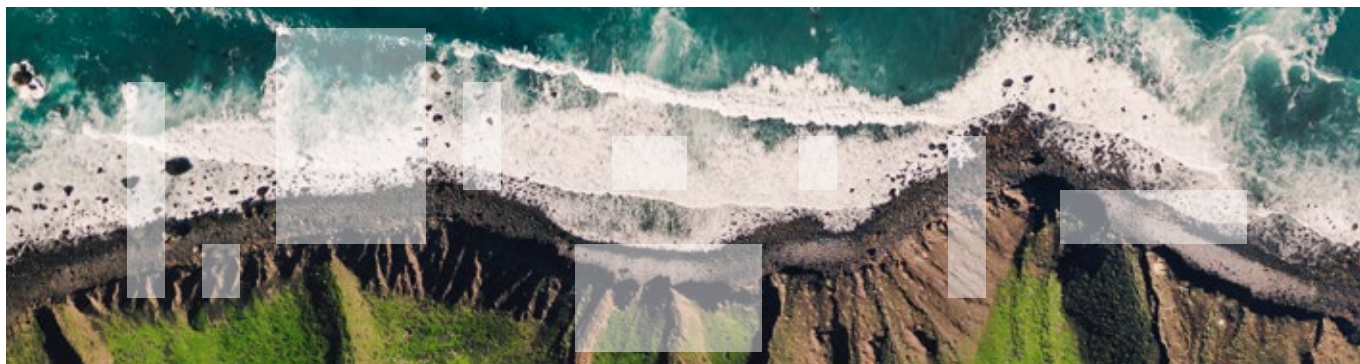
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The post-COVID-19 mining industry: the thoughts of an engineer

*The following article reflects some personal wide-ranging thoughts of **Don Hunter**, one of our employees who, until he joined Willis Towers Watson about five years ago, had been involved for nearly 40 years in the global mining industry. During this time, he has lived and worked in many countries and seen numerous changes in the mining industry as he progressed from the rock face to the C-suite. Don is therefore well placed to offer a perspective on how the mining industry might face a still uncertain, post COVID-19 future.*

Introduction

At the risk of stating what is already obvious, the world has undergone a major change and is unlikely to return to what it was like before COVID-19; this maxim applies to the economy, our way of life and how we work. Moreover, this pandemic has forced governments, businesses and us as individuals to re-assess firstly, how to adapt to survive and then, hopefully prosper in a post-COVID-19 world.

I will focus on the mining industry, but much of what follows will be wide-ranging and apply to industry and commerce in general. I will touch on the changes that the pandemic has forced on mining companies and will discuss some technologies that were already being applied before the pandemic and how their application has probably been accelerated by it. I will put forward some ideas on technologies that will be developed and their associated risks, and finally I will discuss possible implications for risk engineering.

Capital and the challenge of commodity price cycles

First, I think we should remind ourselves that, although mining is generally unpopular and something no one really wants in their back yard, it is a primary industry. Everything we use must either be grown, derived from hydrocarbons or mined. Mining activity is influenced by commodity price cycles which are generally related to economic activity; however, we also see price spikes for certain metals and minerals in response to advances in technology, with semi-conductors, solar panels and batteries being just three examples.

Defining reserves

On the downside, returns on mining investments have historically under-performed other industrial and commercial sectors, with the result that it has sometimes been difficult and expensive to raise the large capital amounts needed to build new mines. Defining reserves to the standard and level of confidence demanded by investors is also expensive.



In certain types of mineral deposits such as steeply-dipping, narrow vein deposits, it is often not practical to define reserves for more than a few years of mine life. In these cases, it may be difficult to secure funding because the window to return the initial investment and then harvest subsequent dividends may be uncomfortably short. Difficulties regarding predicting price cycles, long gestation periods to bring new mines on stream, community and environmental pressures, political and tax instability and now a hardening insurance market all add to the challenges. With this as a backdrop, let us now consider some things mining companies have done to survive the pandemic.

Surviving the pandemic

At Willis Towers Watson we observed that many companies quickly developed COVID-19 management plans. Arguably, some companies in West Africa that had successfully managed recent Ebola outbreaks were better prepared and able to build on that experience instead of having to develop plans from scratch. One company was able to quickly convert the construction camp used for a recently completed expansion project into a residential quarantine facility.

Changes to staffing and rostering

Absences from work through sickness or quarantine requirements, combined with travel restrictions, have forced significant changes to staffing and rostering as miners sought ways to maintain production with reduced work forces. For surface workers at many mine sites, the nature of their work meant social distancing was not unduly difficult. By contrast, in some underground mines such as the labour intensive, deep level mines in South Africa, hundreds of workers are transported underground in crowded shaft conveyances where social distancing is impossible. In more mechanised underground mines with smaller workforces, the challenges of social distancing and hygiene may be less extreme but no less important. For mines that draw their workforce from their neighbouring communities, there is possibly a greater need to strictly adhere to distancing and hygiene rules on the mine site because of uncertainty about how well those rules are managed beyond the mine's gates.

Workforce accommodation

Some enterprises were forced into making organisational changes and modifying work practices to take account of travel restrictions, social distancing and quarantine requirements. Where this resulted in skills shortages, it was necessary to hastily implement training programmes to allow a greater degree of multi-skilling than previously. Mines which accommodate their workforce in hostels, on-site accommodation or camps are particularly susceptible to infection hotspots which, when detected, require quarantining, and, in some cases, closure. Employees at fly-in, fly-out sites have been required to spend extended periods away from their homes because of quarantine rules. In Australia for example, workers at fly-in, fly-out operations who had to travel across State borders were subject to 2 weeks isolation on-site before starting their extended work roster. On returning to their homes, these workers were then subject to two more weeks of self-isolation.

Impact on mental health

These essential protective measures have an impact on employees' mental health and well-being, as well as being highly disruptive to family life. The disruption to pre-pandemic workplace practices is obvious and has, I believe, incentivised employers to re-think well-established work practices which will probably now become the new norms. Importantly, but beyond the scope of this article, is the impact on people's mental health and wellbeing which will probably only be fully apparent in the years ahead.

Project work postponements/cancellations

Restrictions on contractors, third party technicians and consultants visiting mine sites have resulted in postponement or cancellation of some project work and postponement of major maintenance and inspection activities. This raises several questions:

- Is the plant or machinery in question still safe to operate?
- Can the tailings dam that was due for an expert condition assessment still be safely operated?
- Will delayed maintenance result in premature breakdown?
- What are the implications for warranties and, of course, insurers?



As risk engineers, my colleagues and I need to provide insurers with answers to these questions; however, our task is made harder in the current circumstances by being unable to travel to sites and observe conditions at first hand. The challenges of remote, virtual surveys as an alternative to site visits are discussed below.

Looking into the future: an engineer's crystal ball

Looking to the future, what might the mining industry look like in a post-COVID-19 world?

Teleconferencing

With the need for many of us to work from home, we have become accustomed to using teleconferencing where previously we met colleagues and clients in face-to-face meetings. This is likely to continue as companies try to reduce the on-site payroll; moreover, the ability to offer a combination of on-site and working from home may provide a lifestyle that would attract new employees with different training and skills sets. Video conferencing is an enhancement on telephone meetings, but its effectiveness is limited by the reliability, security and speed of the network used. Effective tele-conferencing also requires the establishment of rules of engagement and meeting etiquette to avoid unintended interruptions while allowing all participants to contribute without the frustration caused by overtaking one another. A further, some would say, important disadvantage is the reduced ability to read the body language of meeting participants; something which is often useful in tricky negotiations or dealing with difficult questions.

Before COVID-19, internet development was already on an exponential growth curve. Because of development lead times which go back before the pandemic, we probably cannot say that it has significantly influenced this development rate. However, we can safely say that COVID-19 has provided an incentive for industry and commerce to explore and make greater use of tools such as video-conferencing and networking apps.

An increase in the uptake and use of tele-conferencing is changing the way we do business; however, there are risks. In an article in last year's Mining Risk Review we pointed

out some of the cyber security risks associated with a growing number of increasingly malevolent, sophisticated and well-funded cyber predators. This risk has certainly not gone away and is in fact becoming increasingly significant for the security and confidentiality of our remote working activities.

High speed internet - SpaceX

Demands on internet speed and coverage have led to an increase in the number of satellites providing internet access. Mining companies with operations in remote areas where internet coverage is poor or non-existent will particularly benefit from improved access to reliable, high speed and secure internet access. Since 2015, US-based SpaceX has been developing its Starlink internet access system which will ultimately use a swarm of small, mass produced satellites in low Earth orbit working in conjunction with ground transceivers to provide full global internet coverage. So far about 12,000 of these satellites have already been launched, with the total number expected to be over 40,000¹.

The initial objective is to provide truly global internet access, but SpaceX has already signalled its interest to also sell satellites for scientific, military and exploration purposes. Although many of the potential benefits have yet to be discovered, this visionary project raises important questions:

- How will outer space and access to the internet be regulated?
- What are the risks of over reliance on a single or a small number of service providers, possibly with competing national interests?
- Without meaningful international agreement, how can the weaponization of Space be avoided?

These questions go well beyond the scope of this article and, indeed, the influence of the mining industry. Nevertheless, because it will definitely benefit from good quality, high speed and secure internet access the mining industry will also need to explore and develop ways to manage the associated risks.

¹ <https://spacenews.com/spacex-submits-paperwork-for-30000-more-starlink-satellites/>



Autonomous operation

Prior to COVID-19 we had already seen some of the world's largest mining companies develop remote operations control rooms, increase their reliance on telemetry and increase their use of autonomous vehicles within mine sites, both on the surface and underground. This trend will continue and almost certainly intensify; not so much as a result of COVID-19 but rather as result of mining companies seeking to increase efficiency, reduce costs and, in particular, minimise their on-site workforce costs while finding more productive ways to utilize employees.

Some well documented examples of automation include the Caterpillar company which recently noted that over 2 billion tonnes of rock had been moved by Caterpillar autonomous haul trucks since their introduction². Another leading manufacturer, Komatsu, can probably boast a similar performance.

Moreover, several operators who already use autonomous haul trucks are looking to significantly increase their fleets in the near future. Not only has full autonomous operation been successfully applied to open pit haul trucks, it has also been applied to underground and surface front end loaders, Load Haul Dumps and railway locomotives. There are also numerous semi-autonomous drill rigs, dozers and graders operating around the world.

One major equipment manufacturer, Hitachi, recently announced it will begin autonomous field trials next year of its ultra-large EX3600-7 excavator. Powered by a 1450 kW diesel engine and weighing in at about 370 tonnes, the ultimate objective is to create a fully autonomous excavator capable of safely loading autonomous haul trucks³. The prospect of a single operator remotely overseeing an integrated fleet of multiple loading units and haul trucks is surely not far away.

With over a decade of operating experience, autonomous control, obstacle recognition and anti-collision systems have become increasingly reliable. Autonomous vehicles have provided significant, proven improvements in efficiency, reduced tyre wear and reduction of maintenance costs. To date, autonomous haul truck development has been focussed on the plus 240 tonne payload class; these units are no longer experimental or in prototype development and are being increasingly accepted by a traditionally conservative industry. Manufacturers are also now offering packages to retro-fit and convert conventionally driven units to full automation.

² <https://im-mining.com/2020/04/30/caterpillar-hits-2-billion-tonnes-hauled-milestone-with-autonomous-haulage-system/>

³ <https://mqworld.com/2020/07/17/hitachi-takes-leap-remote-controlled-ultra-large-excavator-trial/>

Until now the users of autonomous vehicles are the major mining companies operating very high tonnage mines, but this will change. Significant market acceptance, coupled with the ability to retro-fit existing equipment and innovative ways to finance fleets, suggests that it is only a matter of time before autonomous equipment is more widely used, including by smaller operations.

Developments in remote maintenance support

During lockdown it was not possible for consultants, technical experts and original equipment manufacturers' (OEM) support specialists to visit mine sites to provide face-to-face, on-the-job support. As already noted, this led in some cases to project work being cancelled or delayed and some critical equipment inspections and overhauls being postponed with corresponding risks of premature failure/breakdown and safety. Delaying major overhauls or important inspections can only be sustained for a limited time before the equipment must be shut down or risk the consequences of breakdown or failure. Of course, insurers are very interested to know how postponed inspections, changed maintenance programmes or reduced budgets may alter a site's risk profile.

In future, because COVID-19 is likely to be a long-term feature of our lives, international travel is likely to be more expensive than in the past. Moreover, the different rates at which countries ease their travel restrictions and the possibility that once lifted, quarantine restrictions may be re-imposed, create further uncertainty for international travellers. Consequently, site visits by consultants and technical support specialists are likely to be less common than in the past and alternative means of support will have to be found.

Remote condition monitoring hardware

Many manufacturers already build remote condition monitoring hardware into their equipment. Remote monitoring has progressed from simply collecting and downloading data to a laptop on site to remote condition and performance monitoring in an off-site Control Room or OEM facility. Most large power generation and automotive engines are fitted with engine management systems, which enable the remote adjustment of operating parameters as well as providing trouble shooting and diagnostic information. However, at some point expert human intervention will be necessary; recognising this, manufacturers are developing ways to provide remote support and minimise the need for costly experts to visit mine sites in person.

Increasing complexity of maintenance skills

As mining and mineral processing equipment becomes more complex, the maintenance skills required to keep that equipment operating safely are also becoming more complex and, in some cases, OEM-specific. Recruiting or training staff to provide on-site, high-end skills is expensive and would not necessarily overcome the challenges of a return to lock down conditions; so in future, greater reliance will likely be placed on remote specialist support.

One way this is already being provided is by means of a smart device (or body camera) connected via the internet to a skilled specialist who may be thousands of kilometres away. By seeing in real-time the item that is being worked on and communicating directly with the on-site technician, the remote expert will be able to provide step-by-step guidance. As already pointed out, this requires a stable, reliable and high-speed internet service which will be susceptible to cyber malfeasance for which operators and OEMs must be prepared.

Supply chain resilience

One of the impacts of lockdown on the general population has been an increase in on-line purchasing. The sheer volume of this increase has necessarily been accompanied by a rapid growth in the capacity and efficiency of distributors and their logistical control systems. It is no accident that when many businesses were furloughing or laying off staff, distributors were recruiting drivers, packers, sorters and dispatchers to meet the suddenly increased demand. Most mining companies were already highly proficient at managing their supply chains before the pandemic but in a post COVID-19 world they will undoubtedly benefit further from the improvement of logistical support services available to their suppliers.

A lesson that can be learned from the scramble to acquire PPE, cleaning materials and even some foodstuffs is that supply chains which work well under stable, predictable conditions can quickly fail when their operating environment suddenly changes. Governments trying to secure face masks, gloves and other items of PPE suddenly found themselves facing furious competition for limited supplies. Moreover, relentless market forces created by globalisation to reduce prices had also reduced the number of global suppliers of PPE to a few very large organisations that were severely tested by the Covid-19 scramble. Hopefully we won't experience another pandemic such as this; however, a major earthquake or tsunami event may have a significant impact on local supply chains and recovery, albeit on a smaller scale. The lesson to be learned here is that although potentially more costly in the short term, there are advantages to not having all your eggs in one basket.

The effects of COVID-19 on risk engineering

Risk control engineers have been prevented from visiting mine sites to carry out pre-renewal risk surveys since March 2020. This has been particularly challenging in the current hardening market, where insurers are demanding more detail and a greater understanding of the risk to be insured.

Reliance on documentation, photographs and teleconferencing

During a normal on-site survey, the risk engineer is able to see conditions at first hand for him/herself and quiz site personnel, thereby building up an accurate picture of the quality of the risk in question. Now, with visit sites temporarily out of the question, risk engineers will have to rely more heavily on documentation and photo images provided by the sites as well as teleconferencing. Teleconferencing works well where there is a good quality internet connection and participants speak the same language. However, where this is not the case it can be both difficult and frustrating to collect the information necessary for an accurate and objective survey report. Since not all sites have good internet access or the technology and resources for effective teleconferencing, how information will be collected needs to be carefully planned and coordinated with each site well in advance.

Replacing the site walkaround?

During a conventional site survey, a significant amount of time is spent in round table discussions, during which site staff present information and risk engineers ask detailed questions. The full picture is then provided by being able to walk around the site to observe conditions and ask focussed questions to clarify or confirm information presented during the round table discussions. There are several ways to replace the site walkaround, none of which is entirely satisfactory.

Sharing still photos

One way might be to get site personnel to share still photographs of key aspects of the site. The effectiveness of this approach is dependent on the quality of the photo images and how well they are described. An alternative would be to have someone on site take a video of key parts of the site according to a pre-determined "script". The video is then shared with the risk engineer, possibly from a cloud-based host. If the video is date and time stamped, it will be possible during a subsequent tele-conference for the risk engineer to ask questions relating to specific points in the video. Again, this option will only be as effective as the quality of the images; moreover, it may not be possible to take useful video in some parts of the site, for example underground.

Real-time interaction via a smart device

A third option, which is dependent on the mine site's available resources, might be real-time interaction via a smart device or body/helmet camera with a member of staff doing a scripted walk through of the facilities. The remote observer could then ask the cameraman to zoom in on specific aspects or parts of the facilities that need greater clarity of understanding. A drone might also be used, especially for remote inspection of such infrastructure as tailings dams. Since this will require transmission of large amounts of digital data, this approach relies heavily on the quality of internet access and therefore may not be applicable on all sites.

Conclusions

It will probably be some time before the true extent of the pandemic's impact on the mining industry will be known. This includes lost production capacity and the effects on employees' mental health and wellbeing.

Working locations

The lockdown, social distancing and travel restrictions not only required significant changes to on-site work practices, they also incentivised companies to explore



ways for employees to work remotely. This in turn has created additional cyber security risks which companies have worked hard during lockdown to counteract. Lessons learned from remote working will probably become the new norm, with the expectation that mining companies will in future actively look for opportunities for staff to work remotely.

Maintenance

The use and scope of on-line condition monitoring and remote expert support via the internet will probably increase, not because of COVID-19 but because it makes sense in terms of process efficiency and cost reduction. Maintenance and supply chains are inter-linked and supply chain resilience may have benefited from COVID-19. It is hoped, however, that where possible diversity of supply sources will not be sacrificed purely on the basis of lowest prices.

The internet

Mining and, more generally industry and commerce, are increasingly dependent on the internet to realise the efficiencies needed to remain competitive. The development of a truly global system of high-quality internet access potentially offers huge benefits. At the same time, there are significant inherent risks of dependence on a system operated and controlled by a single player or small number of players, possibly with differing national interests.

“In the currently hardening market insurers are being more selective about which risks they are prepared to insure and so the need for objective, accurate information remains.”

Risk engineering reports

Risk engineering reports are essential for providing insurers with the information they need to determine the risk quality and hence their conditions for underwriting the risk. However, the pandemic has temporarily changed the way insurance risk engineering surveys are conducted and for the time being, site surveys have been replaced by remote or virtual surveys. By their nature, virtual surveys will be less comprehensive but probably cheaper (in the absence of travel expenses) than on mine site surveys by an experienced engineer. Nevertheless, in the currently hardening market insurers are being more selective about which risks they are prepared to insure and so the need for objective, accurate information remains.

Resuming on-site engineering surveys

Consequently, insurers require detailed information about all aspects of the assets to be insured, which virtual surveys may not be able to provide. For this reason, once travel restrictions are lifted, it is considered essential - for the benefit of insurers and insured alike - that full on-site risk engineering surveys are resumed as soon as it is safe to do so.



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Part two - risk management issues



Using risk and analytics to support your risk financing strategy: the views of a former risk manager

Introduction: why persist with an irrational preference?

Renewal: *“An irrational preference for that which has gone before.”*

I credit my Willis Towers Watson USA colleague Sean Rider for this quote, recently used in the Webinar series “Outsmarting Uncertainty”.

Renewal is embedded into our DNA as buyers, brokers and insurers. It happens every year and we all slavishly prepare for, negotiate and execute renewal transactions. In stable economic times and uneventful risk conditions, the preference for what went on before makes perfect sense. Last years’ renewal was based on healthy economic conditions; the hard insurance market was on the horizon and budgets were capable of expansion.

Clearly, we do not have those conditions today. The hard insurance market and the anticipated impact of the COVID-19 pandemic have already cut deep into insurance renewals so far during 2020 and these conditions are likely to persist for some years into the future.

Time for a seed change at your next “renewal”?

Bearing this in mind, your next renewal should really be the inception of a new chapter, a seed change to reflect the “new normal” of your company’s post COVID-19 condition. Consider whether your organisation could sustain a major loss today of the same magnitude that it could have done at the start of the year. Is the same cash available? Is your access to credit markets the same? Is your ability to pay dividends to shareholders and wages to staff still the same? In most cases, the answer is no, so any renewal strategy needs to be fundamentally re-assessed.

The “Gateway Workshop”

So how do you go about planning the inception of your 2020 (or 2021) insurance programme? Depending upon your risk financing maturity, it should start with a “Gateway Workshop”. This is conducted with your broking team and internal functional stakeholders (including treasury, tax, finance, legal and risk personnel) in a safe environment outside the season of renewal pressures, which is designed to elicit a high-level assessment of your insurance programme and broader company risks.

Ask yourself the fundamental question: “why insure?”

This should tease out the drivers for the current programme and an honest assessment of your current strategy. Why, for example, are you buying individual towers of insurance for a suite of non-correlated risks? Why do you carry a big retention for your Property programme but routinely buy project-specific Construction insurance with a low retention? (Especially when that project is yet another mining expansion – akin to “business-as-usual” for many operators.)

The workshop should explore which insurance covers are really needed and which could in fact be cancelled. It should consider a 3-5-year Risk Financing Strategy with a view to what the programme could look like in five years, not at the next renewal. Most mining companies are not just focused on next years’ results but on their production plans and further expansions years into the future, so why not do the same for your insurance strategy? In the next five years, new and emerging risks will manifest themselves so your risk financing strategy should lay a foundation of risk capital to help finance these risks should they manifest.

In most cases, 2-3 hours are need for successful workshop to critically assess the current programme and identify future direction and self-insurance opportunities. But in this short space of time, interesting things happen - the following are a few real examples of issues raised/ outcomes:

- “I never understood why we were buying crime insurance in the first place”
- “Why insure the risk of Mobile, Plant and Equipment below \$25m when we are retaining \$25m on Property and Business Interruption?”
- “Why don’t we have bigger deductibles at a Group level for Construction?”
- “Why purchase \$1.5bn of cover when the top \$500m doesn’t cover the earthquake risk?”
- “Run the analytics to self-insure side C D&O”
- “We need a captive...fast”

What is clear is that there has never been a more urgent time to review your self-insurance and insurance mix. In many cases, self-insurance will be forced upon companies via increased retentions, coverage reductions and lower limits so pivoting to a position where the business controls that challenge, through a flexible and calculated approach to risk retentions embedded as part of the risk finance strategy, is certainly more desirable than an ongoing reactionary strategy. Get ahead of the problem and plan for the longer term.

Establishing tolerance

With the long-term risk financing vision broadly outlined, analytical tools are going to be needed to provide insights, inform and support the strategy. Analytics will help your business understand its tolerance for risk, providing an indication of how much an organisation can withstand as self-insurance before an agreed level of materiality is reached. This is useful for internal discussions on risk appetite, recognising that tolerance and appetite may produce different results – the level of risk that the enterprise can tolerate is not always the same as management’s appetite for risk and willingness to absorb it.

Finding the efficient frontier

Analytics can also review the benefits of combining non-correlated risks at various levels of risk retention and risk transfer. It will find the efficient frontier – the desired point where an optimal trade-off is established between insurance cost and the impact of retaining additional risk.



Knowing the right price

As a former risk manager, for me the most value I ever derived from analytics was always knowing the technical insurance price for my company's risks. This helped provide insights as to when the insurance market was efficient to use and when it was more effective to retain risk at a business or captive level.

Proving the efficiency of captive capital deployment

One study I commissioned looked at the captive capital from a Solvency II perspective and included one standout number in an otherwise sobering 45 slide deck. It basically outlined the capital required by each business/operation to finance their retained risks compared to the capital required to aggregate these non-correlated risks into a captive. This was almost the silver bullet for self-insurance, clearly demonstrating (and more importantly quantifying) to management and the board the case for aggregating risks at a Group level and then retaining them in a cost effective and disciplined vehicle – the captive.

Impact of COVID-19

Although the mining industry has for the most part been resilient during the pandemic, the industry risk profile is now very different. Analytics will provide decision support around risk tolerance and self-insurance, while the Gateway Workshop should provide the strategic direction and a preference as to which self-insurance tools to employ going forward.

“As a former risk manager, for me the most value I ever derived from analytics was always knowing the technical insurance price for my company's risks.”

Managing “main event” risks

In one workshop, we challenged a business which had a traditional and comprehensive suite of insurance lines but was exposed to one major uninsured natural catastrophe risk. We asked them whether they would consider cancelling all (non-statutory) insurance classes and purchase a parametric instrument for the one single company-threatening event. This was a perfect illustration of the “renewal” concept in action – the irrational repeat of traditional insurance policies with the “main event” risk remaining uninsured. These new “main event” risks may now include people risks (working from home), pandemics, cyber and shareholder/insider activism.

Conclusion: the potential for self-insurance

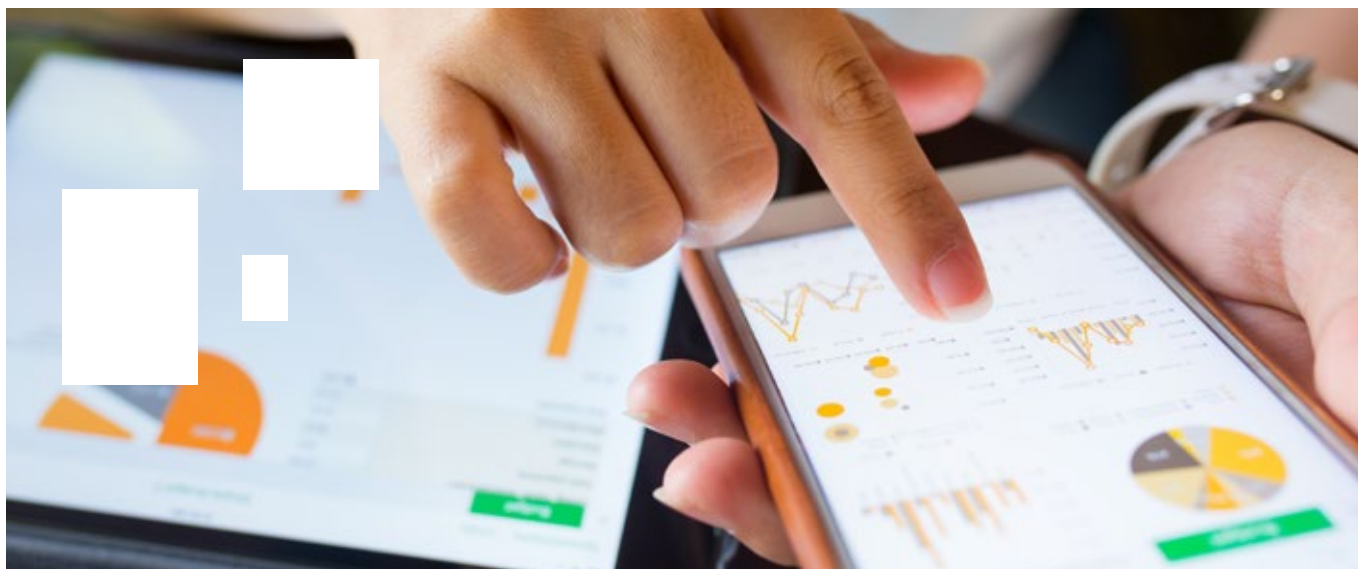
It is for this reason companies need to inception a new long-term risk finance strategy, one that:

- unearths the potential for self-insurance;
- uses analytics to provide insights on the ability of the company to retain and finance risk;
- help select the right tools to finance risk; and
- ultimately, reduces the impact of the current and post-COVID 19 sustained hard insurance market.



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Geopolitics of resources: prospecting threats to the mining sector

Introduction: new geopolitical challenges and risks

Geopolitics is about how businesses sit within the economy, government policy and geography. Within the mining industry we've seen these intersections play out over four different industrial revolutions, with different commodities and technologies underpinning global development and growth, together with the geographic shifting of value chains as new resources vital to consumer demand have been uncovered.

At the most fundamental level, the location of resources has been the most obvious geopolitical driver, with echoes of the rise and fall of empires continuing to impact trade partnerships, national security and development pathways. Three centuries ago, the technologies used by humanity required half a dozen metals; today we use more than 50. Furthermore, the transition to a low carbon economy will require an increase in the consumption and diversity of materials needed as well as technology that hasn't been invented yet¹.

As a result, the sector is at the forefront of new challenges and risks that, if not managed correctly, can threaten the very viability and long-term profitability of sites and unveil new business models. But how do these risks manifest themselves and how can they be mitigated? Whatever the size of your organisation, geopolitical circumstances demand a high degree of engagement and understanding. Today, the lenses through which geopolitical risk can be viewed apply to almost every business sector, and the mining industry is no exception. Risk professionals need to be able to identify and understand geopolitical risks, their drivers and the connections between them – of which there is no shortage – so they can mitigate the risks and seize new opportunities.

“The sector is at the forefront of new challenges and risks that, if not managed correctly, can threaten the very viability and long-term profitability of sites and unveil new business models.”

¹ <https://theconversation.com/critical-minerals-are-vital-for-renewable-energy-we-must-learn-to-mine-them-responsibly-131547>

Geopolitics high on boardroom agendas

Over the last 12 months, we've seen the ripples of natural, man-made and political upheaval spread far and wide; meanwhile environmental, technological and political changes continue to highlight any number of new uncertainties as global trends set new domino chains in motion.

Disruptions are emerging from more areas than aging infrastructure and extreme working environments². At a societal level, the outbreaks of unrest in Peru, Ecuador and Chile³ challenged the industry, and the global momentum building around inequality has made it clear that political risk events can arise suddenly in regions traditionally seen as risk-free. The unfolding COVID-19 outbreak has also highlighted the fragility of the global system to interconnected events, with business interruption happening at a scale few would have dared to imagine.

As well as causing operational challenges for the mining sector, investors have been increasingly asking questions around how these risks are being identified and managed. 40% of respondents in the 2019 Willis Towers Watson Political Risk Survey felt that they were facing more pressure from investors regarding political risk management.⁴ ESG shock, populism/nationalism, US-China strategic competition and Middle East regional instability were the four most mentioned emerging issues in the survey.

When uncertainty is your only certainty, it is easy to see why investors want to know if companies are on the case and are curious about a wide range of areas as well as why systems perspectives and the connectivity of risks are also creeping into regulatory requirements. Provision 28 of the UK Corporate Governance Code 2018 requires boards to undertake a "robust assessment" of their organisation's principal risks, including risks that result in events that may threaten the organisation's business model, future performance, solvency and reputation. Stakeholders want to know you understand the wider risk landscape, and COVID-19 is likely to trigger further interest as the attempt to gauge resilience.

If you had pandemics on your risk register, was there a scenario comparable to the impacts we've seen? Did it include the escalating tensions between nation states and the competition and shocks to global supply chains? Foreseeing trends is often a matter of perspective and sometimes it helps to take a step back and look at challenges with fresh eyes. It is time to dig out the risk list and put it under the microscope in this new world of the art of the possible.

COVID-19

At a macro level, a debt crisis among emerging markets is growing as developing countries face a wave of government bankruptcies, due to the global economy going into shutdown⁵. Alongside this, countries around the world are at different stages in their COVID-19 cycle, which is hampering prospects for export-dependent economies and jeopardizing the prospects for income convergence between developing and advanced economies.

As COVID-19 continues to spread around the world, we're seeing countries unable to pay and businesses that deal with public entities or governments directly facing political risk losses as a result. In many cases these losses will be more than the value of a contract and upfront investments could also be at risk if companies do not manage the challenges and opportunities.

At a local level, COVID-19 has stressed day-to-day challenges for the sector. Ongoing issues such as attritional losses, aging infrastructure, rising business interruption losses, and concerns around talent retention and attraction have gained new dimensions. While economic downturns often result in a decrease in infrastructure projects and upgrades, Boards should be considering this pause point in business operations and look at the ongoing issues and the strategic direction to re-plan for organizational resilience. Use the opportunity afforded by this disruption to make progress toward the longer-term upskilling and reskilling agenda.

When some form of normality is restored, governments and organizations will be judged according to how well they managed under pressure. Companies may be viewed through the lens of social and moral responsibility; as such, how policies in areas such as employment, pay, pricing and supply are established and communicated may define how perceptions are shaped in the future⁶. False media should be anticipated; this will require extra mitigation and attention during such information-rich scenarios. Not managing these risks as the situation continues to unfold could impact the Social License to Operate in the future.

It has never been more important to consider new ways in which geopolitical risks can be managed more effectively than by simple insurance purchase. The coming 12 months are going to require a holistic view of risk in an already charged landscape.

² <https://www.miningreview.com/health-and-safety/expert-advice-on-how-to-avoid-safety-risks-in-aging-infrastructure/>

³ https://www.washingtonpost.com/world/the_americas/a-government-chased-from-its-capital-a-president-forced-into-exile-a-storm-of-protest-rages-in-south-america/2019/11/14/897f85ba-0651-11ea-9118-25d6bd37dfb1_story.html

⁴ 2019 Political risk survey report <https://www.willistowerswatson.com/en-GB/Insights/2019/12/2019-political-risk-survey-report>

⁵ <https://blogs.imf.org/2020/06/24/reopening-from-the-great-lockdown-uneven-and-uncertain-recovery/>

⁶ <https://www.willistowerswatson.com/-/media/WTW/Insights/2020/04/the-long-term-implications-of-covid-19-on-business-risk.pdf>

Dialling in on risk

In the last Willis Towers Watson Mining Market Review⁷, we introduced you to "the six lenses" used to explore these nuances and build an integrated view of risk. In an increasingly connected world, many of the geopolitical drivers of risk are interrelated, and effects often cascade beyond local geographies or individual industry sectors.

Interconnected drivers and risks can be difficult to unpick, but this is where thinking about the geopolitics perspective is useful because it gives context to the 'who, what, where, when and whys', and leads to asking the right questions.

Think of these lenses as focusing dials on a microscope. There isn't one answer to viewing geopolitical risk under the lens – every company's exposure is different, and the real value is in uncovering different perspectives to ask useful questions. Do you want to zoom out for the global macro view or zoom in to a local issue? If you don't have the expertise in-house to understand them, who do you need to talk to?

The lenses cover a broad range of risks – from cyber-attacks to the impact of sanctions – and recognise interconnecting global trends such as shifting public sentiment, population dynamics and technological innovation. While COVID-19 continues to grab the headlines, it's important to remember that all the other risks don't go away and that you could find yourself dealing with multiple events at the same time.

Six lenses - an integrated approach to geopolitical drivers of risk

The six lenses that we deploy to examine geopolitical risk fall into the following categories:

- 1. People risk.** Safety and security issues can pose clear risks to employees; however, there are also risks associated with workforce management, including recruitment and retention, which must be understood and managed.
- 2. Investment and return.** Exposure across multiple geographic locales means geopolitical drivers of risk can be diverse. In order to protect assets and investments, this diversity of risk must be critically considered, and appropriate risk management tools deployed.
- 3. Business resilience and value chain.** When risks materialise as incidents and events it is crucial to have effective business continuity practices. Response and recovery plans, which have been properly tested and exercised, can limit the impact of incidents and help companies quickly resume business operations.

4. Climate and environmental. The risks presented by climate and environmental factors, including storms and earthquakes, can be better understood with advanced analytics. By modelling environmental events and physical assets, risks to property and people can be quantified and managed.

5. Cyber risk. Digital ecosystems and connected devices fundamentally underpin the future of the mining sector. Having a comprehensive understanding of a company's cyber footprint is critical to managing this source of risk, including network outages and regulatory impositions.

6. Reputational risk. Impacts on brand and reputation can affect the ability of a company to attract customers, recruit talent or even to gain an operating licence in a country. Being attuned to the relationships between geopolitical drivers and reputation helps anticipate and mitigate these risks.



⁷ <https://www.towerswatson.com/assets/pdf/power-renewable-energy-market-review-2019.pdf>

Fig 1: The six lenses within the context of other geopolitical risks



Source: Willis Towers Watson

Organisations need to identify and understand their geopolitical risks and the connections between them – in order to mitigate the risks and seize new opportunities, so:

- When there's a change of government on the other side of the world, the components delivered by your supply chain are less likely to be affected; or
- When a pandemic and its impacts strike, your customers and suppliers can still work with you; or
- When your competitors leave a geography due to civil unrest, your understanding of the situation may present you with an opportunity.

As our contribution to this Review, we wanted to set out three possibilities that bring these lenses to life, and which can be used to construct bespoke scenarios for clients. This is the approach we have taken across all our Natural Resources Reviews this year, and we would recommend looking at the reports to understand the sector specific issues and consider how these may create secondary impacts for you further up the value chain.



Storyline One - geopolitics of ESG: business resilience, climate and environment, investment and return lenses

In addition to the physical, transition and liability risks outline earlier in the Review, ESG is important not just for your investors but for your future workforce. Blackrock's Larry Fink stated that millennials are expressing new expectations of the companies they work for, buy from, and invest in:

"In the years to come, the sentiments of these generations will drive not only their decisions as employees but also as investors, with the world undergoing the largest transfer of wealth in history: \$24 trillion from baby boomers to millennials".

"As wealth shifts and investing preferences change, ESG issues will be increasingly material to corporate valuations".

Source: Blackrock – Larry Fink letter 2019⁸

As the landscape continues to shift, the demands on firms in the wider economy to respond to ESG measures will only increase.⁹ In a world of potentially 9 billion people by 2030 – including 3 billion new middle-class consumers¹⁰ – the challenges of expanding resource supply to meet future demand are unprecedented but will still need to be considered through this viewpoint.

You can't manage what you don't measure

Mining underpins the transition to a low carbon economy, with materials such as lithium, cobalt and rare earth elements required for end products such as photovoltaic cells through to new smartphones. Evaluating new and existing projects against this framework will be essential to respond to the changing landscape and to manage risks from a systems perspective.

This is where research can play an important role. Alongside the physical sciences, economic modelling and social science are providing new insights and access to scenarios to represent the possible futures¹¹. It is also something that industry groups such as the International Council on Mining & Metals (ICMM) have been exploring with their members, with several already reporting against the Taskforce for Climate Financial Disclosure (TCFD) framework that articulates their thinking and actions to these increasingly interested stakeholders¹².

Modelling environmental effects on your business model and having access to experts who can translate those effects into business insights has never been more important, and this is reflected in the broad people, capital and risk expertise that makes up our Climate Quantified™ proposition. Quantifying how possible futures will affect companies can allow them to make choices based on their risk appetite, capability and aspirations, and to use existing expertise to create new revenue streams.

Pivoting expertise

Back in 2017, The Economist published a story entitled, "The world's most valuable resource is no longer oil, but data"¹³. This is where the mining sector should be thinking about the decades of information and expertise that they have built up regarding supply chain dynamics around resource provenance and human rights, as well as what can be done with that in the face of rising interest in ESG issues. This could range from monitoring dams with SmallSat-enabled IoT sensors to creating a digital twin of a mine site to simulate COVID-19 mitigation efforts¹⁴. Combined with growing digitalisation and work to set standards, there is deep expertise in the sector that can be pivoted to support these new challenges, and any investments in new technology or systems should ensure they are capturing holistic benefits.

⁸ <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>

⁹ https://www.airmic.com/system/files/technical-documents/Airmic-Survey-Report-top-risks-and-megatrends-2020_0.pdf

¹⁰ <https://www.icmm.com/website/publications/pdfs/responsible-sourcing/icmm-circular-economy-1.pdf>

¹¹ <https://www.willistowerswatson.com/en-GB/Insights/2019/12/a-changing-climate-of-risk-and-opportunity>

¹² <https://theintelligentminer.com/2020/01/30/investing-in-a-greener-future-for-the-mining-industry/>

¹³ <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>

¹⁴ <https://www.miningindaba.com/Articles/unlocking-the-future-of-mining-through-digital>

Fig 2: The geo-political risk management process



Source: Willis Towers Watson

Storyline Two – prospecting for resilience: people, business resilience, reputation and trust, investment and return lenses

At a local level, establishing new sites can result in land use conflict and trigger localised political risk¹⁵, while current sites can also serve as focal points for local and international issues¹⁶. Both instances can cause reputational harm, investor uncertainty and local security issues; furthermore, increasing digital surfaces and accessibility can also widen the field of play to activists. It is therefore vital that the state of community opinion, politics and the security situation are monitored and responded to, and that political and security risk management are integrated into company culture.

Threat assessments

Experience indicates that the benefits of conflict analysis are greater when the approaches are integrated throughout the project cycle as opposed to being introduced only when conflict surfaces mid-flow. Predicting the occurrence and nature of political and social disruptions may seem impossible, but threat assessments can make use of recent examples such as the attack in Burkina Faso in November 2019¹⁷, to add context to ‘actor mapping’¹⁸.

How closely do your security specialists collaborate with your environmental specialists, community outreach, communications staff and general management? Is your Chief Information Security Officer (CISO) involved? Could they list the dividers and connectors in their project area and how their project increases or decreases them? While this kind of analysis won’t give you all the answers, red teaming¹⁹ and scenario building with these questions in mind can give you input on the ‘who, how and where’.

Continuous situational analysis

The scope of threats may be broad, and for this reason consultants may be commissioned to assist in analysis and planning. Typical areas of activity driven by continuous situational analysis may involve planning for medical emergencies, planning for political and natural disasters including evacuation, physical security at installations and a terrorist threat assessment of upstream and strategic installations. Other measures may include business diplomacy, lobbying, community liaison and the building of a dynamic network of local and regional influence and insight²⁰.

COVID-19 has the potential to ignite an already charged landscape and potential aftershocks could include food and water security, overwhelmed public health systems and weakened national institutions²¹. Local engagement and information will be essential to monitor and managing the evolving situation.

¹⁵ <https://doi.org/10.1016/j.jerss.2015.06.008>

¹⁶ <https://www.canada.ca/en/environment-climate-change/services/climate-change/task-force-just-transition.html>

¹⁷ <https://www.reuters.com/article/us-semafo-attack-security-analysis/attack-on-canadian-mining-firm-in-burkina-faso-threatens-golds-final-frontier-idUSKBN1XH2IO>

¹⁸ See p.34 http://www.actuarialpost.co.uk/downloads/cat_1/Willis%20Towers%20Watson%20EMR%202016.pdf and p.28 <https://www.willistowerswatson.com/-/media/WTW/Insights/2017/09/mining-review2017.pdf> for examples from the Energy and Mining markets

¹⁹ A red team is a group that helps organizations to improve themselves by providing opposition to the point of view of the organization that they are helping. They are often effective in helping organizations overcome cultural bias and broaden their problem solving capabilities.

²⁰ http://www.actuarialpost.co.uk/downloads/cat_1/Willis%20Towers%20Watson%20EMR%202016.pdf

²¹ <https://blogs.imf.org/2020/06/24/reopening-from-the-great-lockdown-uneven-and-uncertain-recovery/>



Addressing ESG risk

As highlighted in the first scenario, we also expect institutional investors to increasingly demand that ESG risk is addressed before investing in projects in many parts of the world, and to be more active with calls for a sustainable reset²². This therefore needs to be part of the planning process and outputs used to inform employee risk assessments. Having an onsite engagement plan with local stakeholders and an assessment of regional interests will be essential to understand land use dynamics, and tools such as virtual reality can be used to showcase your asset today and what it could be in the future²³.

This also brings an exciting opportunity dynamic to pivot to site lifecycles and to look at the potential adaptation options that could make existing sites more attractive in the short term by increasing energy efficiency, reducing emissions and considering site lifespans and long-term management. Investment in research and development for new technologies is one option that could serve to adapt and transform infrastructure to increase the lifespan of sites through additions such as the electrification of vehicles or investment in precision technologies.

“Having an onsite engagement plan with local stakeholders and an assessment of regional interests will be essential to understand land use dynamics, and tools like virtual reality can be used to showcase your asset today and what it could be in the future.”

Storyline Three - digitalising geopolitics: cyber, people, reputation and trust lenses

With inherently global economies becoming progressively dependent on digitalisation and technology, it is essential to understand the strengths and weaknesses of these capabilities. While legacy systems have kept the industry ‘air gapped’ from threats, the drive to embrace the Industrial Internet of Things (IIoT) for efficiency, sustainability and risk management is going to require CISOs to be proactive to embed a culture of cyber awareness. In one industry survey, 72% of respondents reported that they detected their most significant breach of the past 12 months within a month, with the remaining 28% saying it took longer to uncover²⁴.

C-Suites should wake up to new policy landscape

Geopolitics drivers associated with digitalisation and cyber vulnerabilities are deep and varied, which is one of the reasons why cyber risks continue to be at the top of board agendas, and why there isn’t a one size fits all answer. It also may not even be about you.

At the national level, geopolitics can leave companies facing unintended consequences as bystanders in new trade wars; this is where escalating tensions from COVID-19 should be considered. In July we saw the UK’s digital secretary announce that the country’s telecoms networks would not be allowed to buy new Huawei 5G kit from 31 December 2020, and all such equipment should be stripped out of mobile networks by 2027²⁵. If an embargo were to hit the mining sector, do you understand what the impact would be? As the sector looks to digitalisation to gain the benefits, understanding the capabilities of the potential players on the board is going to be critical.

²² <https://www.weforum.org/great-reset/>

²³ <https://startups magazine.co.uk/article-vr-startup-sitting-gold-mine>

²⁴ https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/advisory/ey-global-information-security-survey-2020.pdf

²⁵ <https://www.bbc.co.uk/news/technology-53412678>

Cyber-attacks

At a company level, while most of the intrusions detected by mining companies seem to have been basic reconnaissance operations or intellectual property theft, malicious actors are getting into systems through unpatched vulnerabilities so the potential for chaos is huge. For example, one of our geopolitical risk partners, Elisabeth Braw from RUSI's Modern Deterrence programme, flagged up Refined Kitten (also known as APT33, Holmium or Elfin²⁶). While the name might evoke the image of a cuddly pet, Refined Kitten is a hacker team that Microsoft believe to be backed by Iran, that can do things that virtually no other known hacker group can do, namely infiltrate the control systems of critical national infrastructure, including electric utilities, manufacturing and oil refineries²⁷.

Uncertainty around COVID-19 may provide a doorway in for any malicious actor²⁸. Most cyber-attacks start with a phishing email²⁹, and aren't always directly aimed at your business. As was subsequently determined, NotPetya had been created by a hacker group working for Russian military intelligence, and initially targeted Ukrainian government agencies and businesses³⁰. Even though Maersk – one company impacted – was not the primary target, it was “collateral damage,” as its chairman, Jim Hagemann Snabe, later explained³¹.

Time to get the story books out

While people risk is often thought about in terms of shadowy outsiders looking to cause harm, it is important to remember the risks that can arise from within the business from your own people's actions – intentional or not. Do you have a security awareness programme to measure the effectiveness of your internal training? Have you run an internal phishing exercise to test readiness, and what templates and hooks are you offering your employees?³² Being aware of the art of the possible has never been more important for risk managers to ensure scenario planning and business continuity exercises are relevant.

Cross sector working groups and access to state-of-the-art science can play a role in understanding the art of the possible, and our team is tapping in to this knowledge and bringing it closer to our clients through initiatives such as the Willis Research Network or RUSI's Modern Deterrence programme³³ that brings cutting-edge defence and security research to its members.

Conclusion – multiple perspectives to build resilience

Given the speed, regularity and relative surprise of such events, and the unforeseen decisions, it may be time to reconsider how well businesses really are prepared for the impact of geopolitical events. In one of our recent articles, General Sir Richard Shirreff (former Deputy Head NATO) set out how the military approach to risk management might help the boardroom³⁴, and this should be a question that all mature companies ask themselves.

- **What risks are on the horizon and who can speak to them or be invited in to build awareness and understanding?** This is where board composition, NED selection and trusted advisors are increasingly important to encourage a holistic view that recognises and explores interconnectivity of risks and how these can be pivoted to opportunity.
- **When designing scenarios to build resilience to these changes, mining companies should assemble multi-disciplinary, diverse teams from across the organization.** This is the approach that our geopolitical team takes, and it reduces the possibility of blind spots. A classic example of the power of scenario planning is the approach pioneered by Shell. When the 1973 oil crisis hit, Shell was better prepared than its competitors because its management had already considered a comparable scenario³⁵.



²⁶ <https://www.wired.com/story/iran-apt33-industrial-control-systems/>

²⁷ <https://www.willistowerswatson.com/en-GB/Insights/2019/12/what-you-should-know-about-the-changing-cyber-risk>

²⁸ <https://www.willistowerswatson.com/en-HK/Insights/2020/04/keeping-vigilant-against-increasing-cyber-risk-during-Covid-19-crisis>

²⁹ <https://cofense.com/enterprise-phishing-susceptibility-report/>

³⁰ <https://www.wired.com/story/notpetya-cyberattack-ukraine-russia-code-crashed-the-world/>

³¹ <https://www.youtube.com/watch?v=VaqlYIYmDbA>

³² <https://www.willistowerswatson.com/en-GB/Insights/2019/03/social-engineering-avoiding-the-hackers-harpoon-and-phishing-net>

³³ <https://rusi.org/rusi-reports/modern-deterrence-first-year>

³⁴ <https://www.willistowerswatson.com/en-GB/Insights/2019/12/geopolitical-risk-and-how-experience-of-the-battlefield-might-help-the-boardroom>

³⁵ The summer reader's guide to scenario planning <https://www.willistowerswatson.com/en-GB/Insights/2019/08/the-summer-readers-guide-to-scenario-planning>

Taking an integrated approach to geopolitical risks

The use of adverse scenarios allows businesses to consider whether the right assumptions are being made, the appropriate questions are being asked and whether the key issues are being sufficiently examined. Different functions within businesses need to look at these connected risks/opportunities collectively and manage them using an integrated approach. Such matters are overlooked at one's peril, leading to heightened risk and missed opportunity.

Willis Towers Watson's Geopolitical Risk experts examine risk drivers and their associated risks through the six key lenses set out in this article; Cyber, Climate/Environmental, People, Reputational, Business Resilience and Investment/Return. These interconnected lenses encourage the identification of integrated solutions that can be tailored and address insurable and non-insurable risks seamlessly. This structured approach provides an effective framework to assess, quantify and mitigate geopolitical risks in an integrated fashion and might include red teaming initiatives to challenge or test the adopted plans and thinking, geopolitical risk workshops, new country risk assessments, tailored scenario development and risk register stress testing.

Exploring positive futures

It is also important to consider the opportunities and ensure that scenarios explore positive futures. Companies should learn from the innovation journeys of other sectors to think outside the box to create new value in future stranded assets³⁶. As a result of this kind of thinking, innovative companies are investing in new technologies, diversifying their models and, in some cases, working with local governments to transform sites into new uses that take advantage of transport links, proximity to transmission lines. They are then using their detailed site knowledge to create renewable energy sites³⁷, gas capture³⁸, battery storage locations³⁹, vertical farms, housing and tourism, which in turn can reduce regional inequality that can develop into social unrest⁴⁰.

“Companies should learn from the innovation journeys of other sectors to think outside the box to create new value in future stranded assets.”

Next steps

As you read the Review, think about the trends and drivers and ask yourself: are these issues on our list as risks or opportunities, and do we have a plan? If the scenarios in this article don't create a problem in your value-chain, what would and is the business resilient enough to meet it? Scenarios can be developed that deliberately challenge adopted strategy, plans and practices.

For example, if considering political risks, solutions such as VAPOR⁴¹ allow global companies to assess the financial impact of political risk exposure that can feed into your company's business continuity planning. However, if for example your company needs to examine its supply chain dynamics to understand the impact of the Chilean Water Directive on lithium production⁴², the Willis Research Network, with its strong links to the scientific community, can help find the relevant experts.



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³⁶ <https://theconversation.com/coal-mines-can-be-closed-without-destroying-livelihoods-heres-how-124336>

³⁷ <https://coloradosun.com/2019/05/29/guzman-tri-state-coal-plant-offer/>

³⁸ <https://www.bgs.ac.uk/downloads/start.cfm?id=1370>

³⁹ https://pureportal.strath.ac.uk/files/19668385/RevManuscript_1_.pdf

⁴⁰ https://pureportal.strath.ac.uk/files/19668385/RevManuscript_1_.pdf

⁴¹ <https://www.willistowerswatson.com/en-GB/Solutions/services/vapor>

⁴² <https://eandt.theiet.org/content/articles/2019/08/lithium-firms-are-depleting-vital-water-supplies-in-chile-according-to-et-analysis/>



The challenge of digitalisation: troubleshooting cyber risk in the mining industry

Introduction: a digital future

The digitalisation of the mining sector is underway, and the industry is primed to transform itself utilising the industrial internet of things, integrated robotics and artificial intelligence. Advances such as 300 tonne driverless haulage trucks, remote control drilling and predictive analytics for ore deposits are leading the sector to improvements in productivity, efficiency and safety.

But this change does not come without risk. Cyber risk is the new “kid on the block” that risk managers and executives must address in their risk management and insurance strategies.

Changing Cyber risk solutions

The challenge here is that for insurance buyers, insurance solutions to cyber risk are also changing; for instance, traditional markets such as Property do not yet understand the full potential of this risk on their portfolio. A large-scale incident affecting several facilities across borders and continents was simply not contemplated for perils such as Fire and Natural Catastrophe; they were, for the most part, isolated from each other. Now, through a Cyber-incident, this has become possible.

Underwriters therefore have moved to either constrain or remove Cyber cover. But they achieve this utilising a plethora of differently worded - and therefore differently interpreted - Cyber exclusions, while the same dynamic is now occurring in Casualty markets. In parallel, a specialist Cyber market has developed, historically to cover non-traditional risks such as non-damage Cyber Business Interruption, but more recently to close the gap on those exposures now being excluded from the traditional markets such as Property.

It is within this context that this article explores:

1. The challenge of digitalisation and the emergence of Cyber risk
2. The developments in the insurance market for Cyber risk in both traditional and specialist Cyber markets
3. An intelligent approach to Cyber risk

Fig 1: key Cyber challenges for the mining industry



Source: Willis Towers Watson

The challenge of digitalisation

The fundamental challenge involved in the digitalisation of any system is that that security will always lag behind technology. Back when early operational technology systems were developed, security was not considered important; it was an afterthought. This is changing, but with so many different ways for a Cyber incident to occur, both internally and externally motivated, it is simply too volatile an issue to go unaddressed within an organisation. Simply securing systems - assuming systems are secure - cannot be considered enough for a company in today's digital environment; the strategy at the end of the article will elaborate more on this point.

The key challenges

Several of the key challenges, each worthy of its own article, associated with addressing Cyber risk are illustrated in Figure 1 above.

Popular misconceptions

Let's focus for a moment on the misconceptions surrounding Cyber risk. Most general Cyber concerns across all industries have been focused on the enterprise information technology (IT). For the mining industry this would not have been a significant issue in the past, being historically more reliant on operational technology (OT). But even now this has been shown to be a worrying exposure for the industry; IT has always been the medium whereby highly sensitive corporate communications may be intercepted, employee databases breached/leaked, and malware may spread across an enterprise computer network. And even this factor has become more of a concern during the last few months of COVID-19 lockdown, as large numbers of staff work from home, accessing private company networks through virtual private networks.



Integration of OT and IT

For the mining industry, the general position has been that the critical OT networks are isolated from the internet, but from now on this cannot be relied on due to the convergence and interconnectivity of OT and IT. These operational systems, whilst not sensitive data-rich, are open to malware and ransomware. However, of more recent concern is the implications of a serious advanced form of Cyber event, whereby a Cyber actor takes active control of OT with malicious intent. This issue is being driven by the Internet of Things (IoT) and growth in the interconnectivity of systems as the physical has become coupled with the digital. Now robotic drills and diggers can operate remotely at the rock face; autonomous haulage trucks can travel both above and below ground without driver input; and crushing and smelting processes are now controlled with limited human input. The problem is that these connections and processes can fail or be infiltrated.

Developments in the global insurance market

Just as Cyber risk exists across many different parts of a business, it also an exposure that exists, often unintentionally, in many different lines of insurance such as Property, Casualty, Marine and Terrorism; this is a significant concern for insurers, since these covers were not designed with such risks in mind.

Coverage clarifications

In recent years, Lloyd's of London and company market insurance companies have taken a cautious approach to this issue. Firstly, the industry itself has sought to clarify the intent of cover and allocate adequate reserve capacity should a large-scale Cyber event occur. And recently this has been accelerated due to concern from regulators and governments. For example, in the first half of 2019 the Prudential Regulation Authority (PRA) directed that UK-based insurers, including those operating through Lloyd's of London, begin formulating clear manageable and measurable action plans to address the Cyber exposure in their portfolios¹. Both the insurance markets and buyers are now seeing much of the effects of this taking hold as we move further into 2020.

Silent Cyber

Following on from the PRA directive, Lloyd's of London released a market-wide bulletin focused on the issue of silent Cyber. Silent Cyber is non-affirmative Cyber, i.e. where a policy neither expressly provides nor expressly excludes cover and is simply silent as to its existence. The bulletin laid out a timeline for this to take effect; Property policies incepting on or after January 1 2020 should either clearly affirm cover or exclude Cyber exposure, while for Liability policies the requirements are to come into effect in two phases during 2020/2021.

The difficulty here is that while organisations will obtain clarity over whether an insurance policy covers the peril or not, Lloyd's of London has not been prescriptive as to which approach they should take and whether they should cover the risk or not; they have left that decision to individual syndicates in the market.

Mind the gap: the clause dilemma

As a result of the movement away from silent Cyber, insurance buyers may now find that Cyber risk where previously covered - or not expressly excluded in their existing policies - is now being excluded, creating a gap in cover.

This complexity is then compounded by the wide variety of clauses available in the market that insurers may apply, either to the entire risk or in a patchwork manner, depending on the numbers of insurers on a programme. The easiest approach for insurers is that they would seek to exclude Cyber in the first instance and then allow "carve back" to covers, subject to a better understanding of the risk. However, this creates a complex minefield for both insureds and their brokers to build a consistent and harmonised insurance programme, whilst also potentially opening gaps depending on the clause(s) being used.

¹ <https://www.bankofengland.co.uk/prudential-regulation/letter/2019/cyber-underwriting-risk-follow-up-survey-results>

Out with the old, in with the new..

Towards the end of 2019 it was made known in the market that the ever-present CL380 Cyber Attack and NMA Electronic Data 2914/15 Cyber exclusions clauses (that many have become accustomed to) do not, by Lloyd's of London standards, go far enough in addressing the issue of silent Cyber and so are therefore deemed not satisfactory in respect of their requirements on this issue.

As a result, in November 2019 the Lloyd's Market Association (LMA) published a set of new model clauses for Property and Marine risks¹, which come in the form of an outright exclusion and a clause with provisions for buy-backs such as Fire and Explosion, but only from a non-malicious Cyber-attack. The Casualty sector has also seen several different clauses being used in this market.

While Lloyd's provided their clauses recently, the International Underwriters Association (IUA) were one step ahead and released their own London Market model clauses in the summer of 2019. In similar fashion, the intention was to address the issue of non-affirmative silent cover². As stated by the IUA, these come in the form of a "Cyber Loss Absolute Exclusion Clause" which provides market participants with an option to exclude, in the broadest possible manner, any loss arising from the use of a computer system, network or data – each of which is clearly defined. Meanwhile, a Cyber Loss Limited Exclusion Clause enables only the exclusion of losses directly caused by Cyber events, rather than 'directly or indirectly'. The nomenclature of these clauses differs slightly from that of the Lloyd's clauses, adding to the difficulty.

Exclusion the easiest option for the market

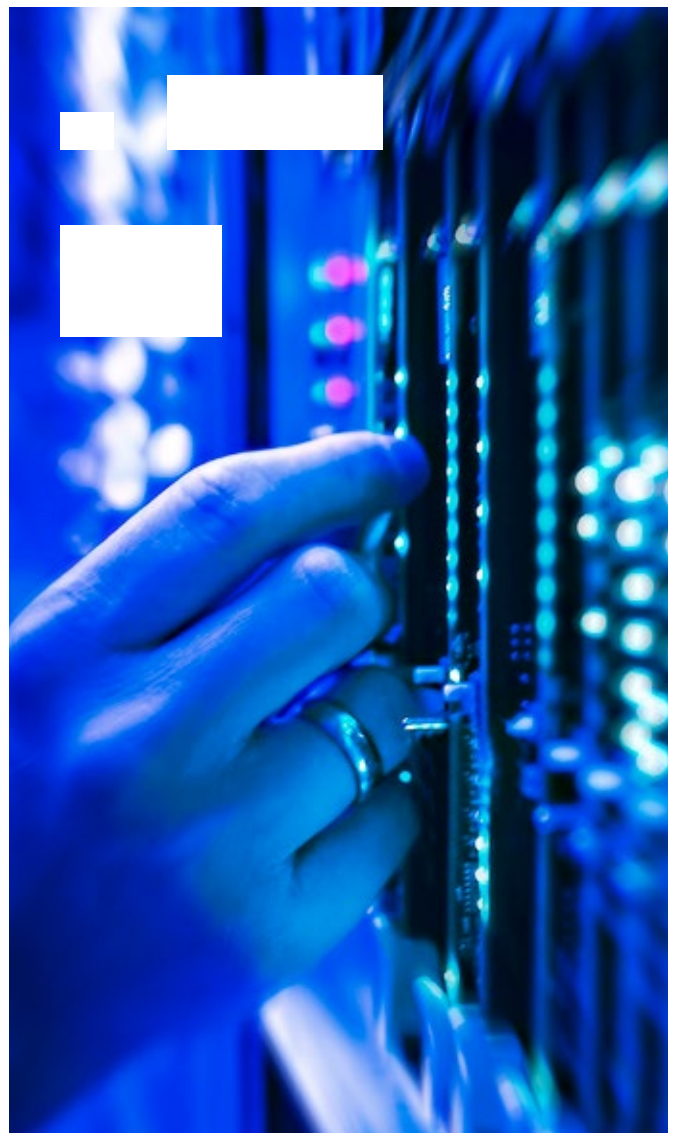
Insurers will have to make a decision on which clause to use; for a risk that they themselves don't fully understand, the easy option is to apply the broadest exclusion possible. Whether they will allow for carve backs, restrict cover for certain Cyber events or exposure or even change their stance entirely and cover Cyber completely, their stance is likely to face challenges and insurers rarely will concede ground, especially in a harder market environment.

For brokers, discussions must be had with insurers during which underwriters will be looking to apply certain clauses, while brokers will be drilling down into why insurers are taking a certain stance and whether the wording achieves what the broker had intended.

As a tightening of approaches in the traditional markets is now apparent and perils are becoming excluded, mining companies are increasingly seeking specialist support from their broker and the Cyber market.

A new home for Cyber risk

The Cyber market has historically originated from a consumer focus on data-related risk, whereby organizations obtain cover for loss of data and liabilities resulting from breaches of personal data. For a mining company, personal data will not be a primary focus; they do not hold large amounts of personal data (bar that of perhaps their own employees), although they do hold operational data which may be affected. However, the focus should be on ensuring operational resilience and reliability.



¹ https://www.lmalloyds.com/LMA/News/LMA_bulletins/LMA_Bulletins/LMA19-031-PD.aspx

² http://www.iua.co.uk/IUA_Member/Press/Press_Releases_2019/IUA_publishes_cyber_exclusion_clauses.aspx

Fig 2: Cyber solution categories

	1. First Party Data Damage
	2. Property Damage & Resulting BI
	3. Non-Damage BI
	4. Third Party Liabilities
	5. Incident Response/ Auxiliary Support

Source: Willis Towers Watson

New solution categories

The solutions in the market can address the categories noted in Figure 2 above on a clear affirmative basis from a malicious Cyber-attack. Affirmative being the operative word here - it actually provides certainty. A solution from this market will avoid any of the issues and disputes that have been seen on traditional policies whereby cover interacted with War and Terrorism exclusions. However, the market is currently not offering Physical Damage and ensuing Business Interruption cover for human mistakes (i.e. a negligent employee) and/or technology failure.

There are several important considerations to highlight from a Cyber insurance perspective. Property must be considered as two elements; the tangible and the intangible. The former comprises the tangible assets such as the hauler trucks, drills, and general infrastructure; the latter, the non-physical intangibles (as they are known) encompassing the software and data. Both can be impacted by Cyber-attacks.

This First Party data loss is an area which the traditional Property market generally has no intention of covering, unless the loss of this data comes from a physical peril that would generally be covered, i.e. Fire or Explosion; however,

even now some of the newer clauses are beginning to exclude this altogether. The loss of intangible, without the physical element, is only generally offered in the specialist market.

Non-damage Business Interruption cover is the loss of gross profit resulting from a Cyber incident across both IT and operational technology where no physical damage is experienced. A common scenario which this cover could respond for is the dreaded ransomware strike, whereby operations are brought to a standstill.

Third-party covers in the market are primarily focused on the potential liabilities surrounding the loss of third-party data or sharing of malware downstream which causes financial loss. Third Party Liability cover for bodily injury and property damage is less readily offered by the market at this time.

Finally, the incident response type solutions being offered allow cover for the event responders and their external experts, who come in to mitigate loss and to get companies back up and operating. It is important that this is matrixed-in with the company's existing incident response and claim protocols.

Insurance capacity in the cyber markets

It is no secret that the capacity available in the Cyber market is not even close in quantum to that provided by traditional Property & Casualty (P&C) insurers and that Cyber “towers” are modest in comparison to what can be created in those markets. The current estimate for cover in the Cyber market is around US\$600 million; this top capacity level is only possible for the areas that are personal data risk, such as financial services and retail where Cyber insurers have a relatively strong understanding.

In general, the Cyber market has grown in a pragmatic yet cautious manner and there has not been an explosion of available capacity. Indeed, just as capacity withdraws and prices rise in the P&C markets, the Cyber market is experiencing its own degree of hardening.

The question is often posed as to how much capacity is available for the mining sector in the market but there are too many different variables to consider. So perhaps this conversation should move instead towards truly quantifying, although a complex endeavour, the key exposures – specifically what a Cyber-triggered Estimated Maximum Loss or Maximum Possible Loss may look like, and how best to approach both the traditional and specialist markets.

For insurance buyers considering purchasing cyber cover, it is important to note that the furnishing of high-quality Cyber security and risk information is crucial to the risk transfer process. For the purchaser, this requires a complex Cyber information-gathering exercise for a risk management and insurance function which historically has not collected this type of information. Broker support for this process is therefore invaluable.

“Make sure you troubleshoot your current cover; it’s not a question of if you get hit, but when.”

Conclusion: an intelligent approach to Cyber risk

Simply put, any metals and mining company risk manager should have a clear understanding of:

- Their Cyber exposures
- The potentially outcome of Cyber incidents
- The insurance solutions that can be implemented

Bearing this in mind, we would recommend adopting the following four-stage process:

1. Have an open conversation with your insurance advisor to review the Cyber cover is in your current insurances
2. Identify any gaps in exposure and cover
3. Analyse these gaps relative to your business’ vulnerabilities and stress test the potential impact of several Cyber scenarios on operations
4. Work with your advisor to address whether these gaps can be addressed through your existing insurance providers or whether specialist solutions are required

Your risk has gone digital..

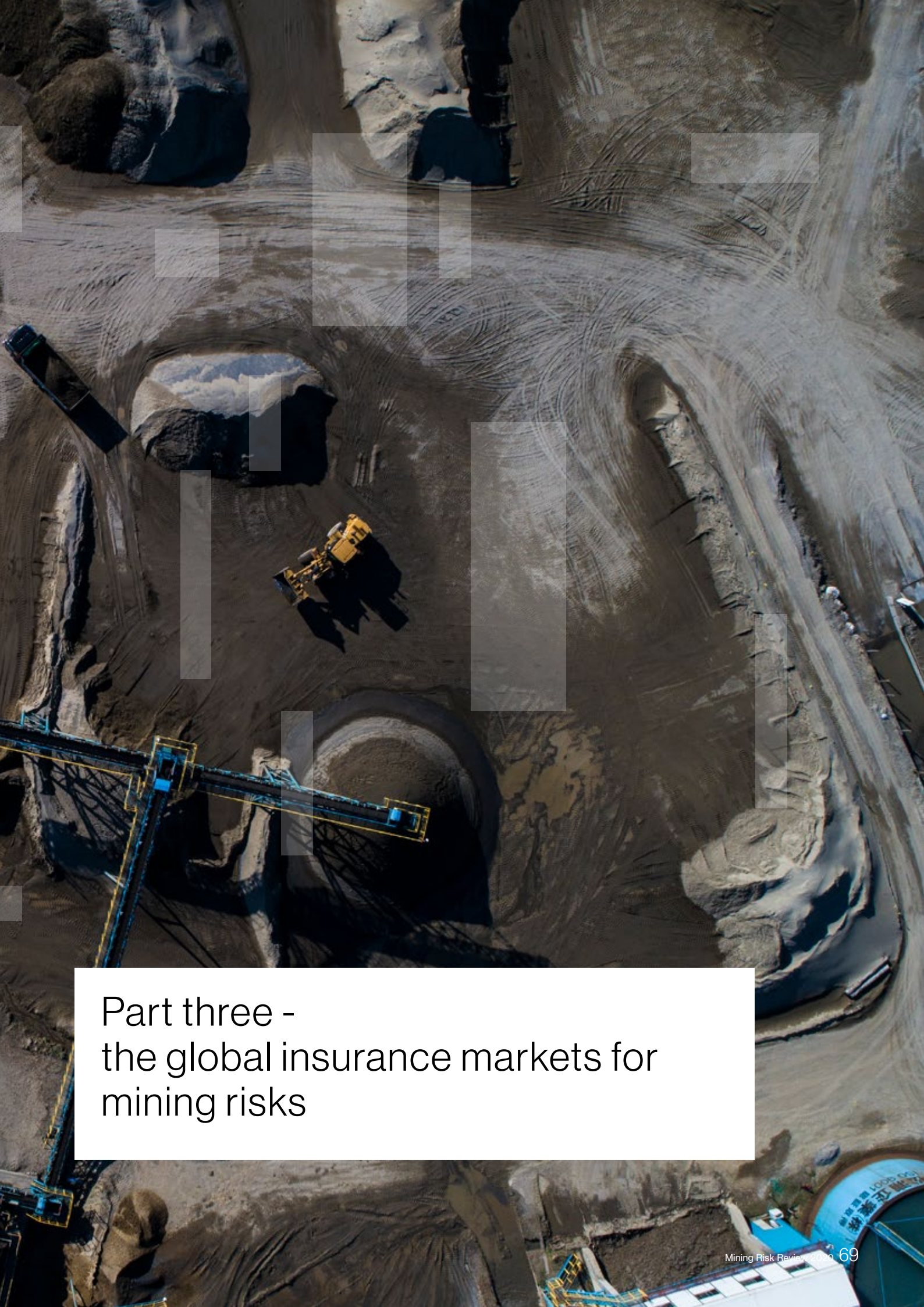
Cyber risk poses a significant challenge to any risk manager. The market has shifted in its approach to the risk; where once cover may have been provided, gaps are appearing. However, specialist markets and experts have evolved to bridge this gap with new and novel solutions; the risk of not exploring your options in today’s age cannot be overestimated. Make sure you troubleshoot your current cover; it’s not a question of if you get hit, but when.



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Part three - the global insurance markets for mining risks



Property: how do you solve a problem like the market?

Introduction

In previous editions of this Review, we have divided our Property market analysis into several geographic regions, including separate articles for Europe and North America. This year, we have combined our comments across these regions as the increasing trend towards more centralised underwriting has resulted in very similar themes manifesting themselves in all the major mining market hubs.

Today' market disconnect

In doing so, we have discovered an increasing problem affecting both buyers and sellers of Property insurance - a disconnect between the quality of information (and level of detail) now required by insurers and the underwriting submissions that buyers have been providing. Bringing both sides to the table and evolving a "new normal" in terms of underwriting submissions will be critical in the next few years. Without a new consensus on data, we will see an increasing trend towards coverage refusals, the retention of more risk and a much less viable market place for mining risks.

So how do you solve a problem like the market? Only by first reviewing the current trends in the market can we plot a roadmap ahead towards a more confident future.

Capacity: steady as she goes

On the face of it, supply-side statistics suggest a straightforward, stable market environment. Even for coal mining risks, we have not experienced any significant insurer withdrawals over the course of the last 12 months, and overall capacity levels – at last in theory - have remained broadly similar to what was available to buyers this time last year, with mutual such as Oil Insurance limited (OIL) continuing to offer significant capacity to mining companies. While in previous years we have focused on the withdrawal of certain major insurers from coal mining risks, it seems that lobbyist pressure has now moved on to insurers' involvement in/with other industries, with only CNA Hardy pulling out of coal this year.

Fig 1 – Global mining losses, 2018

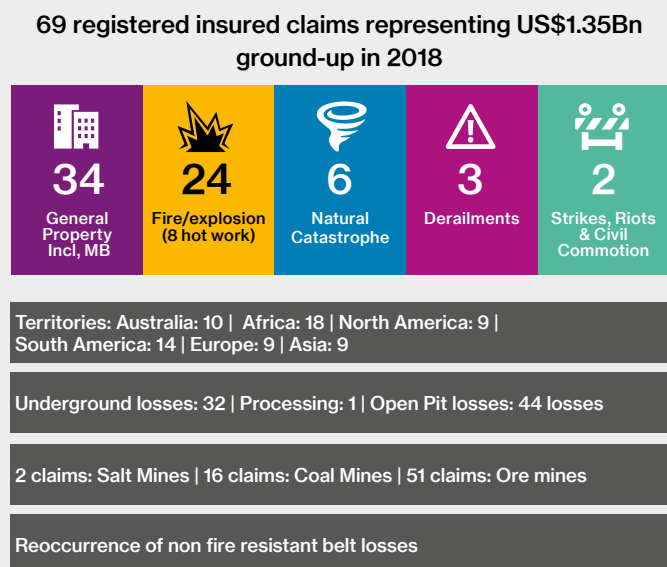
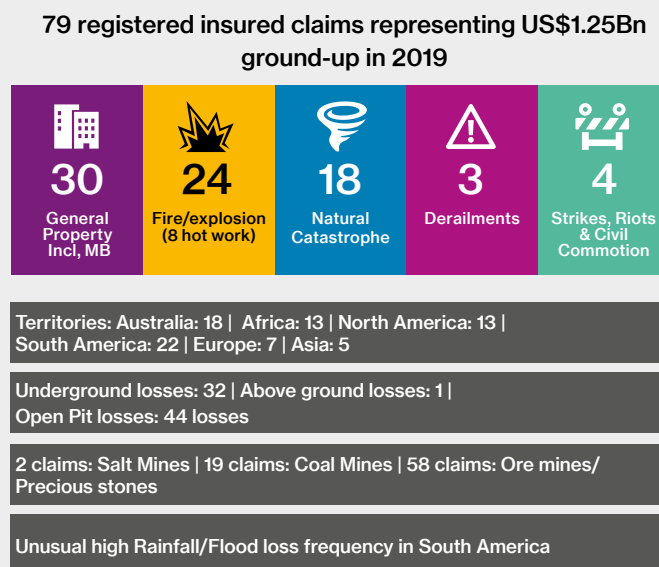


Fig 2 – Global mining losses, 2019



Source: Willis Towers Watson/market intelligence

Minor realistic market contraction

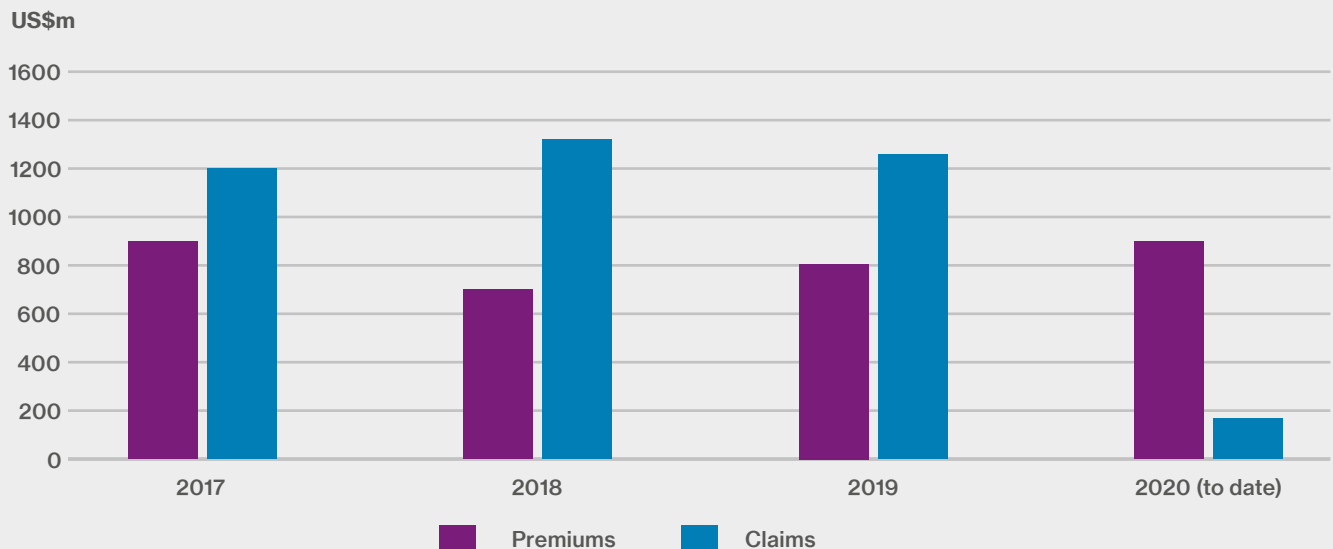
However, we have noticed a minor contraction in the realistic capacity available, due to certain major insurers offering reduced lines compared to what they were offering last year. For example, both Chubb and Liberty are actively reducing their capacity in the thermal coal sector, with both scheduled to have withdrawn completely by the end of 2023; while AIG are strategically reducing their participations by as much as 40% or so for certain programmes. Furthermore, the reduction of capacity within the London Direct and Facultative (D&F) reinsurance market is likely to have a knock-on effect on the realistic capacity figures in due course.

Although these developments are having some effect, they are likely to be increasingly offset to some extent by the arrival of new markets such as Convex and Guide One as the rest of the year progresses.

Figures 1 and 2 above show the extent of global mining losses sustained from January 2018 up until the beginning of this year. It can be seen that overall losses decreased slightly in 2019, by approximately \$100 million, but in all other respects (apart from an increase in natural catastrophe losses in 2019) the loss profile was broadly similar in both years.

“Both Chubb and Liberty are actively reducing their capacity in the thermal coal sector, with both scheduled to have withdrawn completely by the end of 2023; while AIG are strategically reducing their participations by as much as 40% or so for certain programmes.”

Fig 3 – Global mining insurance market premiums and claims estimates, 2020



While the figures for 2020 are still too immature to be germane, it is clear that the mining portfolio has been unprofitable for the past three years

Source: Willis Towers Watson/market intelligence as at July 31 2020

If we now look at Figure 3 above we can see that overall mining premium income almost certainly remains below US\$1 billion, so the market as a whole would almost certainly have sustained underwriting losses in both 2018 and 2019. However, from this chart we can see that this level of losses is likely to be significantly reduced in 2020, with very few losses being reported to date for this calendar year.

So with capacity stable and the loss record improving, some buyers might be thinking that the hardening insurance must be coming to an end. Sadly for them, this is by no means the case.

Profitability

The main reason why mining insurers across the globe are still hurting is a simple one – very few of these insurers view their mining portfolio in isolation. Instead, it is generally considered to be part of an overall heavy industry portfolio (including industries such as downstream oil & gas, power, steel mills and textiles) which continues to deliver overall negative underwriting returns. In last year's Review we showed how various management initiatives (such as the Lloyd's Decile 10 process) have significantly changed the underwriting climate – indeed, culture – across a range of different underwriting disciplines, and mining is no exception.

No freedom of manoeuvre

As a result, regardless of location, the amount of capacity in play and the current loss trends, mining underwriters across the world currently have very little freedom of manoeuvre. Their remit is quite straightforward – to restore the overall heavy industry portfolio to profitability as soon as possible. And because insurers around the world are essentially all saying the same thing, individual underwriters appear to be confident that by taking a more aggressive stance they will not jeopardise their existing market share.





Rating movements

So while individual mining companies might think that their risk is a sufficiently attractive one to merit a reduction in rating levels, at the moment they are going to be sadly disappointed. Under strict instructions from their management, mining underwriters across the world are being told to ensure that every programme pays at least a nominal increase in rates. And if the programme in question features coal, underground operations, 20th century-built tailings dams or exposure to natural catastrophe perils, then the extent of the rating level increase will be much more significant. And for the truly “distressed” risk – i.e. one where the buyer is having to approach insurers whom they have avoided completely during the soft market and/or has suffered a significant loss - the situation is going to be even more bleak.

At a minimum, we are seeing rating increases of 10%, escalating to as much as 40%+ for the least favoured programmes. However, it should still be noted that for the most part these increases are still tempered compared to the rises imposed in other areas of the overall heavy industry portfolio.

Bermuda at the forefront of the market charge

Without question the Bermuda market has been at the forefront of pushing for rate adequacy and profitability. The market has pressed home its advantage as the holding insurers on many key programmes to not only drive rate but also increase retentions, reduce sub-limits and tighten terms and conditions, particularly for coal programmes.

In years past, brokers may have had the ability to place such business with alternative markets; in 2020, no such alternatives are readily available. And in any event, coal mining companies in particular are increasingly reluctant to part company with markets that continue to offer them capacity (often on a multi-line basis) in the face of environmentalist pressure; it is often more expedient to reduce an insurer’s line size in the event of punitive terms than to part company altogether. Moreover, some coal companies have been able to mitigate the impact of rating increases by being able to display above-average green credentials from an ESG perspective (see earlier chapters of this Review).

Fig 4: Major mining losses, 2014-20

Date	Country/Territory	Cause	Quantum (US\$)
Q1'14	South Africa	Earthquake & fire	200,000,000
Q1'14	Philippines	SAG mill machinery breakdown	10,000,000
Q1'14	Australia	Fire in a benefaction plant	120,000,000
Q3'14	Canada	Tailings failure	25,000,000
Q3'14	Asia	Fire - hot work failure	65,000,000
Q4'14	Australia	Flood - breach of sea wall	200,000,000
Q4'14	Papua New Guinea	Machinery breakdown - belt failure	15,000,000
Q1'15	Zimbabwe	Underground collapse	100,000,000
Q1'15	Australia	Leach Tank Failure	outstanding
Q1'15	New Caledonia	Furness loss	outstanding
Q1'15	Namibia	Machinery breakdown	outstanding
Q1'15	South Africa	Fire	outstanding
Q3'15	Chile	Conveyor fire	60,000,000
Q4' 15	Brazil	Tailings dam failure	600,000,000
Q3'16	Canada	Fire in processing plant	45,500,000
Q3'16	South Africa	Shaft fire	90,000,000
Q1'17	Australia	Cyclone David	125,000,000
Q1'17	Peru	Conveyor failure	15,000,000
Q1'17	Australia	Cyclone Debbie	250,000,000
Q2'17	Australia	Earthquake underground	155,000,000
Q3'17	Russia	Flood above and below ground	175,000,000
Q3'17	India	Unknown	250-300,000,000
Q3'17	Caribbean	Hurricane	outstanding
Q3'17	Chile	Flood	outstanding
Q3'17	Canada	Flood	outstanding
Q3'17	Israel	Tailings dam failure	57,000,000
Q4'17	USA	Chemical extraction breakout	400,000,000
Q2'18	Ghana	Operational & Construction*	outstanding
Q2'18	Australia	Pitwall failure	50,000,000
Q1'18	South Africa	Surface fire	outstanding
Q1'18	South Africa	Transformer fire	50,000,000
Q1'18	USA	Furnace breakout	17,000,000
Q1'18	USA	CBI	5,000,000
Q1'18	Papua New Guinea	Earthquake - power plant	50,000,000
Q1'18	Chile	Machinery breakdown	20,000,000
Q1'18	Australia	Tailings dam failure	150,000,000
Q2'18	Mexico	Tailings dam breach*	outstanding
Q2'18	French Guyana	Flood	50,000,000
Q3'18	South Africa	Underground conveyor fire*	70,000,000

Source: Willis Towers Watson/market intelligence as at July 31 2020

Date	Country/Territory	Cause	Quantum (US\$)
Q3'18	South Africa	Dragline failure	97,000,000
Q3'18	Australia	Underground longwall fire	125,000,000
Q4'18	Australia	Train derailment	60,000,000
Q1'18	Mexico	Theft of concentrate	7,000,000
Q1'18'	Canada	Underground rock collapse:	5,000,000
Q3'18	Russia	Pit wall failure (Polyus)	10,000,000
Q3'18	Chile	Ship loader failure	outstanding
Q4 '18	Czech Republic	Methane gas explosion *	outstanding
Q4'18	Russia	Fire - potash mine*	outstanding
Q4'18	Chile	Ship conveyor at a port	outstanding
Q1'19	Chile	Landslip/tailings dam failure	100,000,000
Q1'19	Chile	Mill failure	25,000,000
Q1'19	Australia	Conveyor belt fire	outstanding
Q1'19	Brazil	Tailings dam failure*	150,000,000+
Q1'19	Peru	Torrential rain	150,000,000
Q1'19	USA	Coal - supports to conveyor failure	50,000,000
Q1'19	Canada	Underground fire – conveyor belt	125,000,000
Q1'19	Australia	Flood – various mining companies	50,000,000
Q1'19	Australia	Underground coal – box cut slope failure	45,000,000
Q2'19	Australia	Surface conveyor fire	20,000,000
Q2'19	Peru	Earthquake to waste dam	20,000,000
Q2'19	Australia	Conveyor loss	15,000,000
Q2'19	Australia	High wall collapse	outstanding
Q3'19	USA	Underground fire	50,000,000
Q3'19	Chile	Machinery breakdown	45,000,000
Q3'19	South Africa	Underground fire	20,000,000
Q3'19	Surinam	Strikes, riots & civil commotion	45,000,000
Q3'19	SE Asia	Ball mill failure	15,000,000
Q1'20	Tanzania	Pit wall failure	outstanding
Q1'20	South Africa	Machinery breakdown	100,000,000
Q2'20	Australia	Methane explosion	outstanding
Q2'20	Sweden	Earth movement	10,000,000
Q2'20	South Africa	Conveyor fire – above ground	outstanding
Q2'20	South Africa	Infectious disease	15,000,000



Cash is king

However, there is another factor which is equally important from an insurer perspective, and that is their premium pool itself. As explained earlier, underwriters are under instructions to recoup as much of their past underwriting losses as quickly as possible. In particular, the specialist mining market – the likes of Scor, Swiss Re, Munich Re and Zurich – are focusing on this issue to an even greater extent that their generalist Property counterparts in Lloyd's and elsewhere. While asset values are on the increase, clawing back premium paid out in the form of past losses is a fairly straightforward process. However, when commodity and property values are decreasing – as they generally are at present – insurers are finding that they are having to impose even steeper rises on programmes to satisfy their management that their premium pool continues to increase. So while the better-paid programmes are escaping the worst effects of the hardening insurance market, the situation is much more challenging for smaller programmes that contribute less to insurers' overall premium pots.

Insurers push for quota share placements

Meanwhile brokers have had to reassess the efficacy of existing programme structures (particularly for coal) in the light of this shift in focus towards increasing premium at all costs. Previously, brokers have been able to identify those insurers who prefer to participate in the primary arena (often the major composite insurers) and those who preferred to participate on an excess of loss basis (often generalist Property insurers such as Lloyd's syndicates). But such is the focus now on premium income and the need to be able to stipulate the required underwriting information, we are now finding that insurers are increasingly looking to participate in programmes on essentially a "quota share" basis (i.e. with no layering element) with increased retentions and reduced overall programme limits.

However, given that insurers are reducing their capacity and quota share stretches, brokers will continue to use their own market knowledge to deliver optimal programmes that still combine both sets of underwriting philosophies. In particular, Tier 1 miners with multiple locations in natural catastrophe (CAT) zones who need to buy large amounts of Tailings and Underground cover will still continue to have a large portion of their programme being layered, especially if they require capacity in excess of \$500m.

Dealing with data

Among all the measures that mining insurers are taking during this hardening phase of the underwriting cycle, by far the most challenging has been the new levels of data required in terms of underwriting information. This is because their “underwriting file” for each account that they subscribe to is under so much scrutiny from their own management, requiring them to “tick every single box” on their underwriting questionnaire/check list to make sure their file will pass muster in terms of a peer review. It should be stressed that this is happening even on programmes where the insurer has been writing the business for many years.

Price caps

Perhaps the most challenging of these for buyers has been the insurer scrutiny of their schedule of values, and in particular a growing requirement to impose price caps on both Property and Business Interruption amounts due to significant underwriting losses being sustained on programmes where these were not in place. During the period of the soft market, insurers had found that they were basing their premium calculations on one set of values, declared by the buyer at inception as their estimate for the forecast calendar year, but finding that they are actually paying a loss later in the process on the basis of a completely different set of figures. So perhaps it is not so surprising that mining insurers are now seeking to impose an annual cap of say approximately 110% of the values declared at inception, with a monthly cap of say 125% (although there is a conversation to be had with insurers to increase this for clients that provide the right information to the market). Furthermore, insurers are requiring retentions to be expressed in terms of a number of days rather than be tied to a specific monetary amount. This focus on price caps also helps to explain the trend towards “quota-share” underwriting that we commented on earlier. Again, in a soft market brokers would not have to accept quotes with price caps as there would be sufficient capacity being offered across the market without these restrictions.

It seems clear that the solution to this issue is to forecast more accurate numbers to insurers at the inception of the programme. However, there is clearly a tension between ensuring an accurate pay-out in the event of a loss and keeping insurance costs to a minimum in the first instance. Perhaps the professional deployment of risk engineers, forensic accountants and valuation consultants might eventually lead to greater trust and certainty for both buyer and insurer, speedier settlement times and less of a need to resort to lawyers.

An exhaustive focus on technical detail

Regardless of the merits or otherwise of the market's position on these issues, there can be no doubt that obtaining optimal terms from insurers is now requiring much more diligent work from both buyers and their brokers.

This level of exhaustive technical detail has been particularly apparent for programmes featuring tailings dams. In one recent example, a mining company was asked by their insurers for their Third-Party tailings reports on every dam across the world. The company advised the market that they were not able to provide these reports for legal reasons; as a result, several insurers refused to provide cover as otherwise their underwriting file would be incomplete, with the result that the buyer was reduced to self-insuring part of their programme. Several major mining companies have multiple tailings dam facilities located across the world, of which each are different in their own unique way. To identify the exact incline/slope of each tailings dam requires engineers to get inside the dam and take specific measurements of each structure – by no means a straightforward process.

So no matter how professional the buyer is, the amount of work involved in satisfying each insurer's specific demands can be very significant indeed. And if you are a mid-sized company, it will be particularly difficult to provide this data and secure capacity without external assistance. Finally, even if a mining company does provide the information in sufficient detail, that of course does not necessarily mean that cover will be automatically provided.

Resorting to self-insurance

No wonder we have seen buyers deciding to increase retentions and reduce limits in response. However, we believe that in most cases such a course of action won't be sufficient to ensure an optimal risk transfer strategy. We would instead urge buyers to adopt a more technical approach, using actuarial tools and processes to determine exactly how much risk a company can absorb in the long term rather than being driven by short-term financial expediency (see Matthew Frost's article earlier in this Review).

It's all down to the timing...

Just as important an issue, in our view, is the timing of the renewal approach. Given these challenging market conditions, it perhaps won't come as much of a surprise that we advise buyers to get their renewal submission into the market in plenty of time. However, approaching the market too soon is also fraught with risk. Underwriters are now in the habit of refusing to look at any submissions until at least 45 days before the renewal – and sometimes even 30 days. So if a buyer submits their renewal in advance of this time, all that will happen is that the submission will be left in the underwriter's in-box and ignored, while the buyer runs a significant risk of their data becoming out of date and inaccurate. Timing is now everything; by all means have your submission data ready, but don't time it so that by the time insurers look at the submission, the data submitted is no longer correct. Instead, plan the whole process carefully with your broker to ensure that your submission has a perfect market landing to drive optimum terms.

Insurers taking it down to the wire

Perhaps it is not so surprising that individual underwriters have begun to latch onto the importance of timing to secure the best deal and are responding accordingly. In several instances we are aware that several well-known insurers have been purposely hanging back from providing terms until the very last minute, thereby hoping that there will be no time for the buyer's broker to seek alternative terms. However, we can advise that sometimes this strategy can have an unexpected sting in the tail; we have recently experienced a situation whereby a major insurer adopted just this strategy, only to realise – too late – that an alternative had been lined up and that the buyer didn't in fact require their capacity after all.

The outlook for 2021

What are we to make of an outlook clouded by COVID-19 and an ever-hardening insurance market? Well, perhaps it's not all doom and gloom – there is still plenty of capital available within the overall (re)insurance market and we don't think that the pandemic will have quite such a negative effect on the Property market as it is already having on the D&O and Liability markets. And so there is no doubt that, eventually, capital will flood back into this market and new competitors will emerge to challenge the hegemony of today's market leaders.

Getting used to today's conditions

However, it would be quite wrong to suggest that today's hardening insurance market conditions are just a short-term phenomenon. We have to advise buyers that we think these conditions are here to stay for the foreseeable future, and in the absence of any market disruptors suddenly appearing and undercutting everyone else in sight – something we have seen at the end of previous hard markets but not this one (at least until now) – there is in reality very little to prevent insurers from sticking to their existing positions. In any event, it won't be up to individual underwriters to effect any change in strategy; in our view it will take some time and a complete change in underwriting climate and supply-side dynamics for insurer management teams all over the world to decide to compete more vigorously for business once again.

Conclusion: how to solve a problem like the market?

In the meantime, buyers and their brokers are going to have to learn to live with today's challenging market conditions. For most of us, buyers and brokers alike, this is the first time in many years – perhaps for some, the first time in our careers – that we have seen this part of the overall underwriting cycle and there can be no doubt that a fresh approach is going to be required by all of us if mining risks are to continue to be transferred effectively.

To date, some buyers have expressed incredulity at the market's current approach and have found it difficult to believe that alternatives have not been available. They have not appreciated the need for additional underwriting data to be collated; they have seen no reason to apply any analytical methodology to their programme design and marketing strategy; and they have not considered which markets will produce longer term benefits and which will prove to be less reliable risk transfer partners in the long run. Furthermore, the amount of work being asked to be undertaken by risk managers has exponentially increased, together with inevitable protestations regarding lack of resources and practical objections to what is being asked of them.

However, simply running more risk when your company can't afford to do so is a very short-term strategy, to say the least. In managing buyer expectations, we would distil our advice down to four specific suggestions:

1. Make sure your risk retention, captive participation and risk transfer strategy are based on sound actuarial principles.

Some of our clients have been pleasantly surprised at how much risk they can actually retain, having bought down their deductibles to successively lower amounts during the previous soft market.

2. Make a careful inventory of what should be insured, and what should not.

The market is going to charge their rate regardless, so to keep insurance costs down, only insure what you need to. For example, how much of your surface item Property risk really needs to be transferred? And if so, does it really need to be on a Replacement Cost basis, or will Actual Cost Value suffice?

3. Ensure that your values are accurate, up to date and accountable.

Insurers are going to demand to know how they stack up and the basis on which they have been calculated. Not only will this save you time when it comes to the renewal process, it will mean that any price caps that insurers will impose will be less punitive in the event of a loss.

4. Timing is everything.

Work with your broker to ensure that you deliver your underwriting submission to the market at exactly the right time. Know in advance what the insurers will be looking for and so avoid any unwanted surprises.

This process will require buyers and their brokers to work constructively together in a more co-ordinated fashion than perhaps we have ever been used to. But only by combining our resources together on an all-the-year-round basis can miners offset the worst of the challenges ahead.



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Liabilities: dealing with a “double whammy”

International Liability

Crystallisation of market leaders

The Brumadinho disaster in January 2019 unquestionably served as a trigger for insurers to determine their underwriting position in respect to mining and, while the focus on Tailings Storage Facilities (TSFs) continues to grow, the recalibration of market appetite has led to the emergence of a ‘lead – follow’ dynamic within the market. This of course has been exacerbated by the onset of the COVID-19 pandemic.

This is coincidentally reminiscent of the ‘lead – follow’ initiative that Lloyd’s announced last year insofar as certain carriers are investing in specialist engineering resources that enables them to adopt lead positions on programmes whereas other carriers are approaching mining risks on the understanding that they are following a recognised lead that has undertaken the necessary risk due diligence prior to quoting.

The impact of coal exposure

Whereas TSFs have dominated the spotlight in terms of insurer requirements recently, the market position on coal has continued to evolve and the extent of an Insured’s coal-related operations is becoming an increasingly dominating factor in determining whether insurers will consider providing cover. This is particularly pertinent for non-Lloyd’s markets, who are the most likely to apply coal-related criteria to their underwriting guidelines or refuse to write coal-related risks altogether.

Insurers who can continue to write coal exposures are often unwilling to increase their exposure to coal further by writing new risks and will only consider renewing existing policies. In addition, there is a much greater emphasis on understanding buyers’ ESG strategies and as such a forward thinking and well-considered approach to ESG often now forms part of the prerequisites for insurers.

Trend for reduced line sizes

As the pressure of market contraction and reduced capacity deployment takes effect, we expect that most - if not all - mining programmes with significant limits will likely face a substantial challenge when it comes to maintaining existing capacity.

The impact of this for buyers is varied as the expense to replace any existing capacity can sometimes come at a much higher cost than the existing pricing. Consequently, some buyers have found themselves at an unfortunate predisposition to price volatility where their primary or lead insurers are seeking to cut back line sizes before the renewal process has even begun.

It is therefore increasingly important for buyers to ensure that relationships with key insurers are carefully nurtured, thereby maximising the chances of any necessary rate correction and/or wording restrictions being introduced over a longer period. That being said, the benefit of cultivating key relationships with specific lead markets needs to be balanced with the disadvantages of not sufficiently diversifying the insurance panel, as a failure to do so can leave buyers exposed to a significant change in underwriting approach from a single insurer.

Market capacity

While in theory the total capacity available for mining may be close to US\$1 billion, in reality the largest limits purchased (or even purchasable) are often significantly lower. This delta is caused by a variety of underwriting considerations, including insurers' unwillingness to deploy their maximum theoretical capacity, minimum and/or preferred attachment points and a lack of appetite for specific aspects of the coverage requirements.

In addition to this, capacity deployment can vary significantly on a risk by risk basis according to multiple underwriting factors such as the location of the risk, extent of coal exposure, construction method of any TSFs and, of course, the loss record.

Another important variable is whether the risk is existing or new business. Underwriters are treading even more cautiously when it comes to putting new mining risks on the books and consequently the deployment of maximum line sizes is reserved almost exclusively for well-perceived longstanding renewals.

Continued focus on TSFs

In conjunction with the hardening conditions in the context of the broader International Liability market, the approach from underwriters to mining risks continues to be increasingly technical with a major focus remaining on TSFs.

In addition to the usual elements of a mining underwriting submission, underwriters now expect to receive recently undertaken third party Dam Safety Inspection and Dam Safety Review reports per TSF, as well as specific details about their construction and a host of other characteristics. These include conformity to design standards, frequency of inspections and – importantly – details of any outstanding maintenance and/or recommendations.

Whilst the requirement for detailed TSF information is not a new development within the past year per se, the requirement for insurers to be in receipt of such information in order to provide cover has without doubt become stricter as underwriters operate under pressure from management to walk away from risks where such information is unavailable.

A vertical perception of risk

A key component of the challenging market environment is the perception of mining risks as presenting a much greater 'vertical' exposure than in prior years (due to the increased chance of incurring a loss that breaches the entire programme "tower" comparative to other sectors). As a result, excess layers are often being subjected to a greater rate increase than primary layers and this makes for a much larger - and harder to predict - potential range for rate change.

Like the market's position regarding underwriting information, insurers are increasingly only participating on risks where they consider the price to be right. The effect of this is two-fold, as it not only leaves renewal pricing vulnerable to opportunistic pricing, but it also reinforces the impact of capacity scarcity for capacity-impacted programmes.

In addition to pricing, much greater attention is also being paid to policy coverage and, depending on the premium adequacy of the risk, insurers may look to strike out soft market coverage extensions in a bid to achieve rate adequacy.





Conclusion: how should buyers approach the market?

In order to mitigate the impact of all the above considerations, there are number of actions buyers can take:

- First, it is essential that buyers **engage early with their brokers** and both understand the capacity challenges they may face and agree on the best approach to market. Restructuring programmes is still an effective strategy for minimising the impact of ongoing market dynamics and vertical placements are sometimes an essential method for driving down layer prices to achieve overall premium targets.
- Second, and as discussed above, **the provision of a high quality and comprehensive underwriting submission** - combined with an early approach to market - is key to ensuring that the maximum potential capacity can be accessed. This will help ensure that the best possible results are achieved in an environment where risk selection is so prevalent.
- And last, but certainly not least, it is more important than ever that buyers **appoint a broker equipped with the necessary industry experience**, technical knowledge and market relationships to creatively and effectively negotiate the evolving and challenging landscape of the mining market.



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North American Casualty market

Brumadinho - the straw that broke the camel's back

The North American Casualty market for miners started to undergo lasting change shortly after January 25, 2019, largely as a result of the tailings dam failure in Brumadinho, Brazil, which killed over 250 people and caused substantial environmental damage.

Up to that point, Casualty insurers traditionally provided coverage for Sudden and Accidental pollution events under their respective Casualty policies, which included coverage for unforeseen tailings dam failures. Historically, requests for underwriting information, as they pertain to this substantial exposure, were rather limited.

Brumadinho was a defining moment, not just for the mining industry as a whole but also for Casualty insurers supporting this sector; it finally opened insurers' eyes to the true risk they have assumed all along without asking too many questions. This particular dam failure, which impacted several insurers in the market, caused a change in underwriting guidelines, adjusted risk appetite and impacted pricing. Some insurers chose to exit the mining space completely, while others chose to provide curtailed coverage going forward.

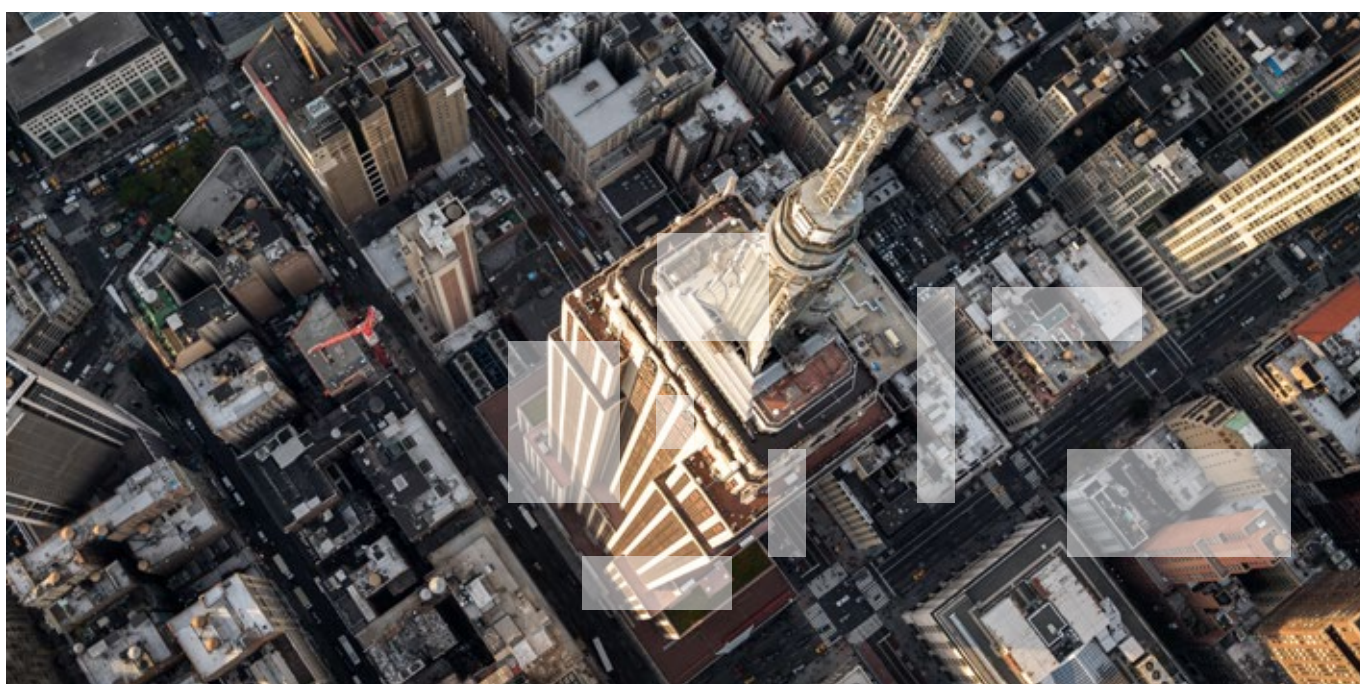
2019 - a time for correction

For years, insurers had complained about a lack of profitability in this space; rates were so far below where they should have been technically that gross written premiums were never enough to cover losses. Despite this, competition was still sufficiently vibrant to prevent rating increases to the buyers' obvious benefit. However, Brumadinho has provided the wake-up call needed to made Casualty insurers realise that they had to adjust their overall underwriting approach towards mining in order to stay in business.

This process took place throughout 2019, when insurers took a very close look at their respective book of business, scrutinizing every program and its associated risk. We witnessed premium increases throughout last year, with no miner remaining unaffected by this changing market place. Underwriting requirements and requests for information increased; in particular, miners are now expected to be fully transparent as far as their tailings exposures are concerned.

Greater focus on underwriting information

At present, the vast majority of insurers are demanding to see copies of independent third-party dam safety inspection reports, including an explanation as to what the insured plans to do regarding any identified recommendations; some insurers will request copies of flood inundation studies if available. Those insureds who prefer not to share these reports with the insurers will have very limited options to obtain Sudden and Accidental Pollution coverage for their tailings dams.





To make matters worse...2020 ushers in COVID-19

Now, we have to report that overall market conditions have gone from bad to worse, with the arrival of COVID-19 and the resultant global pandemic which is deemed to be the largest single catastrophe to ever impact the Property & Casualty sector. While the market was already in a hardening state prior to COVID-19, the pandemic has caused a shift to an actual hard market - something we have not seen since the 1980s.

Most lines of insurance have been impacted by the hard market, with premiums rising across the board; sadly, Casualty is one of the lines most impacted. Combining a challenged line of insurance with an equally challenging class of business, such as mining, leads to some very challenging renewal negotiations and outcomes, leaving many buyers in a state of disbelief.

North American insurer responses

Casualty insurers across North America are taking a very similar approach towards their mining book of business. Underwriting guidelines are now very much centralized and aligned across the region, with minor exceptions.

The North American pool of insurers willing to lead or participate in a complex and international mining risk is limited, especially when there is a need to issue locally admitted policies overseas. The pool shrinks even further for buyers with thermal coal exposures. Due to their international networks, insurers such as AIG, Allianz, AXA XL, Chubb and Zurich are potential lead options. While these insurers have the network capabilities and generally support mining placements, they vary in coverage scope and risk appetite and may not always offer a primary or lead option.

Large programs require international placements

In reality, large mining Casualty programs will require access to the international market place beyond North American insurers. At this point, we do not foresee any new market entrants until conditions have stabilized, at which point the market will become an interesting investment opportunity for available capital yet again.

Changes to appetite

While we still saw \$25m excess layer blocks in 2019, insurers are now cutting down capacity to \$10m or even \$5m per layer and program. Some insures may still deploy a \$25m limit but will do so through ventilation across a program with enough buffer capacity inbetween. Working with these smaller blocks requires brokers to secure more insurer participants and therefore increases the timespan to complete a program.

Review of attachment points

In addition to cutting capacity, insurers will also carefully review attachment points on any given risk, often preferring excess positions above \$50m or more in underlying capacity, which reduces the insurer pool for miners buying lower limits.

Some Umbrella insurers are insisting on a minimum \$5m attachment on Automobile coverage; this may lead to a potential gap in limit, as many primary Automobile insurers only offer a \$2m limit.

We are also seeing a push for higher deductibles, although there is no consistency on this across the North American Casualty market.



No one is exempt...

These changes are currently taking place regardless of long-standing relationships between buyers and insurers. Even buyers who have not experienced recent claims are impacted by these changes in appetite.

Changes to coverage scope

Despite the current hard market conditions, the actual coverage provided has not been impacted as much as one might imagine; of course, this is always subject to future change.

That being said, COVID-19 has led to the widespread deployment of Communicable Disease and Health Hazard exclusions across the board. While some insurers may be open to negotiations in this regard, others will enforce these exclusions outright. As the pandemic continues and COVID-19 related claims probably rise, we may see this room for negotiation shrink to zero.

Some miners, whose tailings dams are identified as problematic or those who do not want to disclose requested tailings data, may find themselves without coverage for Sudden and Accidental Pollution events related to tailings dam failures. Other buyers will have gaps in coverage throughout their casualty program as insurers are taking different approaches rather than following an underlying coverage lead.

Rating increases

In observing rate changes, we must differentiate between the primary Casualty space and the Umbrella/Excess space. In general, we have not seen any insurer enforce a blanket rate change across the mining portfolio; every increase appears to be applied on a case by case basis, driven by the perceived client risk profile. Rates are driven by individual exposure, as well as past and recent losses sustained by the buyer:

- **The Canadian experience:** On average, Canadian domiciled miners are seeing 15-20% rate increases as a starting point on favorable mining risks for primary layers. Umbrella and Excess layers are undergoing much more dramatic price increases, starting at a 25% increase and ranging into multiples of the prior year's premium. Those buyers who experienced a large premium increase within the last 12 months may be shielded from an exact repeat come renewal time, but rates will continue to rise. Flat renewals are most unlikely and premium reductions out of the question. While excess insurers have often followed underlying percentage premium increases in the past, this may no longer be the case. Some excess insurers are pushing rate more than the underlying program participants.
- **The United States experience:** Compared to their Canadian counterparts, US miners without any recent loss activity are seeing Primary Liability layers increase by 5%-10% at renewal. As far as Umbrella and Excess layers are concerned, insurers are often looking for rate increases far beyond the primary markets' needs. Most excess insurers are looking for increases of 25%-40% on renewal business, with high excess layers seeing significantly higher increases. As in Canada, those buyers who saw large premium adjustments during the last 12 months may have a smaller percentage increase for the upcoming renewal, but an increase nonetheless.

What to expect going forward: making a battleplan

We expect current market conditions to remain challenging for the next 24-36 months. Every renewal negotiation will take extra time and effort and will be challenging for all parties involved. Maintaining existing coverage limits, deductibles and coverage scope will be the main task on hand.

Buyers are advised to fully engage in the renewal process, following these guidelines for best renewal outcomes under very challenging market conditions:

- **Start the renewal process and internal data gathering early**, specifically as it pertains to engineering and tailings related information.
- Take great care, together with your broker, to **craft a wholesome renewal submission**, giving underwriters an in-depth and detailed overview of your operations and risk without overwhelming the reader with unnecessary detail. Underwriters are inundated with submission flow and stretched for time, so the submission document has to be on point.
- Take the time to **engage with your Liability underwriters personally** to explain your operations and answer any questions. If meetings in person are not possible, schedule video conference calls.



- Although North American insurers have supported the mining industry in the past, due to appetite changes and capacity constraints, do **consider international wholesale markets** such as London, Bermuda or Singapore to fill your program.
- **Consider higher retention options** and/or alternative risk transfer programs (i.e. high deductible, captives, retrospective loss limitation).
- **Utilize data analytics** to determine optimal pricing based on deductibles.



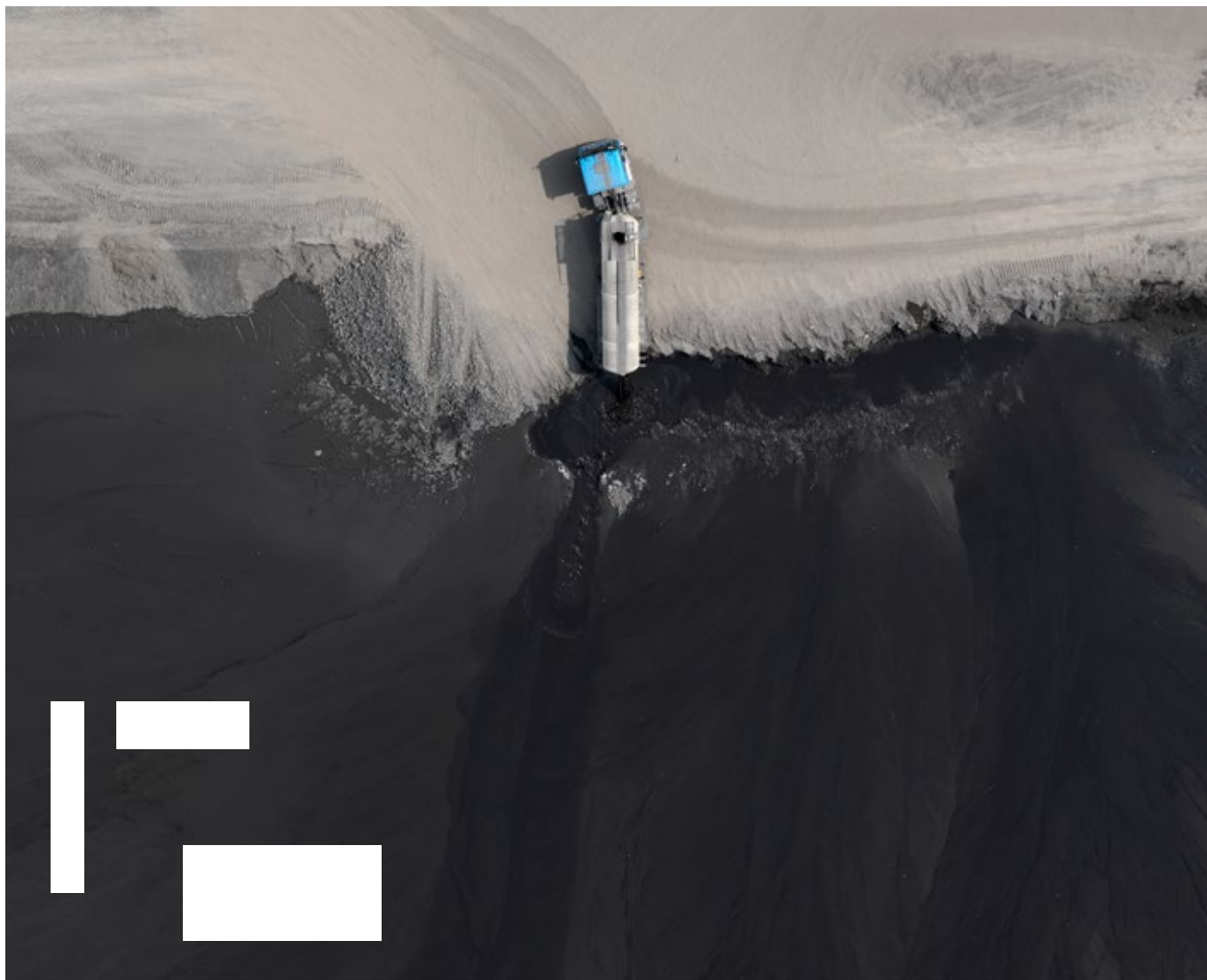
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Environmental Impairment Liability

Environmental Impairment Liability (EIL) coverage and capacity continues to evolve as a result of buyers' heightened awareness of increased exposures, legal liability and regulatory risk around the world.

In Europe there is also a clear trend towards the introduction of mandatory financial security (where an environmental insurance policy is the main solution) for activities involving waste, environmental permits and Seveso III facilities beyond that required by EU legislation. This trend shows no signs of abating or reversing; rather, its continued increase now appears to be inevitable.

Particularly for mining risks, London is the main centre for underwriting EIL risks outside of the USA, with developing markets emerging in Australia and the EU supporting our 'rest of world' placements.

Insurers have risk appetite for:

- ✓ Metalliferous and non-metalliferous mines
- ✓ Underground and open cast mines
- ✓ Dissolution mines e.g. potash, uranium
- ✓ Mines operated by established mining companies with strong CSR principles
- ✓ Tailings Management Facilities (TMFs) constructed in accordance with internationally recognised standards, e.g. ICOLD, CDA, ANCOLD

but not for:

- × Coal mining and associated infrastructure. (unless it's a fairly minor part of the overall risk)
- × TMFs in areas of high seismic activity
- × Upstream construction TMFs

Useful additional coverage

As the General/Public Liability market for Mining risks hardens and contracts, the EIL market is being used increasingly to provide additional Sudden & Accidental (S&A), unexpected and unintended cover at the top end of Mining Liability programmes or to infill gaps mid-programme.

EIL markets can offer additional S&A capacity on a Claims Made basis which is often the main reason why high limits are purchased. Dependent on territory and exposure, there may be \$20–150 million+ capacity available for Mining (considerably lower than other less risky industries, but no less valuable nonetheless).

Locking in long term Environmental programmes

Hard market conditions in standard lines of insurance have also had both positive and negative effects on the EIL market. As demand and application for Environmental products continues to grow, many clients facing hardening conditions in the Property and Excess Casualty markets are strategically locking in multi-year operational environmental programs where available (2–3 years) to mitigate future market uncertainty. Stretching the aggregate policy limit across a longer policy period is proving a popular and cost-effective way to build an EIL programme.

While longer policy term programmes (5+ years) are available for transactional business such as mergers and acquisitions, insurers are less likely to offer them based on regulatory uncertainty surrounding emerging risks. Furthermore, pricing increases on long term programmes also means that some buyers are less likely to purchase them when they are offered.

Effective deal facilitators

Having said that, these transactional programmes are extremely effective deal facilitators, unblocking impasses in sales negotiations where the seller wants a clean exit from an environmentally-distressed business but where the buyer is reluctant to take on responsibility for unknown historic risks that are difficult to quantify financially. Venture capitalists, banks and lawyers increasingly see the deals available in the EIL market as a valuable tool to ensure that a deal moves ahead.



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D&O: the worst of all worlds

European D&O market: unprecedented conditions

Introduction: a slide into unprofitability

For well over a decade, D&O was a highly competitive market, with a significant number of carriers looking to grow portfolios rapidly and regular new entrants, attracted by the historical profitability of the segment. This resulted in year on year premium decreases, significant deployment of capacity and broad coverage as insurers competed for market share.

However, since 2015 the number of claims against large international companies has increased significantly – a trend that is by no means limited to US domiciled companies. At the same time, there has been a significant increase in investigation and defence costs, as well as a rising frequency and severity of settlements. Combined with the consistent prolonged decline in rates, this has meant that the Combined Ratios of insurers has started to rise, and for some, significantly - above 100%. Our understanding is that the negative development of prior year figures, dramatically rising over this period, has put a sharp focus on the long-term profitability and sustainability of D&O portfolios for many insurers.

Capacity constricts and rating increases

A long period of suppressed premiums, combined with a significant deployment of capacity in a previously highly competitive market and increasing losses, had now led to London D&O insurers materially reducing per risk capacity, significantly increasing premiums and imposing stricter terms across all portfolio segments. Even harsher renewal terms have been imposed on some specific sectors - including Mining - due to historic claims trends and the perception of the industries' relative risk exposure.

The COVID-19 impact on D&O

The hardening market conditions seen in the second half of 2019 and Q1 2020 have been further compounded by COVID-19. The fear of a systemic impact across already ailing D&O portfolios now appears to be driving even steeper increases in rate and a corresponding reduction in - or in some cases removal of - capacity. Risks associated with Directors and Officers liability are among the many risks that are at the forefront of underwriters' minds. In the context of this pandemic, these may include:

- The adequacy and accuracy of disclosures in a financial/ business environment with so much influx, including many businesses trying to cope with shutdowns and other unprecedented pressures
- Fiduciary and other duties owed - changes are occurring quickly and there is no real precedent for many of today's tough decisions
- Complications and challenges in balancing the needs and priorities of today's diverse and complex interests among key stakeholders
- Regulatory and compliance uncertainty in facing unparalleled events and responses by authorities
- Workforce and operational adjustments, bringing new potentially unanticipated risks
- Legal, financial and other external advisors may be overtaxed or unavailable, as many others are wrestling with COVID-19 related issues
- Reputation risk arising from perceptions - well-founded or no - of how management has responded to the pandemic

So far, the major D&O underwriting areas of focus have been on company liquidity and the industry-specific impact of the virus. In many instances, insurers are seeking extensive information on COVID-19-related risk disclosures, the impact on financial results, operations, product/services shortages, industry-wide concerns, liquidity/solvency and cyber security.

A focus on mining

Many insurers have made public statements around their commitment to including ESG metrics in their investment decisions; for some, this commitment has now extended to incorporating similar metrics into their underwriting guidelines. While insurer approaches differ, we have started to see declinatures on certain industry programmes (including mining), purely on the basis of these insurers' internal ESG guidelines. According to the NERA's report on recent Trends in (US) Securities Class Action Litigation: 2019 Full-Year Review, "Cases involving allegations related to the environment have remained low, representing less than 5% of filings in each of the past five years".¹ Despite the slow uptick in the US SCAs filed in Federal court, we believe that environmental risk will become more relevant to underwriting D&O risks for mining companies.

Tailings concerns

The relatively recent tailings dam disasters continue to be of significant concern and focus for underwriters, with D&O insurers seeking additional information and/or imposing additional limitations including a significant increase in the self-insured retention payable in the event of a tailing's incident - or even blanket exclusions of cover in respect of tailings operations.



KYC/due diligence concerns

In addition to broad exclusions for Pollution and Bodily Injury & Property Damage experienced by the mining sector in recent years, we are now also seeing insurers apply Payments and Gratuities exclusions or again imposing significantly higher retentions for these types of claims. Insurers are keen to know more about companies' Anti Bribery and Corruption policies and understand the robustness of their KYC/due diligence procedures, with a focus on centralised contract management and their extent of dealings with government.

If a mining company has any legacy issues relating these matters, we recommend instigating transparent conversations with insurers to demonstrate the lessons learned and differentiate the "go-forward" exposure.

The outlook - more challenges ahead for miners

The mining industry across the globe has already been hit with significant rate increases in recent years, but with the rapid market hardening in 2020, it is likely that further rate corrections will be experienced. Applying a significantly higher retention can help to mitigate a degree of premium increases, while alternative programme structures may also be considered, for example a Side-A only programme (i.e. cover for non-indemnifiable loss for an insured person, or main board only coverage). Company co-insurance and the use of captives may also help to create a more sustainable programme over the long term.

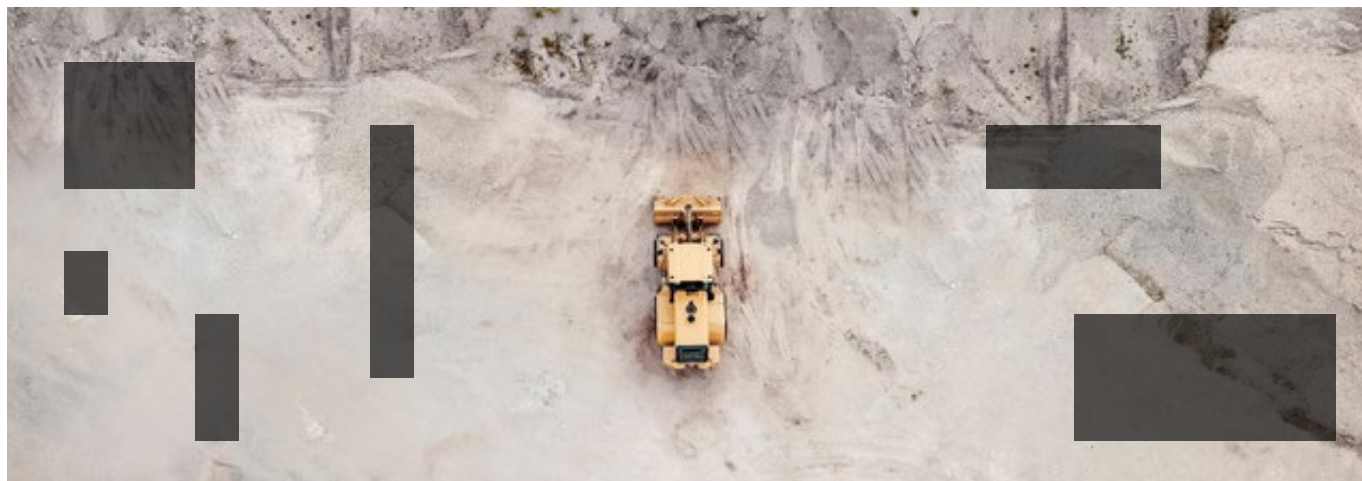
Such challenging market conditions build a strong case for seeking expert input and assistance from advisers specialising in this sector of the insurance market, to ensure an appropriate balance of coverage is achieved between the corporate and individual D&O's protection that is tailored to your board and company's specific needs.



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¹ https://www.nera.com/content/dam/nera/publications/2020/PUB_Year_End_Trends_012120_Final.pdf



North American D&O market: an unprecedented shift

Market correction

Much like its European counterpart, the D&O market in North America has experienced an unprecedented shift over the past 12-18 months, which has threatened the future viability of key marketplaces and the insurers which operate within them. Although we have been experiencing market hardening for the last five years or so, what's changed during this period is the severity of the increases and now terms are now under attack too; that started before COVID-19 and has got worse since. As a result, a significant market correction has been introduced and traditional D&O programs have been negatively impacted due to diminishing capacity, increased rates, and tapered policy language. A few key contributing factors of this accelerated hard market include the increase in the frequency & severity of claims, new exposures, several years of soft market pricing and of course the impact of COVID-19.

Surge in claims coincides with low premium levels

The surge in D&O claims from both a frequency and severity perspective has been coupled with low premium levels for several years, leaving insurers in unprofitable territory and unable to continue with their existing portfolio strategy; in some instances, it has forced major insurers to exit participation in the D&O arena.

Mining particularly impacted

The Natural Resources sector, and the mining segment in particular, has unfortunately experienced a large number of high-profile claims across the industry in recent years. Depressed commodity prices over the past decade has caused several mining operations to experience unprofitable production models, resulting in major financial hurdles such as asset impairments and suspensions. Ultimately, the D&O market experienced a wave of management liability claims, including high profiles securities class actions and bankruptcies due to the deterioration of bottom line performance and stock prices during this sector downturn.

Operational disruptions

Other recent and noteworthy sources of D&O claims in this segment include operational disruptions in international jurisdictions due to political unrest or competing local interest. Additionally, recent catastrophes and accidents at mine sites resulting in loss of life have also found its way into the boardroom from an accountability viewpoint, leaving stakeholders and investors questioning managements' oversight over health, safety and environmental policies.

Short term future underwriting trends

Overall, market conditions in North America will continue to be very firm. The market is likely to experience some of the following trends, due to the market correction which we will continue to experience for the remainder of 2020 and into 2021.

Premium increases will likely continue through 2021. Challenged industries, together with risks with liquidity concerns and/or claims activity, may see increases significantly higher than the indications below. Dynamic market pricing makes predicting renewal costs unusually difficult, but our expectation is as follows:

- **Public programs:** A broad range of increases. We are projecting that near-term averages (excluding outliers) may fall between 50-65% on primary programs.
- **Private/NFP programs:** For programs with revenues less than \$1 billion, we expect rating increases of between 10-50%. For programs with revenues greater than \$1 billion, see Public programs above.
- **FI:** We are expecting +10% to +30% increases for most D&O renewals.
- **Excess:** The trend of higher increases than for primary programs continues; however, this should taper off as excess recalibration wanes. Side-A programs are also seeing increases now.

In terms of capacity, layers continue to shrink as London syndicate revenue limits constrain appetites and capacity. Larger towers may have to shrink, too; replacement capacity challenging to find and often costly. Carriers are becoming more consistent in their approach to COVID-19 risk.

Meanwhile, terms are tightening. For Large Private programs, insurers are focusing on coverage and the exposure at risk, raising attachments and reducing capacity. We are also seeing some recalibration of P/E portfolios. Meanwhile carriers are looking to exclude: Cyber and Privacy, Insolvency and Professional Liability. Furthermore, Derivative Investigation Sub-limits are being pulled back, eliminated or now only offered excess of retentions, which could impact Books & Records coverage.

Underwriting criteria remains unchanged, but underwriters are applying more depth and focus, especially for liquidity and COVID-19-related business impacts. Last minute quotes are still possible, but that trend is getting better.

Rating expectation summary

- Overall Primary rate prediction: +15% to +50% or higher
- Public company (stable profiles) - primary: +15% to +50% or higher
- Public company (stable profiles) - excess: +25% to +75%
- Private and not-for-profit: +5% to +35%
- Side A/DIC is no longer soft; we are beginning to see flat to +20% or more
- Leading insurers are exercising a conservative or reduced limit deployment strategy - the discipline demonstrated by leading insurers has been taken up broadly, and largely consistently across D&O markets
- Significant exclusions are being introduced by sector, including tailings dam exclusions, bribery/corruption exclusions for the mining segment
- There will continue to be consistent and material increases in retentions/deductibles

Impact of COVID-19

Apart from performance dynamics, D&O may be one of the lines most affected by the pandemic and the resulting economic challenges. When we look at the mining sector on a global basis, there are several ways that COVID-19 has affected company operations. It is not only the impact of outbreaks within a company's employee base that has slowed or forced operations to halt but, in some countries, there has been a government directive for non-essential businesses to cease operations.

To date, we have seen relatively few US Securities claims that are COVID-19 related; as at the end of June 2020 there were only 16 active COVID-19 Strong Customer Authentications, with none against any mining company. The majority of the cases alleged 'Non-Disclosure of the potential impact of COVID-19.' Another category, not being tracked but which may have a more significant impact, are claims that go out of their way to avoid blaming COVID-19. Those claims look at pre-pandemic disclosures and post-pandemic disappointing results and blame any possible disclosure gap or event, other than COVID-19 or the responses to the pandemic.

As the effects of global pandemic start to bite, we are seeing many countries move from dealing with the public health impacts of the crisis to starting to try to understand what the short and long-term financial impact will be on the industry.

Commodity demand had dropped before 2020

The mining industry is resilient, but it will take time to get back to profitability. Gold miners are a standout as historically investors rush to gold investments in times of global unrest. Pre-COVID (a term we hear more and more of these days), the demand for many commodities was already low, thereby affecting profitability. In discussions with mining clients, some make reference to the relatively low energy prices being a benefit to them; they hope that these will continue for some time, due to the large proportion of direct operating costs attributable to energy use in mining production. Time will tell.





Going back to basics

Directors & Officers Liability underwriters are going back to basics. They are broadly focusing on:

- Understanding a company's current and future cashflows - has a stress test been completed?
- Budgeted capital expenditure plans - are they being put on hold?
- Relationships with foreign governments - are they stable?
- Past and current environmental exposures - particularly tailings dams
- Corporate Social Responsibility programs, in particular the provision of health care infrastructure and housing - what annual costs will be incurred?
- Many questions of employee safety, as well as safety within the whole supply chain which, if disrupted, could indirectly affect the company
- Continuous disclosure obligations of the company

Over-optimistic forward-looking statements?

As mining companies return to full or even partial operation, many of them will be making many forward-looking statements about their future business outlook, current financial condition, operating readiness and capabilities, supply chains, ability to service debt and expected future cash flows. However, many of these potential statements may be overly optimistic and could leave a company exposed to potential shareholder litigation. Companies need to just stick to the facts; D&O underwriters will be taking a good look at their current portfolios as well as any new presented opportunities and will look to avoid companies that cannot show restraint.

"As a result of business cessation due to COVID-19 we have started to see companies across several industries file for bankruptcy and/or bankruptcy protection, and mining companies are isolated in this regard."

More companies are restructuring and many of those in or considering bankruptcy

As a result of business cessation due to COVID-19 we have started to see companies across several industries file for bankruptcy and/or bankruptcy protection, and mining companies are isolated in this regard. For now, the trend, is most bankruptcies involve pre-arranged or pre-pack restructurings. The bankruptcy process is used to get necessary approvals to restructurings, and those bankruptcies are far less likely to produce D&O claims. However, the longer the pandemic lasts, the more likely that banks will have less room to accommodate debtors with restructuring terms. This means that the bankruptcies of tomorrow may be more challenging to resolve, and creditor claims against executives are more likely.

D&O underwriters globally are further tightening policy terms, increasing premiums and lowering policy limits on renewals.

Conclusion: our advice to miners

Mining companies need to start their renewal process much earlier than ever before and should plan to meet (virtually or otherwise) all the existing underwriters on their D&O programs. Underwriters are being a great deal more diligent, asking more questions of companies; indeed, there are lists of specific COVID-19 exposure and preparedness questions that need to be addressed before receiving a new or renewal quotation. Some insurers are also adding Communicable Disease Exclusions on new policies - even D&O policies that already have a Bodily Injury exclusion in the base wordings.

In summary, the combination of a hard market and global pandemic has created the perfect storm, and the full impact of these economic and market forces will continue to create challenges across the insurance market.



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Regional market commentaries

Australia

The Australian market has seen a continuation of hardening conditions during the first half of 2020. Rate increases continue to accelerate to address premium adequacy across the mining portfolio as insurers seek to return to underwriting profitability.

Enforcement of underwriting guidelines

In addition to this rating environment; coverage terms and conditions are being reviewed and certain coverages being tightened by insurers. There are additional levels of rigour in the review of individual mining operations with the enforcement of underwriting guidelines and multiple levels of internal approval required before capacity is offered. This has resulted in certain markets restricting line size or electing not to participate if they are unable to achieve the premium levels or terms and conditions that they require.

Existing lines reviewed

While capacity remains stable, insurers are reviewing their deployment to each risk; the exception being the continued constriction of capacity for thermal coal operations, with further insurer withdrawal from this area of the mining industry.

Submission requirements

Given the level of scrutiny of information in the current market environment renewal processes must start earlier than in past years and detailed submissions are required to achieve best results and demonstrate risk quality to insurers. The submission information now expected include:

- Recent risk survey reports for each site which details the activities and operations, loss estimate calculations, risk management and mitigations, water management processes, risk recommendations and subsequent responses.
- Natural Catastrophe exposures
- Tailings Dam Information – inspection and engineering reports, construction method, dam break studies and future plans for these facilities
- Property damage values – Detailed breakdown of values by area of operation and valuations
- Business Interruption calculations with commodity price assumptions



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China

One Belt, One Road – Chinese insurers remain positive

With the rapid development of Chinese enterprises purchasing overseas mining projects, most Chinese insurers are adopting a positive attitude to such business and expanding their capacity to take more market share. Most Chinese insurers pay a great deal of attention to mining business that has a Chinese interest, where Chinese enterprise ownership exceeds 50% or where it has management control for the project. For those projects which have no Chinese interest, most insurers refuse to write the share on a Primary basis but will consider writing a small line on an Excess basis. PICC is the major insurer that is willing to write non-Chinese interest mining business and others such as Tai Ping will follow. But most other insurers such as Ping An will refuse to participate on that basis.

No cover for underground risks, limited for Liability business

Most Chinese insurers refuse to cover underground risks, no matter whether the project is located in China or overseas. Therefore, if there is a need to place underground risks, Chinese miners need to continue to rely on the London and the other international markets.

Furthermore, most Chinese insurers have no capacity for Liability lines, including Primary General Liability, Excess and Umbrella. At present, we continue to refer Liability risks to the international / London markets to deliver placement solutions.

Environmental Liability restricted to domestic projects

For Environmental Liability risks, the Chinese market also refuses to consider overseas mining projects. However, most of the time for domestic mining projects, under from local government, the market players will combine and adopt an integration insurance model to take the risks. Furthermore, it can be deemed as compulsory environmental insurance in some special areas such as Shanxi and the Hebei province, where most mining projects are located. However, the limits of liability are very small (below US\$1 million) as the co-insurers are not willing to write a higher limit.

Using net retentions

Recently we identified a new trend which is now ongoing in the Chinese market; even for those projects without Treaty support, Chinese insurers are still willing to write part of risk, relying on using their net retention to participate in the placement. Therefore, total capacity seems to be larger than before, so that the actual capacity is now equal to their Treaty amount plus their net retention. However, in actual practice insurers will not offer their full capacity, as they may be restricted by a number of factors.

Fig 1 - The Chinese market for mining risks, 2020

Chinese Insurer	Full Capacity	Underwriter Appetite	Company Security Rating
PICC	US\$720 million	US\$720 million capacity combined PD/MB/BI for projects which have Chinese interests where acting as the leading insurer US\$571 million capacity as co-insurer US\$71 million capacity for non- Chinese interest projects Nil for underground risks	200,000,000
Ping An	US\$589 million	US\$589 million where acting as the leading insurer US\$464 million capacity as co-insurer Nil for non- Chinese interest projects Nil for underground risks	10,000,000
CPIC	US\$571 million	Nil for non- Chinese interest projects Nil for underground risks	120,000,000
Hua Tai	US\$500 million	Acts as co-insurer Not willing to act as leading insurer Nil for underground risks	25,000,000
Tai Ping	US\$300 million	Has branches in parts of foreign countries Act as co-insurers through broker or direct insurer without broker involvement; Nil for underground risks	65,000,000
CCIC	US\$235 million	US\$235 million for oversea projects US\$345 million for oversea projects as co-insurer US\$446 million for Chinese domestic projects Nil for underground risks	200,000,000
BOCI	US\$200 million	Nil for non- Chinese interest projects Nil for underground risks	15,000,000
China Life P&C	US\$185 million	Nil for non- Chinese interest projects Nil for underground risks	100,000,000
Total Chinese market capacity	US\$2.8 billion		

Source: Willis Towers Watson/market intelligence

Client perspectives

From a client perspective, we found that most senior management pay attention to the following issues:

- **How to transfer risks during the M&A phase.** We often involve our FINEX team to participate in the first discussions with our client. Frequently our mining team and FINEX team will combine as one team to target our mining prospect, especially focusing on overseas projects with Chinese investment. In the first phase, our FINEX team will help the client to find the most suitable solution to transfer the risks associated with the M&A phase. If the deal was successfully completed, our mining team will help the risk transfer requirements for the following construction and operating phases.
- In most situations, Chinese clients focus primarily on premium savings, but they still require **a high level, technical standard of broker/insurance service.**
- Due to the low deductibles obtainable in the Chinese market, they often **express concern or complain about high deductibles**, although this is common practice in the international insurance market. They also care deeply about claims assistance and claims experience sharing.

- **Political risks** are a primary concern for Chinese clients, especially for areas such as Africa, as well as environmental risks and community disputes. The Chinese market cannot provide useful solutions for these issues; we rely instead on international broking and risk management resources for these risks.
- **People risks** such as safety, accident, hospital and kidnap are also major concerns, and for these risks we often involve our employee benefit team to provide client solutions. Our London team can offer special products to provide comprehensive coverage for such risks which is very welcome and attractive for our Chinese clients.



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South Africa

In South Africa, Emerald remains the main lead market with Hollard occasionally taking this position. Following markets such as Axxis, Old Mutual Insure and Inniu have been joined by Transition, Sintelum and Partner Risk.

Property

The South African Mining Property market continues to see an acceleration in rating increases, which is expected to continue to the end of 2020. Loss ratios exceeding 100% have forced underwriters to drive profitability; programmes below technical pricing or losing key capacity are seeing largest rate corrections, with coal risks experiencing 40%+ increases. Other commodities with average to above average risk quality are seeing pricing increases ranging from flat to +20%.

Capital remains available, although insurers are reducing overall line sizes and repositioning deployed lines based on profitability, so capacity is available - at a price. The proportion of programmes with split placements has increased; worryingly, some underwriters are insisting on differential wordings.

Underwriters continue to take a more critical look at exposures, restricting many coverage terms previously offered, such as coverage tightening on Extended Premises/Contingent Business Interruption extensions and are seeking confirmation that values at risk are up-to-date. Meanwhile, Silent Cyber and Contagious Diseases exclusions are being introduced, with Insurers adopting a non-negotiable position on exclusion wordings.

Liability

The Liability market in South Africa is hardening, particularly Excess Umbrella Layers. All Medical Malpractice cover, other than First Aid, is being deleted from combined programmes. Mining concerns with extensive medical facilities have been hit with a “double whammy” of significant increases combined with the cost of stand-alone Medical Malpractice that was previously included in the Liability premium.

Capacity remains available, although insurers are reducing overall line size and repositioning deployed lines. Some insurers are reducing capacity on offer regardless of pricing, while others are pushing for co-insurance rather than layering; hardly an ideal scenario for buyers.

Underwriters continue to take a more critical look at exposures, restricting many coverage terms previously offered. Cyber and Contagious Diseases exclusions are being introduced, with insurers being non-negotiable on wording of exclusion, while the majority of local markets will not provide cover for tailings dams.

Directors & Officers Liability

South African D&O markets are seeking increases even on clean risks, with a minimum of 10% which can extend to beyond 60%. All insurers request primary prices before pricing excess; it is understood that the driver for this level of increase is often a combination of global reinsurers and the insurer’s parent company.

Some insurers have begun implementing deductibles for side B, D and C where in the past no such deductible was applicable. Silent Cyber and Contagious Diseases exclusions are also being introduced. Excess layer insurers are sometimes not willing to follow form, and are imposing their own restrictions for their participation.

Insurers are also implementing capacity reduction strategies, particularly on North America & Australian dual-listed entities, and even more so where there is an ADR exposure.

Pressure has also been experienced on so-called “undesirable” business, e.g. Coal, while as reported elsewhere in this Review, global market appetite has shrunk as the market has hardened, which in turn is filtering through to the South African market.



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