Top 10 business risks and opportunities

Mining & Metals

CIM MES Discussion Group – Feb 2021

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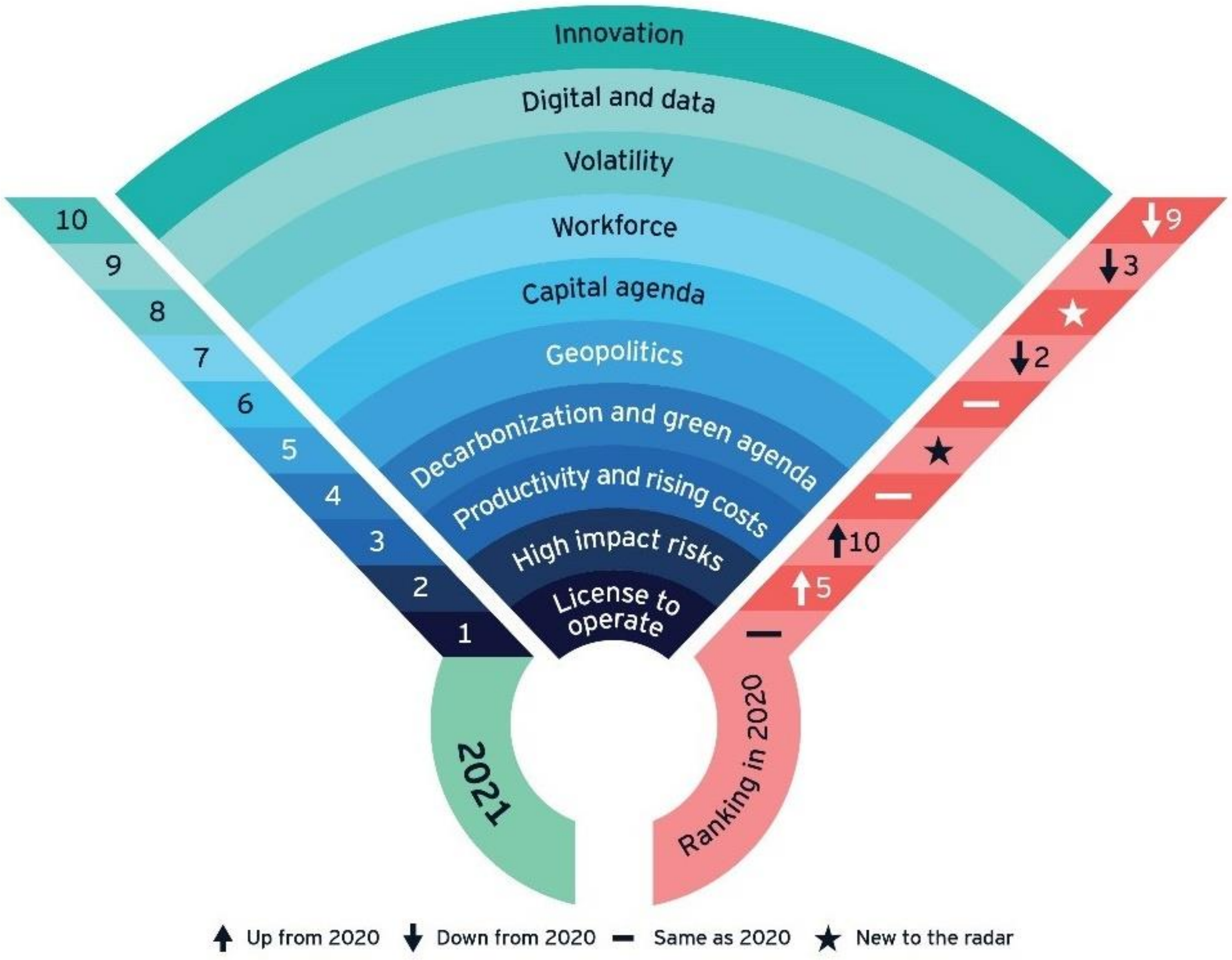
Building a better working world

Top 10 M&M business risks and opportunities

- 13th edition
- >250 mining and metals executives surveyed
- Disruption is clear by re-ordering of the risks
- While the impact of Covid-19 runs through the risks, LTO is still #1
- Opportunities outweigh risks so how do we take advantage?



1. License to operate

- Many factors impact LTO
- Significant linkages with high impact risks, decarbonization, geopolitics and workforce
- Investor scrutiny regarding miners' interaction with communities is on the rise
  - Local – executives will be held accountable by shareholders
  - National – emergence of national mining companies
  - Broader – increased activism around financial inclusion
- Tailings dam standard will raise the bar for the sector

1. License to operate

Apply the lessons learned in Covid-19 to issues critical to LTO

- Understand specific community issues and concerns that impact stakeholders
- Constant review and engagement with Indigenous communities
- Shape a stronger message around mining's value to society and the economy
- Increase engagement with governments to encourage investment
- Proactively manage your human rights and modern slavery risks and impacts

2. High impact risks

#5 in 2020 - highlighting that company destroying risks tend to be rare

COVID-19 has shown criticality understanding & reviewing these risks

Significant link between a company's ability to manage high impact risks and license to operate

Review and plan for high impact risks given

- Increased likelihood of future pandemics
- Safety of tailings dams
- Exposure to per- and poly-fluoroalkyl substances (PFAS)
- Market related risks e.g., threat of substitution

79% of board members say their organizations are not very well prepared to deal with a crisis event

Source: EY Global Risk Survey 2020

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2. High impact risks

How does a company develop an approach for a crisis where predefined responses are not adequate?

NOW - The immediate response will significantly define the company and its brand

- Activate a dedicated crisis management team
- Protect people and assets.
- Maximize liquidity
- Establish lines of communication with key stakeholders.
- Understand the level of disruption and respond accordingly.
- Act quickly and decisively

Next: return to the new normal and pivot

- Conduct scenario planning
- Understand possible disruptions along the value chain
- Establish a transition and transformation center separate from the crisis management team to lead the return to normal

Beyond: reframe the future

As companies adapt operations and build resilience, they need an enhanced approach to risk, encompassing

- Agility – digital readiness will ensure operational agility
- Data-driven approaches
- Rethinking the risk function

3. Productivity and rising costs

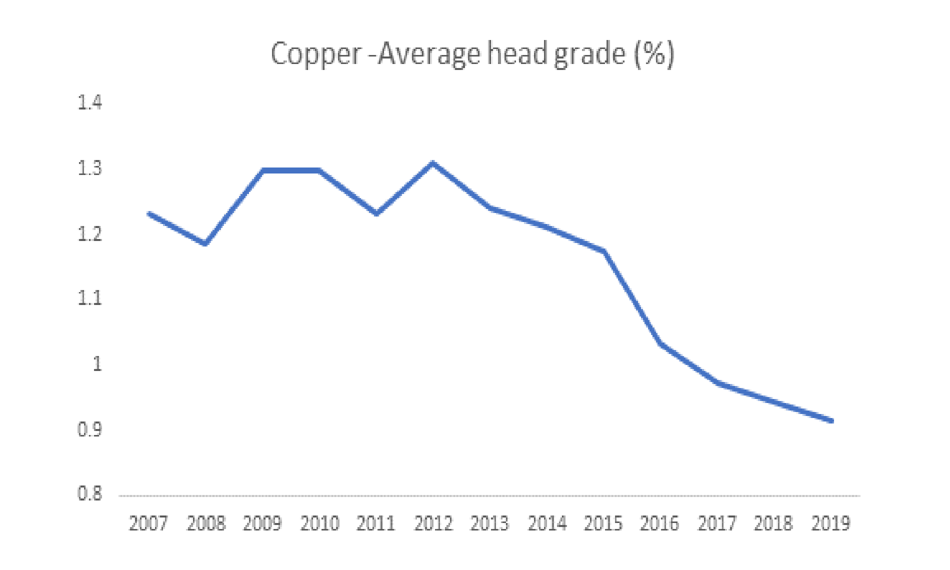
The pandemic has increased costs but created opportunities for innovation

Productivity is still the #1 operational issue for the sector

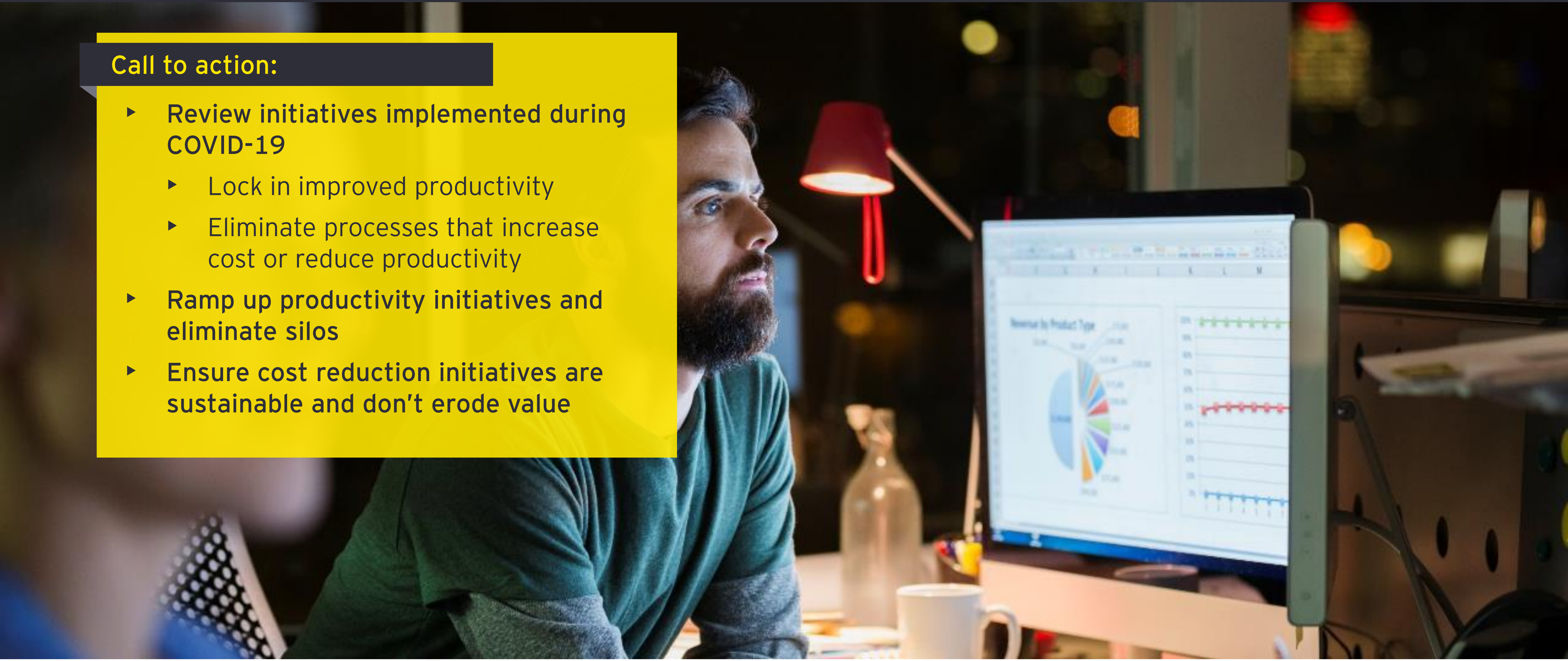
- Some headway in using digital to improve productivity but need an end-to-end approach
- Innovative solutions during Covid-19 to entrenched issues, will have a positive ongoing impact on productivity

Costs rising as mining continues to become more complex

- Declining ore grades
- Rising use of technology
- Changing workforce
- Increased investment in LTO
- Covid-19 has also increased some costs, e.g., new procedures, protocols and changed processes



3. Productivity and rising costs



Call to action:

- **Review initiatives implemented during COVID-19**
  - Lock in improved productivity
  - Eliminate processes that increase cost or reduce productivity
- **Ramp up productivity initiatives and eliminate silos**
- **Ensure cost reduction initiatives are sustainable and don't erode value**

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4. Decarbonization and green agenda

Investors favor companies that measure and manage climate impact

Pressure to reduce greenhouse gas emissions is the biggest environmental issue for M&M companies

- Renewed focus on renewables
- Hydrogen as a fuel alternative
- Preparing for climate related impacts on productivity and operations – high temperatures; water stress, floods etc.
- Further scope 3 transparency - many miners are pledging large-scale reductions
- Production of carbon-neutral materials

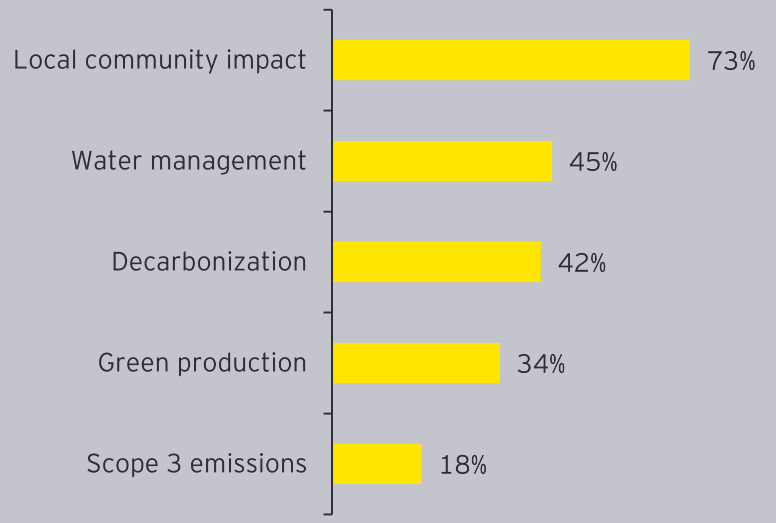
Future areas of focus

- Biodiversity

Green agenda

- Customers seeking transparency of the whole supply chain

What area of M&M will face the most scrutiny from investors relating to ESG issues?



Respondents were allowed to choose more than one answer

5. Geopolitics

Navigating geopolitical risk and economic protectionism

We had already started to see Geopolitics as a rising issue

- Changing role of US in the international system
- Emergence of China as a global power rather than an Asian power
- The global impact of China's belt and road initiative
- EU stability post BREXIT

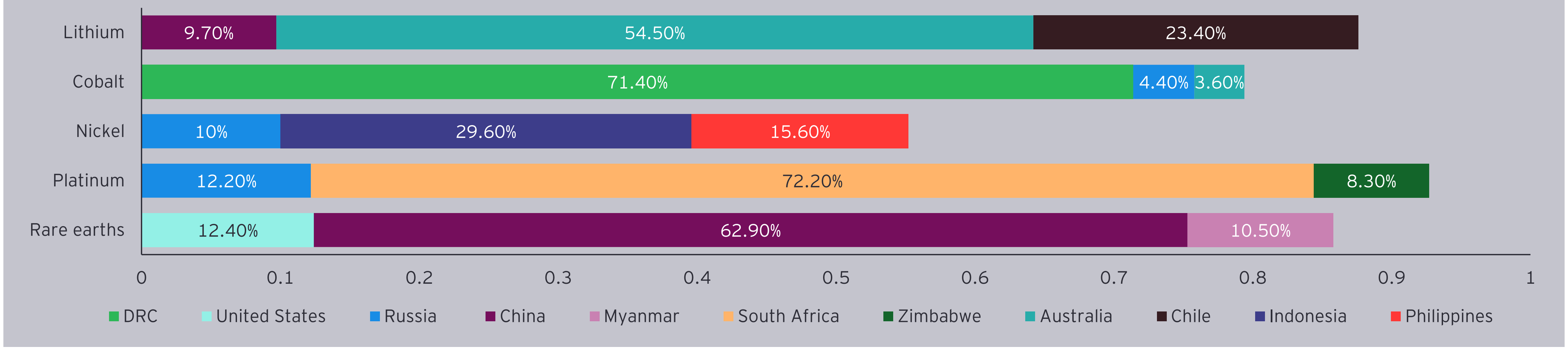
In the future, as China emerges as a global power, we may see:

- The Belt and Road initiative achieving economic imperialism in the East
- China's lean supply chain dominating global metal production and controlling global supply of critical minerals
- Chinese 'digital silk road' extends their social control

Resource security

- Awareness of the strategic value of, and competition for, natural resources enables governments to put a price on resource security (through state ownership, taxes and/or regulation)
- Concentration of mineral reserves and production in only a few regions heightens supply risk e.g., if regional policies are applied or local issues affect supply

Top three countries in total production for selected minerals required in the energy transition, 2019

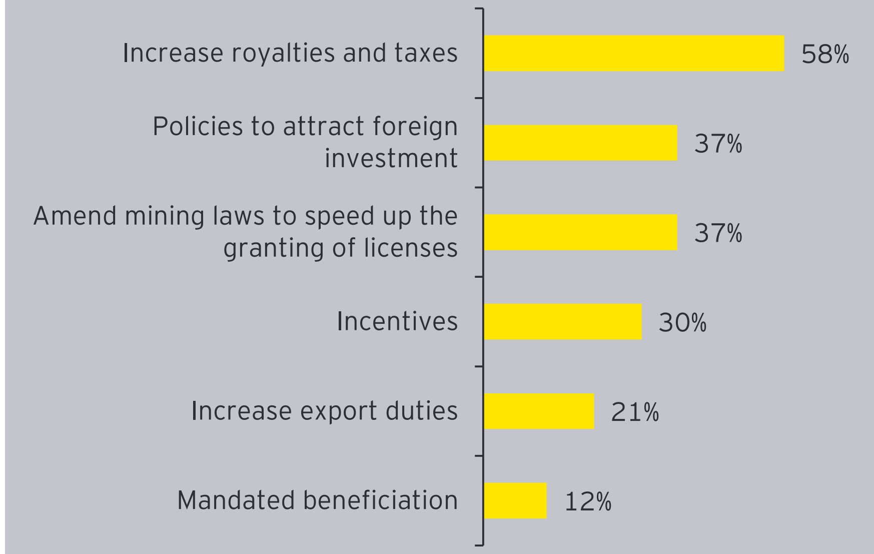


Source: IEA

5. Geopolitics
Impact on mining companies

- **COVID-19 has seen an increase in Nationalism**
- **Intensifying protectionist action**
  - Tariffs
  - Increasing royalties and taxation
  - Protection of strategic minerals
  - Changed licensing arrangements
  - Export bans or reserving production for domestic use
- **Debt pressures may drive tax or royalty increases**

Post-COVID-19, what actions do you expect governments to take?



5. Geopolitics

Mining companies need to take a proactive, diversified approach

- Consider new ways to more proactively engage with governments
- Influence future taxation schemes by working with trade and sector groups
- Seek value-recovering trade-offs
- Make recommendations to governments
- Conduct comprehensive scenario analysis
- Ensure there is clear ownership for geopolitical risks within the business.
- Better understand geopolitical analysis
- Consider how to diversify suppliers and customer

30% | Thirty percent of energy and resources companies surveyed in the EY geostrategy survey say they currently lack a clear owner for geopolitical risks

6. Capital agenda

Strengthening liquidity and maintaining capital discipline

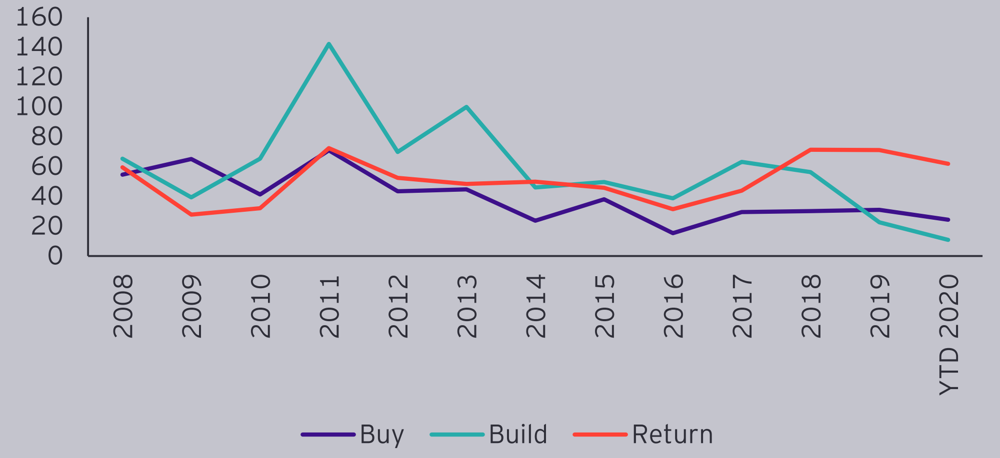
- Buy: rethinking portfolios to maximize returns – Gold M&A; rare earths; energy transition and divestment of coal assets
- Build: varying impact of COVID-19 on "build" decisions; continued investment into less risky expansion projects; will start to see investment in Greenfield projects

Return: balance dividends with funding growth, M&A and shareholder returns.

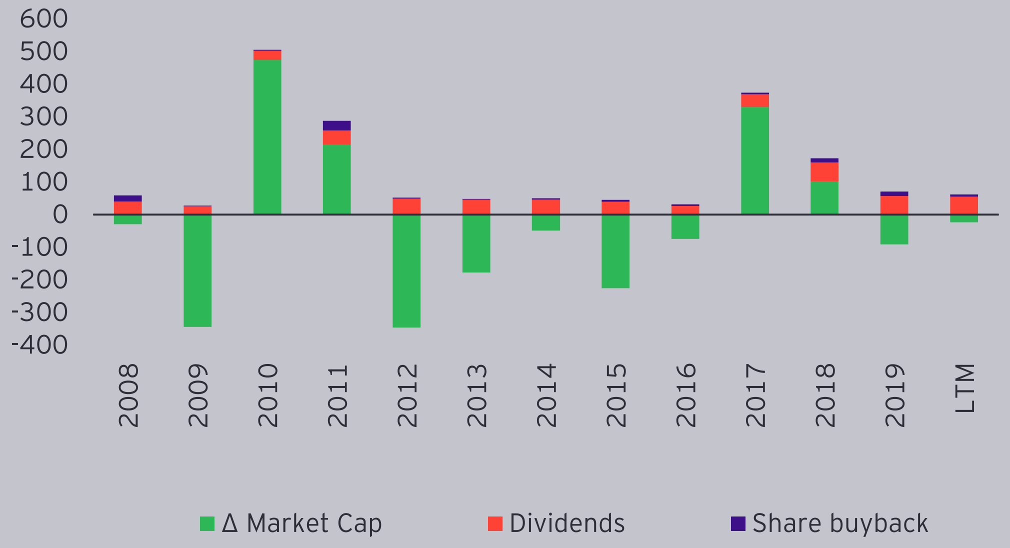
Invest: innovative technologies will create a competitive edge

Capital allocation strategies, US$bn, 2008 – 2020 (YTD*)

* Year to date – 1H 2020 data for M&A and returns; August data for build data



Total Shareholder Returns (TSR), US$b



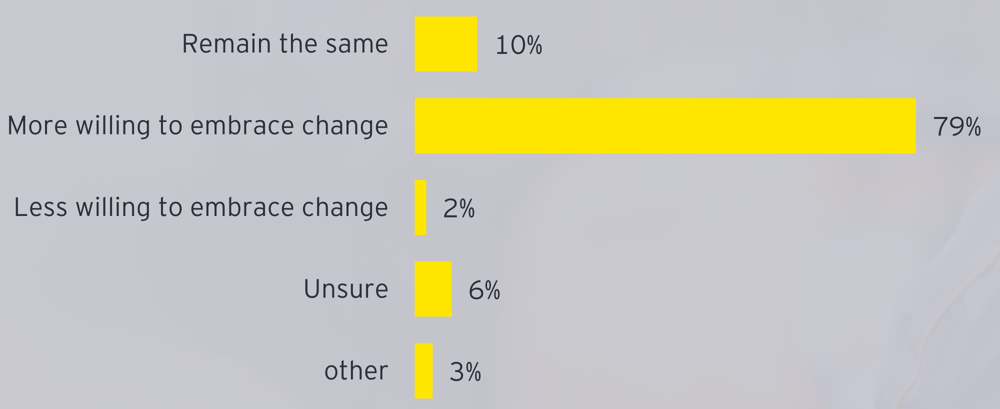
Source: Analysis for Top 100 Mining companies, S&P Capital IQ and Market Intelligence Platform

7. Workforce

Seizing the opportunity for transformation

- Companies are taking advantage of accelerating a transformation agenda focused on long-term resilience
- Siloes have been broken and corporate culture is more accepting of change
- Onsite safety remains a concern
- Renewed focus needed on diversity

How do you think COVID-19 will impact you corporate culture?



7. Workforce

COVID-19 has created an opportunity to rethink the sector's workforce and operating model

3 key steps to transformation:

Miners need to consider how to accelerate the transformation
begun during this time, rather than attempting to return to business as usual

- Scenario planning
- Design future operating models and environments considering diversity and skills mix
- Maintain urgency around workforce transition and transformation, whilst upholding on site safety (both physical and mental)

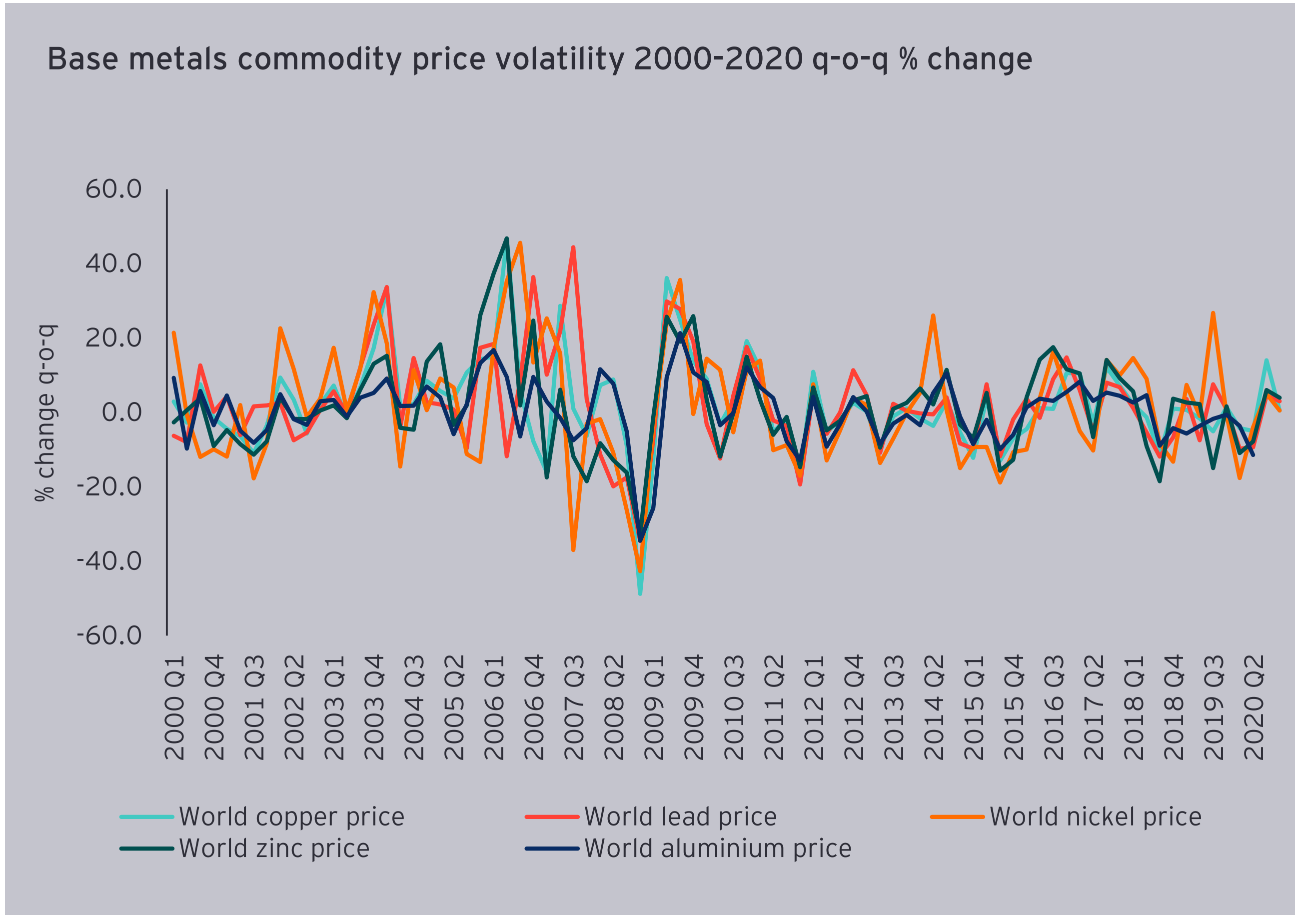
Call to action:

- Accelerate digital transformation, particularly automation and remote and Integrated Operations Centers (IOC).
- Consider new approaches to workforce flexibility arrangements, rostering and FIFO
- Build more agility into workforce reviews to balance capability and cost at speed.
- Review whether current capabilities meet changing business needs, recruiting new capabilities where required and extending new ways of working.
- Accelerate diversity to reap the business benefits of a more balanced workforce that better reflects local communities.
- Build greater capacity for on-site health and hygiene.

8. Volatility

Heading into an unprecedented period of volatility

- Short-term fallout from COVID-19
- Long-term impact of changing consumer habits
- Focus on eliminating carbon from the entire value chain
- Implications of moving to a circular economy
- Increased demand for lithium, cobalt, copper, nickel and other minerals



Source: Oxford Economics

8. Volatility

Preparing today for tomorrow's commodity demand

Preparing today for the myriad forces reshaping commodity demand tomorrow will require miners to consider a range of actions:

- Conduct scenario planning
- Review and optimize portfolios
- Ensure transparent supply chains
- Increase collaboration with downstream industries and governments

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9. Digital and data

Digital transformation is set to accelerate

Where to focus your bets in digital transformation:

- ROCs
- Blockchain
- Cloud-based networked ecosystems and 3D and
- additive printing on-site
- Process mining and digital twin technologies
- Economies of intelligence
- Flexible architecture

Ensure changes are sustainable and add value. Resist the urge to connect every piece of equipment as this will add to data complexity

In the short term, the key focus will be those digital programs that improve safety and/or productivity:

- Remote Operations Centres (ROCs) which can significantly improve mine safety.
- Data and analytics which can drive huge productivity gains.

Longer term, digital investment will focus more on delivering environmental benefits, such as reducing energy and water use, removing waste and decarbonizing operations.

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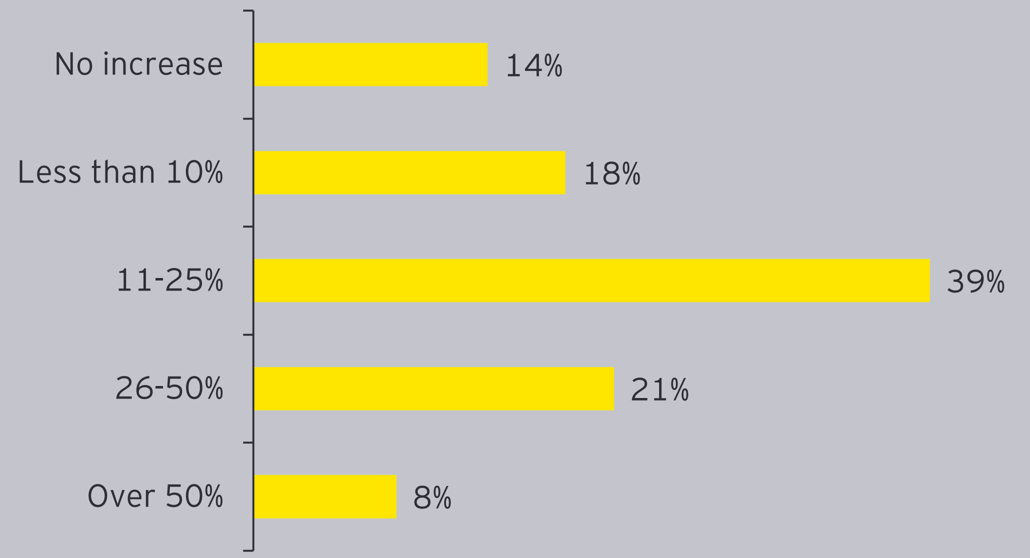
9. Digital and data

Digital transformation is set to accelerate

- Digital has become ‘business as usual’
- COVID-19 exposed critical gaps in some datasets
- Few companies have a high level of data excellence
- Process mining can help miners understand which data is important and how to derive value from it
- Cyber risk shouldn’t be overlooked
- Data transformation is set to accelerate to solve issues of productivity and safety

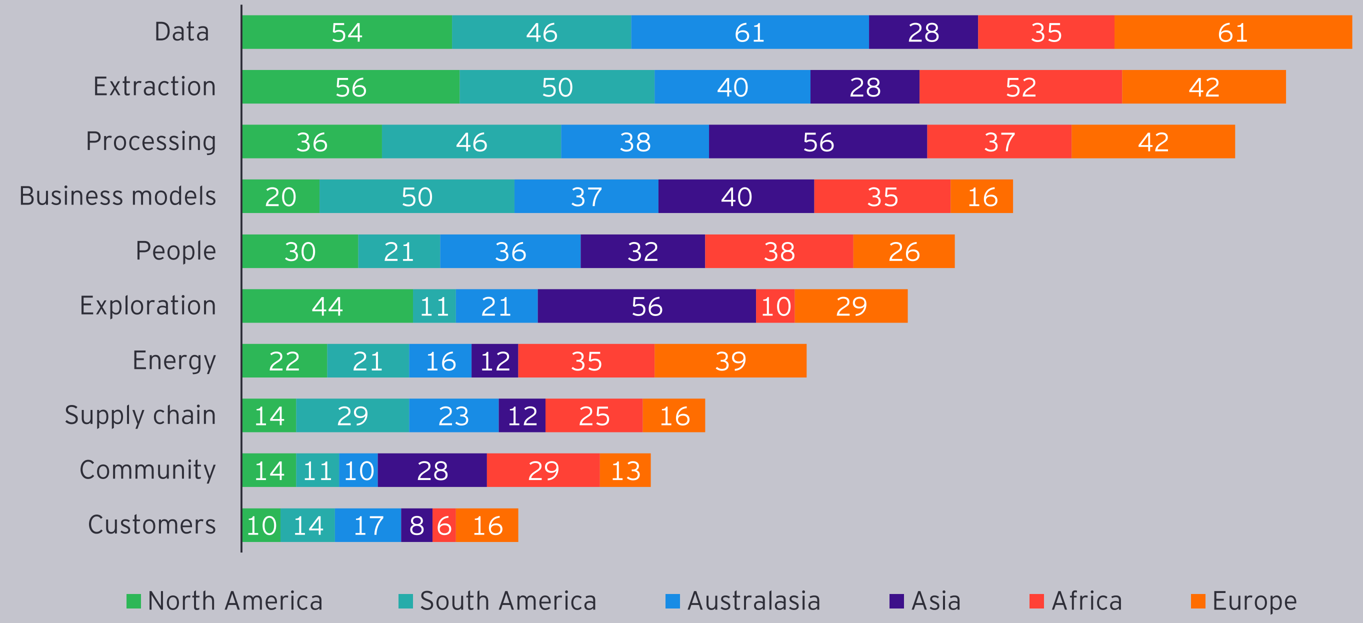
Post-COVID-19 by how much do you plan to increase your investment into digital transformation?



10. Innovation

Opportunities to accelerate and scale innovation

Where in the value chain are your innovation efforts primarily focused? (%) Respondents could choose three options.



Source: VCI State of Play Ecosystems Report, 2019

Opportunities to accelerate and scale innovation

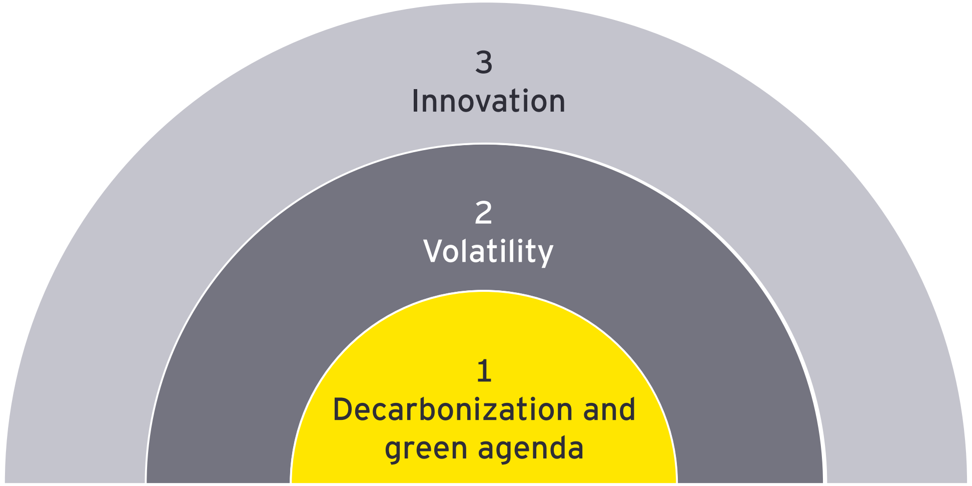
- End-to-end approach
- Collaboration with customers
- An innovation culture
- Balanced expectations around return on investment

Implementation of structural changes will require top-down buy-in, alignment to the company's overall purpose and a supportive innovation culture.

Commodity risk decks

Aluminium

Top 3 risks



1
- Increasing customer demand for sustainable materials triggered by regulations and brand reputation
- Focus on using renewable energy sources
- Environmental issues due to red mud may result in difficulties starting new facilities

2
- Threat of substitution from lightweight steel alloys putting pressure on aluminium demand
- Downstream sectors, e.g., automotive and aviation, facing significantly lower demand

3
- A focus on ESG factors will limit access to traditional sources of capital unless emissions from aluminium production are reduced.
- 'Experimental capital' has been reduced and overall investment in R&D is currently low.

Other Risks

- **Future of work:** Covid-19 has impacted ways of working and highlighted the need for remote operations centres. Change in work style from FIFO to Remote in Remote out
- **Mine closures:** Contemplating options to close mines that are no longer profitable due to high mine closure costs
- **Rising costs:** Rising power costs across regions remain a concern for aluminium producers

Emerging themes

- Investing in smelting process to produce green aluminium
- Rising use of electric vehicles and demand for more sustainable products are likely result in increasing aluminium demand
- Capitalize on secondary production using scrap
- Product has switched to specialist to cater to automotive and aerospace demand. With current disruption, should they continue with specialist products or switch to compete in Infrastructure
- Role of the Middle East in processing

Aluminium
Top 3 Business Risks

1 Decarbonization and green agenda

- **Sustainable materials:** Automotive, construction and packaging customers increasingly opting for "greener" or more sustainable materials
- **Carbon emissions:** Focus on renewables to limit carbon emissions in aluminium production
- Customers to opt for lower carbon alternatives e.g., automotive producers to opt for advanced high-strength steel made with hydrogen
- **Environmental issues:** The red mud which results from alumina production may make it difficult to get permits or approvals to start new facilities

Response

- Increasing secondary production using 100% post-consumer scrap.
- Obtaining ASI certification (responsible sourcing guidelines), e.g., Hydro, Rusal
- Building robust frameworks to address environmental issues, particularly Scope 3 emissions.

2 Volatility

- Covid-19 impact on demand: Sharp decline in aluminium demand due to shutdowns in the airline and automotive sectors; Slow recovery for suppliers to aviation industry
- Threat of substitution: e.g., removal of weight v cost advantage vis-à-vis steel with the shift to EVs
- Limited flex on pricing: steel producers often take the price hit on their margins, whereas aluminium producers do not
- Pressures on prices: High energy costs, challenging demand outlook and continued innovation in other metals

Response

- Be in the right markets or having the right assets, e.g., spin off Arconic from Alcoa and further split of non-core assets by Alcoa
- Investing in green technology (Elysis JV) and new product development (Norsk Hydro's CIRCAL and REDUXA)
- Innovate commercial value-added products to obtain higher margins

3 Capital Agenda

- Investor scrutiny of ESG factors: will limit access to traditional sources of capital unless emissions from aluminium production are reduced
- R&D investment: 'Experimental capital' has been reduced and overall investment in R&D is currently low and little or no changes to the smelting processes. Some investment in green products e.g., Elysis JV or CIRCA by Hydro
- Invest in digital and innovation: shift from capacity expansion to investing in new smelting processes and digital capabilities

Response

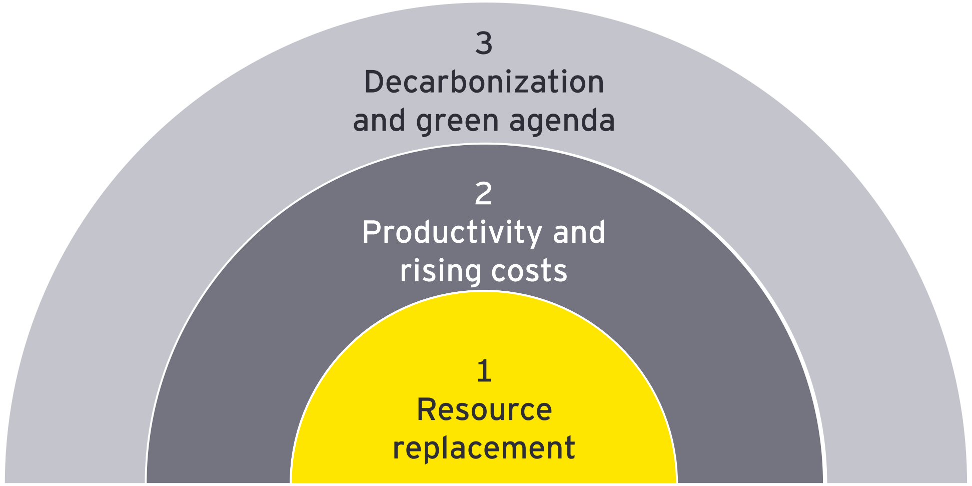
- Re-assess portfolios and production processes to determine how to invest in green production
- Ensure innovation is required across whole value chain
- Collaborate with all stakeholders before committing capital

Opportunities

- Customers across sectors such as automotive and building and construction are increasingly looking for sustainable materials, triggered by regulations and rating programs. Growing demand from electrification will accelerate the need for further supply
- With increase in scrap availability, producers can capitalize on secondary production (i.e. aluminium recycling)

Copper

Top 3 risks



1

- Diminishing reserve profile and lack of exploration spend
- Limited tier 1 assets will lead to a supply deficit in the medium term

2

- Rising costs due to increasing complexity of operations and depleting ore grades
- Additional costs incurred on processes and procedures to ensure the safety and wellbeing of mine workers during Covid-19

3

- Increasing focus on renewable sources of energy for copper mines as well as on water management
- A focus on ESG factors will limit access to traditional sources of capital unless emissions from aluminium production are reduced.

Other Risks

- **Innovation:** to achieve productivity gains and address key structural issues e.g., declining ore grades, remote locations, cost of energy and improving efficiency in processing or ore sorting.
- **Geopolitics:** Trade tensions may also have an impact on copper prices

Emerging themes

- Long term prospects of copper demand from the energy transition (EVs and decarbonization) looks positive.
- Copper's antimicrobial properties will increase its application and potentially demand
- Do copper miners need to reduce dependence on China?

Copper
Top 3 Business Risks

1 Resource replacement

- Lack of new discoveries and lower investment by the copper miners over the last decade is likely to leave the industry in structural deficit.
- Many new deposits have lower copper content and require higher prices to ensure return on investment.
- The copper market is likely to be in deficit over the longer term as supply declines and demand increases as a result of energy transition.
- With the ongoing uncertainty, miners are prioritising liquidity and business continuity over investment in new projects.

Response

- Collaborate with junior miners and exploration companies
- Optimize portfolios to reflect future demand scenarios
- Improve production to increase the mine life. First Quantum is planning to invest US$1b to improve production and extend life of mine by 10 year at Kansanshi copper mine

2 Productivity and rising costs

- Rising costs and productivity remain on the radar both as mining complexity increases – declining ore grades and higher extraction costs and commodity prices come under pressure as a result of economic uncertainty.
- High energy and labour costs are reducing margins.
- The impact of COVID-19 has been mixed, with some restrictions imposing new, unforeseen costs and other measures removing silos that hindered productivity.

Response

- Review initiatives implemented during COVID-19
  - Lock in improved productivity
  - Eliminate processes that increase cost or reduce productivity
- Ramp up productivity initiatives and eliminate silos
- Ensure cost reduction initiatives are sustainable and don't erode value

3 Decarbonization and green agenda

- Investors have a clear focus on considering ESG data before making investment decisions. Miner's capacity to access capital is highly influenced by their relations with the society.
- Copper miners in Chile are seeking to manage competing demands for water with communities as well as reduce their carbon emissions e.g., BHP migrating to renewable energy.

Response

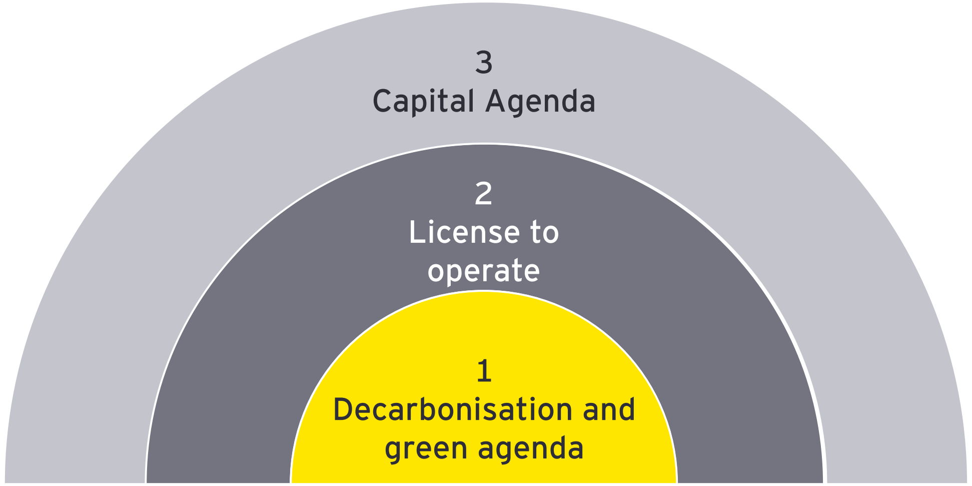
- Increase engagement with governments to manage expectation and improve overall brand of the sector.
- Highlight the positive impact of the company's activities towards community.
- Increase ESG reporting and transparency

Opportunities

- Long term prospects remain positive due to demand resulting from increased use of renewables and electric vehicles.
- Recognition of the antimicrobial properties of copper has gained momentum. Using copper alloys for common surfaces in places such as hospitals, schools and offices can limit the spread of the virus.

Thermal Coal

Top 3 risks



1
- The thermal coal sector is under pressure on Increased investor and social activism on carbon emissions from fossil fuels
- The falling cost of renewables and natural gas is also putting pressure on coal producers

2
- Increased scrutiny and negative image increase the risk of losing license to operate.
- Increased government regulation and community opposition is impacting mine economics and increasing costs.

3
- Public pressure has reduced investment in coal. Several institutional investors and banks are no longer funding or supporting the industry
- Financing costs are rising as a result

Other Risks

- **Volatility:** Covid-19 has had a significant impact on coal demand on lower electricity usage and slowing industrial activity. Seeing increased price volatility and pressure on margins as a result
- **High impact risks:** in the future are likely to have a significant impact on the thermal coal sector given the current trajectory of coal demand. Need a focus on scenario planning.
- **Geopolitics:** Trade quotas employed by China resulting in oversupplied market

Emerging themes

- Potential for some to acquire divested assets to increase production; and improve productivity and cut costs
- Asian markets will be the focus for the seaborne market as the largest source of future demand
- Differentiation of product with premium for high calorific low ash coal
- Alternative ownership and in particular private equity
- Geopolitics of Indian auctions and other changes in ownership

Thermal Coal
Top 3 Business Risks

1 Decarbonization and green agenda

- The thermal coal sector is under pressure on Increased investor and social activism on carbon emissions from fossil fuels
- The US, South Korea, Europe, and Japan are likely to reduce coal use and this will put future demand at risk.
- Are we at a crossroads where consumer demand might determine what gets produced and using what materials? E.g. will consumers want to know whether the copper in the car came from coal fired or green production?
- Global momentum to reduce emissions is driving premiums for high grade coal

Response

Companies are targeting to either double down on coal investments or exit altogether. At the same time, lower quality assets are likely to become stranded.

E.g. BHP exiting coal; Glencore capping its coal production (off back of shareholder pressures).

Less competitive miners need to further reduce risks; Seek higher quality assets to increase average quality across assets or diversify into other commodities

2 License to Operate

- License to operate is now more closely linked to environmental, social and corporate governance (ESG). Compliance is likely to increase further
- Coal has a negative image, which increases the risk of losing license to operate. LTO is impacting most in the form of higher costs. Government regulation is impacting mine economics and regulation of power plants is impacting demand.
- Growing importance to communicate how higher quality coal cuts pollution, as well as the longer term value relating to coal.

Response

- Greenfield development faces the highest risk, potentially leading to the suspension of many projects. Poor relations with local communities can impede access to higher quality thermal coal
- Changing mine plan in response to climate change effects on demand (i.e. "front loading" reserves by producing and selling their coal earlier than originally planned)

3 Capital Agenda

- Public pressure has reduced investment in coal. Several insurers and banks are no longer funding or supporting the industry. Financial institutions and other corporations are increasingly answering public demand for investment screening covering environmental, social and governance concerns.
- At the same time, cost of renewable power generation is falling
- Thus, financing costs are rising and miners must remain disciplined with their capital allocation decisions

Response

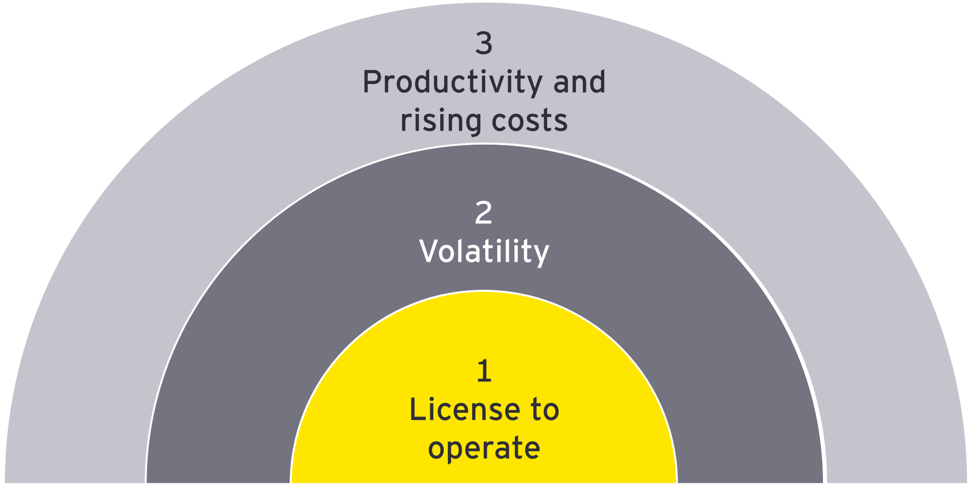
- Valuation trading ranges of the coal companies are particularly vulnerable and they are unlikely to again trade at the levels they did even five years ago
- The value of high quality coal needs to be better articulated to communities
- Maintaining assets beyond their useful life versus allocating capital toward proactive replacement

Opportunities

- Securing future supply: Focus on acquiring high quality tier-1 assets with a long-term presence in the coal market to expand portfolio or increase ownership interest to gain a higher exposure
- Use of JVs is a strategic way to mitigate risk, reduce costs through synergies and increase competitiveness in the market
- Asian markets: as the largest source of future demand

Metallurgical Coal

Top 3 risks



1

- Regulation challenges existing and new mines
- Communities need to understand difference between metallurgical and thermal coal
- Opposition to coal from all fronts impacts availability of funding

2

- Structural shift in consumer habits can impact demand. For example, switch from BOF to EAF in steel resulting in lower met coal demand
- Increased competition from renewables and new technologies (HYBRIT)

3

- Rising cost of capital in particular is a key challenge Increased mining complexity is also driving up costs
- Quality consistency is a top concern for steelmakers
- Long term contracts can be used to secure quality

Other Risks

- **Decarbonisation and green agenda:** Increased activism around ESG along with falling cost of renewables
- **Geopolitics:** Trade quotas employed by China. Ample supply along with tightening port restrictions in China may lead to more oversupply in the global market
- Lower mining employment, either due new ways of doing things or weak demand, may result in increase in taxes or royalties levied on mining firms that employ fewer people

Emerging themes

- Lack of distinction between thermal and metallurgical coal and the impact on access to capital
- Miners to provide a niche products and cater to blending requirements by customers.
- Continue to highlight the difference between metallurgical and thermal coal
- To work with customers to cut scope three emissions

Metallurgical Coal
Top 3 Business Risks

1 License to operate

- Increasing activism around ESG concerns
- Social opposition due to a lack of understanding of the difference between thermal and metallurgical coal impacts funding and increases challenges for Greenfield mines and expansions.
- Communities and populations at large need to be informed of the necessity and end-use of metallurgical coal
- Companies are looking to either divest coal assets and focus on high quality assets; or improve sustainability performance in the coal supply chain

Response

- Constantly review processes and policies and engage
- with Indigenous communities; Increasing ESG reporting and transparency around these initiatives.
- Companies can consider partnering with the Government to lower risk
- CONSOL Energy aims at continuous improvement of sustainability performance in the coal supply chain as part of BetterCoal

2 Volatility

- Structural shift in consumer habits can impact commodities demand. E.g., Lower met coal demand due to switch from BOF to EAF in steel
- Increased competition from renewables and technologies (HYBRIT) as steel producers move to "green steel"
- Changing macro environment are likely to impact commodity demand, as seen after recent disruptive events: coal demand fell in the US due to cheap, plentiful natural gas
- Cost of capital has increased and capital is harder to access but banks have not totally exited in the same way as for thermal coal

Response

- Miners need to be able to make sustainable, long-term decisions as they deal with the return of severe commodity price volatility, the threat of substitution and changing customer demand.
- Working more closely together with downstream players and governments can help ensure positive trade outcomes, as well as policy support

3 Productivity and rising costs

- Mineral deposits are becoming increasingly complex and difficult to mine, thus causing an increase in extraction costs. Current met coal prices are well below incentive prices and even cash costs in some cases
- This is compounded by increased demand for higher quality coal. Quality consistency is important for steel makers demonstrated by China's failed efforts to change mix
- Regulatory changes create additional costs to permit new projects as well as to close mines
- Mines may run at loss for a time – given the costs associated with shutting down production

Response

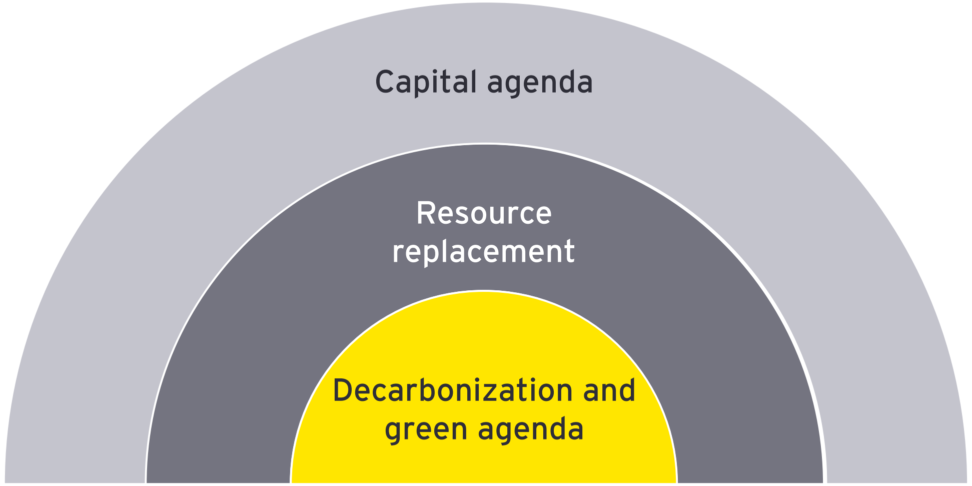
- Less competitive miners need to further reduce costs to protect margins as metallurgical coal prices ease back down. Miners should seek tier-1/high quality assets to blend with existing mine output; Higher prices are paid for quality coal, and this will likely continue to be the case
- Consolidation or JVs to improve efficiency and synergies; and survival in some cases

Opportunities

- Moving to long term contracts: to create supply security for customers and a reliable income stream for miners, this reliability helps create the certainty needed to develop new mines or expand existing ones
- Asian Markets: as the largest source of future demand

Gold

Top 3 risks



1

- Reducing direct emissions, including through electrification and increased investment in renewables.
- Investors favour companies that measure and manage climate impact.

2

- Lack of new gold discoveries as capital expenditure has been focused on existing discoveries and late stage assets
- No major gold discovery in the last 3-4 years and limited number of discoveries in the last decade

3

- Strengthening liquidity and capital discipline
- There may be further consolidation in the sector after the success of the two mega mergers in 2019.

Other Risks

- **Geopolitical risk:** Economic protectionism to favor domestic producers and ensure host countries receive their fair share of resource wealth will emerge in many jurisdictions
- **Gold demand:** Structural shift as consumer demand (Jewellery, etc) for gold declined by 46% in the first half of 2020 while investment demand for gold increased by 90%.

Emerging themes

- Rising cash flows can fund growth and productivity
- Employ digital to remain agile
- Gold attracting investment interest from retail and generalist investors
- Conflict gold and business transparency in relation to modern slavery and human rights risk management

Gold

Top 3 Business Risks

1 Decarbonization and green agenda

- Investors favour companies that measure and manage climate impact.
- Awareness of environmental issues has increased, as have expectations around corporate responsibility.
- Miners are setting out their approach to decarbonize their direct emissions, including through electrification, use of alternate fuels and increased investment in renewables. Newmont's Borden mine becomes world's first all electric underground gold mine. The electrification has resulted in 70% reduction GHG emissions.

Response

- Increasing ESG reporting and transparency
- Conducting scenario planning for climate events
- Electrification of mines and use of alternative energy sources
- Building and communicating the decarbonization strategy

2 Resource replacement

- Lack of new gold discoveries as the majority of capital expenditure focuses on existing discoveries and late stage assets rather than exploration or Greenfield projects
- In the last decade, only 25 new gold discoveries which contains only 7% of the gold discovered since 1990
- Project pipelines are diminishing as they struggle to replace their aging gold mines.

Response

- Collaborate with junior explorers to gain faster access to growth assets
- Optimize portfolios and shore up reserves through M&A to maintain resources
- Use of technology to extend the life of mine.

3 Capital agenda

- Surge in the prices for gold has attracted a lot of interest from retail investors.
- Managing future liquidity – how much cash do you keep aside for future unknown events
- Deploying capital
- Buy – Miners will continue to invest in M&A to strengthen their reserve profiles
- Build – Miners are expected to turn their attention to new projects on the back of improved cashflow.
- Returns: Gold miners need to re-evaluate their dividend strategies and balance this with funding growth

Response

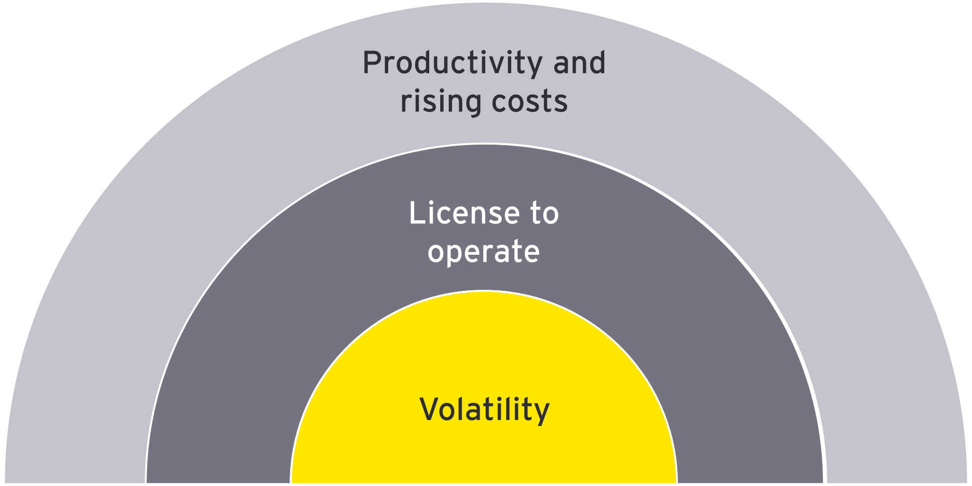
- Investment in transformation technology that improve competitive edge
- Optimize portfolio and divestment of non core assets to align with the long term strategy of the company. AngloGold Ashanti sell its remaining South African asset to Harmony Gold as part of the company's process of streamlining its portfolio.

Opportunities

- Gold is attracting a lot of interest from the retail investors. Berkshire Hathaway Inc.'s US$563.6m investment in Barrick Gold Corp. shows signs of generalist and retail investment in the sector
- Recent surge in gold prices and the resultant rise in cash flows can be used to address long standing challenges in the gold industry and shape their long-term business strategies 1) M&A 2) dividends 3) investment in digital 4) Increased exploration spending

Iron ore

Top 3 risks



1

- Market complacency due to higher iron ore prices
- Insufficient scenario planning for future supply and demand
- Longer-term profitability is in question particularly when prices return to $55/t

2

- Regulation is changing and possibility for reputational risk is rising
- New tailings dam regulations which aims to help companies manage dams to achieve zero harm to employees, communities and the environment.

3

- Labor productivity has improved during the pandemic. Removal of complexity needs to be embedded the rostering e.g., removal of indulgent rostering

Other Risks

- **Future of workforce:** Companies are recognizing that the accelerated adoption of remote working and virtual teams has the potential to add value beyond the crisis by keeping teams safe, productive and engaged
- **Geopolitics:** Geopolitical trends are changing faster than ever, making it difficult for companies to predict its impact

Emerging themes

- Historic high demand from China has pushed iron ore prices to US$130/t. Companies are looking to cash in by increasing their market share in seaborne trade
- To reduce carbon footprint, demand for high quality iron ore has increased. There is a requirement to develop untapped reserves even if at higher cost
- Increasing complexity of operations
- Need for culture change

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Iron ore
Top 3 Business Risks

1 Volatility

- Iron ore prices have almost doubled over the last two years. Prices will remain volatile in coming months
- Excessive economic dependence on China and limited scenario planning for disruptions to supply or demand are likely to increase volatility further.
- Rising demand from China is pushing producers to increase production, but there are limited new projects.
- Future demand is likely to be disrupted by a shift to EAF production and higher usage of scrap

Response

- Understand underline drivers of change to manage operational strategies.
- Proper scenario building is critical to handle increasing volatility.
- Companies need to 'hedge' all future output in all scenarios. Recent volatility in prices can impact producers all along the cost curve

2 License to operate

- As stakeholders broaden and develop a stronger voice, effective engagement becomes even more critical.
- There is a real need to rebrand, and with investors looking to understand value beyond the financials
- Regulatory authorities are compelling mining companies to use automated monitoring systems of tailings dams. Authorities have asked mining companies to refrain from installing any dams until 2025.

Response

- Focus on 'shared value' output for all stakeholders. There is a need to properly communicate 'value' and how company intends to achieve it.
- Engage local communities and ensure reasonable participation across journey.
- Invest in uplifting local economies as will provide long term value to the company by incremental opportunities in nearby regions

3 Productivity and rising costs

- Return on investment remains a key concern, as there is a significant challenge in turning investment into productivity amidst falling grades and complex geology
- The impact of COVID-19 has been mixed, with some restrictions imposing new, unforeseen costs and other measures removing silos that hindered productivity. Need a true end-to-end focus on costs and productivity across the value chain.

Response

- Review initiatives implemented during COVID-19
  - Lock in improved productivity
  - Eliminate processes that increase cost or reduce productivity
- Ramp up productivity initiatives and eliminate silos
- Ensure cost reduction initiatives are sustainable and don't erode value

Opportunities

- Availability of niche products: By having a strong control and maintaining a flexible value chain, miners can seek to provide niche and customized products as well as cater to blending requirements by customers.
- Access to high quality reserves: Currently there is less than 10% high grade (65%+) traded globally. Projects like Carajas, Kami,Shymanivske and Ntem has the potential to offer much higher quality ore to steel industry.

Placemat

Business risks and opportunities in mining and metals 2021

1 License to operate

As stakeholders broaden and develop a stronger voice, effective engagement becomes even more critical. Companies impact on local community is the issue facing the most scrutiny from investors. There is a real need to rebrand, and with investors looking to understand value beyond the financials and particularly in terms of a company's compliance with environmental, social and governance factors.

2 High impact risks

COVID-19 has clearly demonstrated the importance of understanding and reviewing these high-impact risks, particularly as there is a significant link between a company's ability to manage them well and its LTO. The experience of the pandemic has heightened stakeholder expectations around how enterprises prepare for, manage and monitor all high-impact risk exposures.

3 Productivity and rising costs

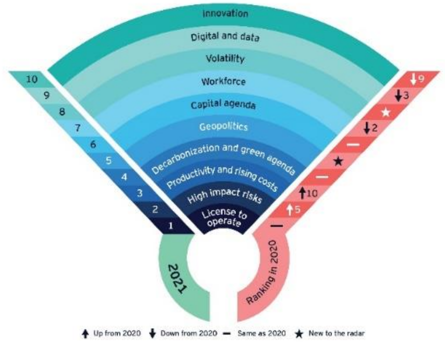
Complexity of mining is increasing and commodity prices are entering a period of volatility due to disrupted supply and the impact of ongoing economic uncertainty on demand. Take a true end-to-end focus on costs and productivity across the value chain.Lock in improved productivity resulting from COVID-19 initiatives and eliminate processes that increase cost or reduce productivity.

4 Decarbonization and green agenda

The pressure to reduce greenhouse gas (GHG) emissions remains the biggest environmental issue for mining and metals companies. Current targets do not align with the Paris Agreement and few miners comprehend the true environmental impact of their entire value chain – both in terms of their operations and scope 3 emissions. Customers seeking transparency of the whole supply chain.

5 Geopolitics

The shifting geopolitical landscape is changing many dynamics for mining and metals companies, particularly with the emergence of China as a global power and the impact of the Belt and Road initiative. Governments are putting a price of the strategic value of natural resources (through state ownership, taxes and/or regulation)



6 Capital agenda

While strong capital discipline is helping miners weather volatility, bolder investment decisions and increasing risk will enable greater returns in the mid term and long term. Mining companies will need to evaluate their appetite for risk and approach to capital allocation to ensure they do not miss out on new opportunities.

7 Future of workforce

Companies are recognizing that the accelerating adoption of remote working and virtual teams has the potential to add value beyond the crisis by keeping teams safe, productive and engaged. New opportunities for sustainable workforce transformation.

8 Volatility

The return of commodity price volatility, the threat of substitution and changing customer demand call on miners to make sustainable, long-term decisions. The impact of COVID-19 has created near-term disruption to supply and uncertainty around demand for many commodities.

9 Digital and data

Many of the issues surrounding digital have become "business as usual" for the larger miners. Digital transformation is set to accelerate, particularly as COVID-19's impact has highlighted the benefits of various technologies, such as automation, AI and blockchain, to help ensure business continuity.

10 Innovation

Opportunities for miners to broaden the scope and increase the effectiveness of their innovation agenda. Important to take a resource-to-market approach to innovation. There has been increased innovation and more solutions implemented across the value chain to deal with the impacts of COVID-19, with many innovation projects fast-tracked into reality.

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