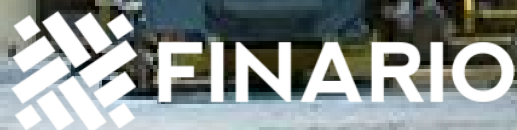
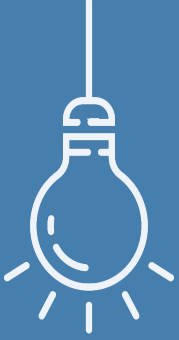


Strategies & Trends in Capital Allocation

MINING





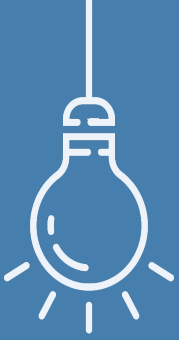
Strategies & Trends in Capital Allocation

01



Now Trending

- **Industrial robotics transform operational models:** Industry is on course to have robots replace more than 50% of miners.
- **Decarbonization:** Mining companies are feeling pressure from investors, regulators, and the community to reduce greenhouse gas emissions and make the switch to renewable power.
- **Rising costs:** Escalating financial liabilities associated with environmental stewardship, water resources, raw materials, energy use and labor exert pressure to cut costs.
- **Trade uncertainties:** Demand for metals differs across economies worldwide, which can affect the value of certain metals while others, such as precious metals, maintain their value regardless of economic status.
- **Changing weather patterns:** Changing and more extreme weather can negatively affect mining processes; hurricanes, for example can shut down mining production for weeks. Specific to demand for coal, more extreme cold or hot temperatures lead to higher demand.
- **Economic uncertainty:** Commodity prices depend on economic trends, which recent events underscore. Companies that have used scenario planning to stress-test strategies for economic downturns are better positioned to weather the storm or seize opportunities.
- **Strategic risk management:** Global volatility, especially in trade and commodity prices, presents high risks. The implementation of new technologies also presents cybersecurity risks.
- **Intelligent mining:** New technologies, artificial intelligence, and analytics solutions require mining companies to transform the way they view their operating models, make decisions, engage with stakeholders, and optimize resources.
- **Access to resources:** As world-class mineral resources in low-risk areas become exhausted, mining companies must either master new technologies for extraction and processing, or venture into frontier areas where extraction has not previously been economically viable.



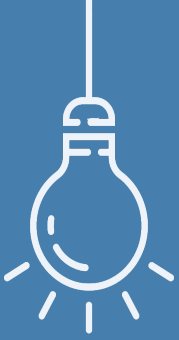
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02



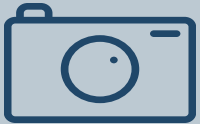
CAPEX Considerations

- **Improving production and efficiency:** Cost reduction and performance improvements are ongoing management challenges and shareholder concerns for mining companies as they are connected to competitive advantage, profitability and innovation.
- **Digital transformation:** Mining companies looking to new digital tools critical to delivering safer and more efficient drilling operations, improving mining processes, and ensuring accurate data for decision making ... as well as streamlining finance operations and decision making capabilities specific to capital investments.
- **Autonomous vehicles:** Capital investment in these emerging technologies offer opportunity to risk exposure to underground conditions, increase mining output for 15-20%, while cutting fuel and maintenance costs by 10-15%.
- **Financing innovation:** In the past, mining companies, faced with collapsing prices, focused on reducing debt ratios and improving their balance sheets, looked to alternative financing solutions such as royalty and metal stream agreements. To spread the risk of new capital-intensive projects, these solutions are likely to grow.
- **Joint ventures:** As has been observed in the oil and gas sector, joint ventures can reduce exposure to a particular Capex project or jurisdiction.
- **Reallocation of capital:** Keeping pace with growing demands created by urbanization, electrification, utilization of renewable energy and new technologies requires mining companies to review the capital allocation of current and future projects.
- **Demands for new metals:** Emerging technologies require diverse metals, so mining companies have an opportunity to invest in projects that will deliver these resources and drive competitiveness.



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03



Industry Snapshot

- Includes companies involved in the search for, extraction, beneficiation, and process of naturally occurring solid minerals from the earth such as iron, gold, silver, and uranium-radium-vanadium ores, and copper, nickel, lead and zinc. Also included: companies that provide support services for metal mining.
- Statistics sizing the metals mining market vary widely. According to one source, the U.S. is forecasted to reach a value of \$153.5 billion in 2020, and global revenue is \$683 billion.
- U.S. revenue breakdowns: Iron and steel - \$58.6 billion; coal \$43.5 billion; precious metals \$1 billion, base metals \$10.4 billion, aluminum \$2.8 billion.
- Largest number of companies in the industry are based in China (16,324).
- Largest global companies by revenue: Glencore (\$220.1B), BHP Billiton (\$43.6B), Rio Tinto (\$40.7B), China Shenhua Energy (\$37.6B), Anglo American Plc.
- Largest North American companies by revenue: Freeport-Mcmoran Inc. (\$14B), Newmont Corporation (\$7.2B), Teck Resources Limited (\$9.7B), First Quantum Minerals Ltd. (\$3B), Barrick Gold Corporation (\$5.5B).
- Growth in the industry is considered to be largely due to operational improvements and reduced costs.
- Activity in mergers and acquisitions for the mining industry has picked up, including multi-billion-dollar deals such as a Chinese company's acquisition of 24% of a Chilean lithium mine and two global mining giants' sale of a stake in one of the largest copper mines to Indonesia's state mining company.

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