

TRENDS AND THREATS FOR ASIA PACIFIC MINERS

Peter Bryant, Clareo, USA, maps out the promising opportunities and imminent pitfalls for miners in the Asia Pacific region.

The mining sector's outlook shows much promise, displaying a level of improved performance, as well as a move from aspiration to action in innovation. Industry executives have gradually embraced a progressive mindset, moving beyond aspirational pronouncements to innovate and create sustained value.

Prior to this economic cycle, mining underwent several years of significant value destruction. Low commodity prices, skittish investors and sagging company profits stifled growth, making it hard to predict when, or if, a turnaround was in sight. Now, mining is entering a new era of growth with the Asia Pacific leading the surge of CAPEX for projects. According to GlobalData, the APAC region comprised 38% of the 483 projects around the world that are under construction or due to begin construction by 2020.



There are many opportunities for APAC miners to reap the benefits of a more bullish cycle, but they must monitor and respond to the headwinds, trends and threats.

Current headwinds for miners

Miners in the Asia Pacific and beyond continue to face a growing number of structural headwinds which conspire to undermine their performance and return on capital, as unit costs of production and productivity do not improve at the rate needed. These include:

- Growing societal and investor pressure around significant reductions in emissions and a shift to cleaner energy.
- A rapid increase in community-based, anti-mining activism juxtaposed against governments' desire to spur economic growth via the development of resources (the Adani coal mine development in Australia is a prime example).
- An increased difficulty in mining with lower grades and harder conditions (e.g. open pits going underground).
- The elimination of tailing dams, with no real scalable alternative in sight.
- A reduction of capital availability in the junior sector, limiting exploration options and mine development.
- Poor returns on capital.
- Scaling innovation across multiple operations.

Influencing change of this magnitude requires a new level of collaboration between all stakeholders, including miners, communities, government, suppliers and others. Until then, these obstacles remain and need to be remedied – hence the imperative for transformative innovation is stronger than ever.

Let us explore some of the major areas that mining companies are currently engaged upon or are emerging.

Autonomy

Miners have made renewed strides in autonomy. There is an uptick in companies committing to deploy autonomous haulage in opencast mining and also more automation underground. The clear leader in this field is Rio Tinto with autonomous trucks, drills and trains being deployed. The mining giant recently launched the world's biggest robot with its Autohaul driverless train fleet in Western Australia. FMG, Barrick, Teck and BHP are also making significant strides forward in opencast mining. For underground mining, there is the well-publicised Resolute mine in Africa.

By 2023, MarketsandMarkets estimates the mining automation market will be worth US\$3.29 billion, with the APAC region set to become the largest market for mining equipment and implementation of mining automation technologies globally.

One substantial roadblock is the absence of a set of universal standards for autonomy, despite the efforts of various bodies, such as the Global Mining Guidelines Group (GMG) and AMIRA International. On the supplier side, Wenco and Hitachi Construction Machinery (HCM) announced in April 2019 that it is advancing an open and interoperable ecosystem of partners for autonomous mining, anchored in ISO standards. This is a market signal

recognising the need for set standards and the shift from closed and proprietary systems.

A study by Clareo and The World Innovation Network finds the desired future world of a fully autonomous mine is only achievable when all autonomous mobile equipment from multiple OEMs are interoperable and are based on standards, as opposed to the current closed and proprietary systems of major OEMs. Furthermore, such a standard will allow equipment providers to more easily access and adopt the major innovations from the open road ecosystem that is producing a significant leap forward in technical capability and unit cost reductions.

Responsibly sourced metals

The rise of responsibly sourced metals has been under the radar for some time but it will be a growing influential factor among end product consumers and investors across all commodities, much like it has been with diamonds and food. One signal is London Metal Exchange's announcement to ban or delist brands with conflict metals by 2022. Another signal is the shift with precious metals. *The Japan Times* reported that jewellers are using responsibly sourced gold and applying ethical standards to their labels.

There is a multitude of emergent standards, including the Initiative for Responsible Mining Assurance (IRMA) and Responsible Steel. Progress has been positive in that respect. Still, the industry remains a long way from agreeing upon a single approach that is more principles-based (vs prescriptive) that provides a level of assurance to all stakeholders.

With the push coming from conscious consumers, investors, non-profit organisations and market exchanges, responsible sourcing is set to be a core issue in the next 3 - 5 years.

Sustainability

Increasingly, companies that use metals and minerals for final products are looking at how to have closed loop processes, where they need minimal or no new mining to supply the required minerals. In a presentation by the United Nations Industrial Development Organization, it was cited that by 2030, developing countries will discard between 400 - 700 million obsolete PCs per year compared to 200 - 300 million in developed countries.¹ Tech companies and manufacturers are taking steps to combat e-waste. In 2017, Apple made a commitment to use all recycled materials for its electronics products, which is an early signal that this will grow.

Before Apple's eco-friendly pledge, lead-acid batteries in the US made a similar shift; nearly 100% of lead-acid batteries are recycled. The closed loop process for lead batteries, which ensures the high recycling rate, is recognised by the World Economic Forum and MIT's Center for Transportation and Logistics as the most successful example of a circular economy in the world.

These shifts can be either dismissed as outliers from marginal users or signals from the markets' early adopters as to what will be coming the industry's way from an increasing broader set of manufacturers.

Despite the gains in sustainable mining, the UN Environment's Global Resources Outlook report delivered some troubling news for miners this year. The report finds that extractive industries have contributed to half of the world's total global CO₂ emissions and 90% of biodiversity loss and water stress.² Mining companies have already faced mounting pressure from communities. If tensions continue to intensify, consumers' anti-mining stance has the potential to shutter projects or significantly add risk that capital markets will find unappetising. The governments that want to develop resources are less likely to override the concerns of communities unless they can also demonstrate to those communities that they will see the sustainable prosperity from these developments.

Overall, sustainability is gaining increased attention but other than a few leaders, such as Anglo American, most companies remain focused around compliance vs a proactive approach to becoming a true development partner and driving improved social, economic and environmental outcomes for all stakeholders, but especially communities.

The energy and water nexus

The mining industry faces huge challenges around both energy and water. For energy, there is the challenge of greater demand, especially driven by lower grades demanding more energy for comminution, plus the increasing pressure to reduce emissions.

To reduce carbon emissions, there are several projects in Australia such as the solar battery hybrid system at Gold Fields' Granny Smith mine, Rio Tinto's solar photovoltaic plant and GMA Garnet's wind and solar farm at the Port Gregory mine. And of course, FMG's planned 60 MW solar farm to power its iron ore mines in the Pilbara. The Australian government aims to lower emissions to 5% below 2000 levels by 2030. There is plenty of room for growth, given the current low penetration of renewables. The big challenge faced is that an increase in CAPEX for renewables often results in no impact on the cost of production; this situation can be a hard sell to investors.

Furthermore, mining companies need to think in terms of the energy needs of both the mine and the communities in and around the mine; this is the mindset of being a true development partner and working with all stakeholders to ensure communities have a sustainable path to prosperity. The Development Partner Institute is partnering with The Rocky Mountain Institute on a programme that will explore the challenges and innovation opportunities (including financial innovation) to accelerate the adoption of cleaner energy for mines and communities.

Water scarcity is another increasing challenge due to more prevalent drought conditions. This shortage is occurring at the same time as demand for water in many mines is increasing and is seen as competing with the water needs of the surrounding communities.

The energy and water nexus demands a high level of transformative thinking that not only takes account of the mines' needs, but also those of the surrounding communities. These events are all against the backdrop of increasing pressure from consumers and investors.

Under-investment in innovation and venture capital

The growth in the APAC region is under threat unless miners make a serious commitment to increase their investment in innovation to norms of comparable industries. Persistent under-investment in innovation leaves the industry unable to leap forward in many areas, such as AI and machine learning, which can massively increase productivity and decrease unit costs of production.

An analysis by Clareo reveals the industry's historical investment in innovation hovers around 0.5% of revenue. Comparatively, manufacturing spends 2 - 3% of its revenue on innovation, while oil and gas companies spend 3 - 5%.³

The inherent conservatism of the industry will also not allow it to build momentum in venture capital that will fund entrepreneurs and startups; mining has largely been absent from the world of venture capital. As a result, transformative ideas and technology are stranded in either research or perpetually small companies. This means startups are starved of the necessary capital to develop and scale their ideas. Simply put, APAC miners will not see the kind of technology-based solutions required to drive the necessary transformative performance improvements until they increase their innovation investments to rapidly drive up productivity and lower costs.

There are some signals that this present scenario is changing. Teck and Severstal are LPs in the leading Canadian-based venture fund Chrysalix. Anglo American has established the AP Ventures fund that now has the South African Pension fund and Mitsubishi as LPs.

Conclusion

The robustness of key commodity prices, for example, iron ore and copper, and increased share buybacks and dividends give a sense of a healthy industry. However, it cannot disguise the underlying headwinds that will ultimately undermine the industry and its contribution to prosperity.

The fact remains that whilst productivity and unit costs of production have improved over the last few years, they remain at unacceptable levels – except at some of the lowest cost mines in certain commodities. Relying on short-term market shifts to provide the fixes is unrealistic. Rather, these should be seen as giving the sector the breathing room to make up for its startlingly high innovation deficit. A new approach and new level of investment is required to transform the business of mining.

APAC miners have an opportunity to establish themselves as true leaders in innovation. Reaching this benchmark will require a true public-private partnership that includes visionary policies and serious investments in innovation. **GMR**

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