



“Mining companies toggle between the failure of under-investment and the risk of overstretch, due to difficulties in predicting market conditions...”

Is ‘value over volume’ the new mantra for miners?

Mining companies barely created any value during the Chinese supercycle. This is because they went after tonnages at any cost, without properly considering the sustainability of their high margins.

This poor performance resulted in a wave of CEO replacements, with shareholders demanding more capital austerity and returns in the form of dividends and share buybacks. In 2016 and 2017, these new, less indulgent leaders started showing their first results, with costs down, debts trimmed and stock prices up.

However, this abstemious approach might combine to a steeper depletion and production attrition rate to cause the next supply shock and price surge. So what can mining companies do differently this time to really capture the value presented by this opportunity?

Mining companies toggle between the failure of under-investment and the risk of overstretch, due to difficulties in predicting market conditions far ahead. Mining managers are well accustomed to boom-and-bust cycles, in a sector characterised by lumpy capacity additions (to satisfy minimum economies of scale), long lead times (around five to seven years from project-undertaking decision to delivered tonnages) and bulky physical stocks (propagating destocking effects along the value chain).

Board members and angry investors argue that mining managers fail because they prioritise volume instead of value. Managers are also to be blamed for showing a herd mentality and pursuing growth at any cost during bull times. One fact is indisputable: by 2016, the mining industry had given back all the value created during the Chinese growth cycle. The picture isn't any better when extended all the way back to 1990, as the mining sector delivered less than half of the value created by the rest of the industrial sector over the same period.

Total Return to Shareholders (TRS),
2004-2017



Total Return to Shareholders (TRS),
1990-2017





Investors were flabbergasted. After realising a golden decade of growth had been wasted in expensive deals and risky projects, mining managers were reprimanded and “capital discipline” became the mantra. In practical terms, this required a clean-up of balance sheets, huge cost-saving efforts, divestment of non-core assets and reduction in net debt. New projects were either stopped or continued under stringent scrutiny. In fact, most companies are yet to conclude their asset portfolio restructuring.

But a solid growth in China’s property market in 2016 and 2017, plus a significant recovery of mining stocks spurred by trimmed balance sheets, sparked a US\$80 billion rise in the combined market capitalisation of the five biggest miners in 2016. This begs the questions: what’s next? And what can miners do differently this time?

“...a significant recovery of mining stocks spurred by trimmed balance sheets, sparked a **US\$80 billion rise** in the combined market capitalisation of the five biggest miners in 2016.”

A look into the past investment cycle (2010-2017)

Sizing the opportunity

Let's take the copper industry as an illustration. In the eight years from 2010 to 2017(E), the world's primary copper demand has grown by 4.2 Mtpa, from 16.1 Mt in 2010 to 20.3 Mt (estimate for 2017). This represents a 26% absolute increase over the same period or a compound annual growth rate of 3.4%. That means each company is expected to have grown their output by at least 26% in the same eight years to avoid losing market share.

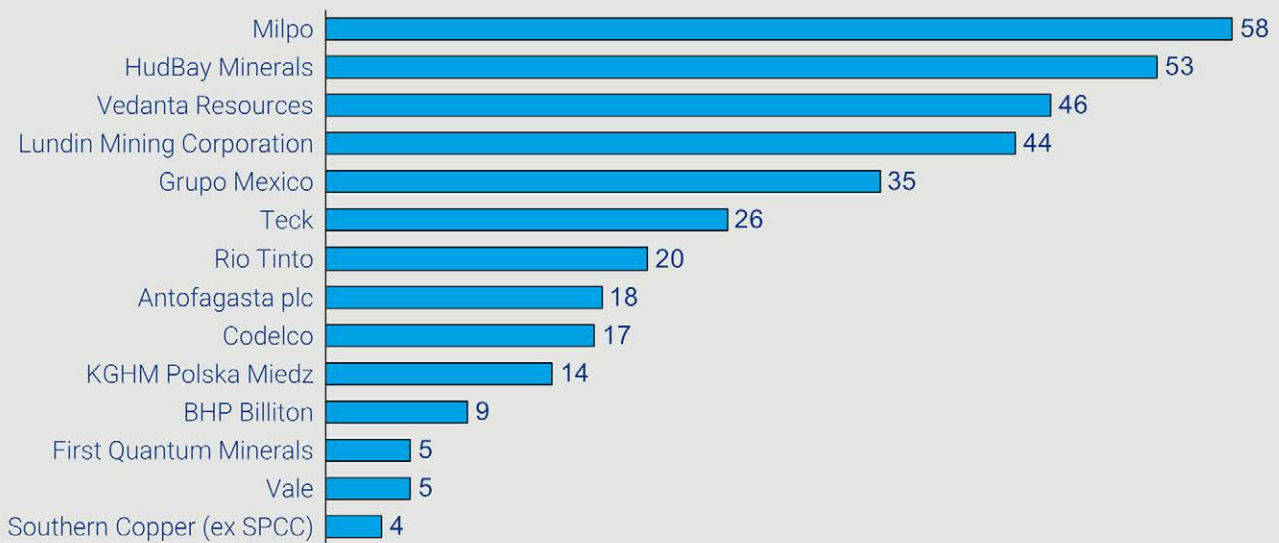
But demand expansion is not the only factor driving companies to search for growth. The rate of depletion and production attrition of existing mining assets adds to the pile of opportunities, as new supply is required to make up for natural geological erosion (and not necessarily from the same miner). The inertial demand growth of +4.2 Mtpa should then be added to the rate of deposit depletion and production attrition, which is approximately +1.8 Mtpa in the same period. As a result, the total amount of tonnages up for grabs between 2010 and 2017 is 6.0 Mtpa.

The depletion and production attrition rate is quite relevant, representing 30% of the total growth opportunity and 11% of the installed capacity in 2010. Of course, the challenge for each company is a function of its particular portfolio of producing assets and their corresponding life of mines, representing different speeds of depletion and production attrition. Companies such as Milpo and Hudbay Minerals have had their 2010 total output cut by half or more after eight years, whereas Vale and Southern Copper have relatively younger portfolios, with just a 4% to 5% depletion and production attrition rate between 2010 and 2017.

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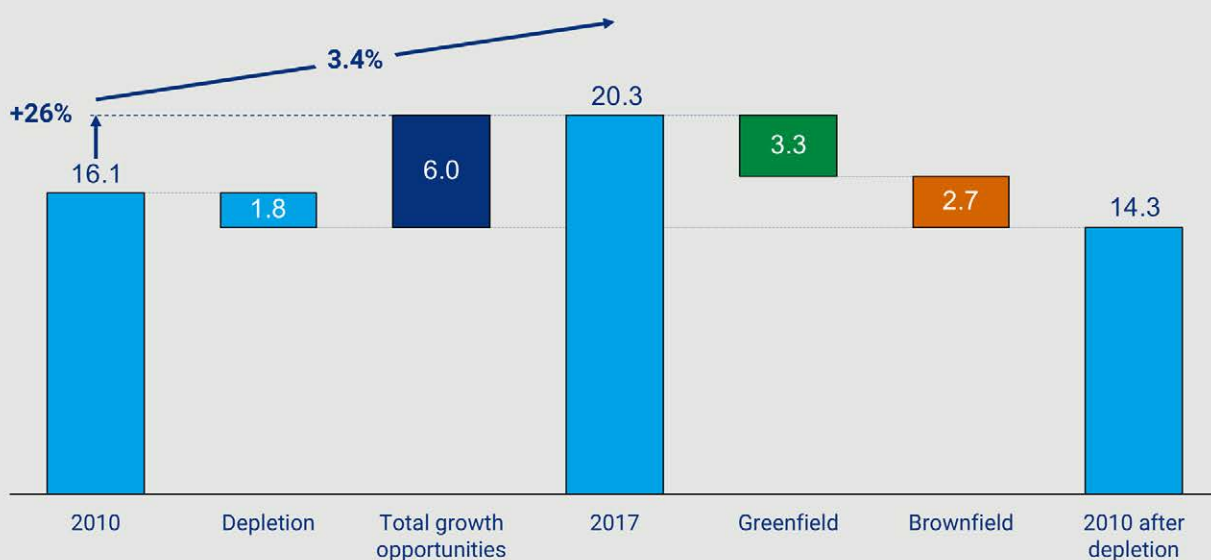
Average depletion for deposits operating in 2010



Source: Wood Mackenzie

Now let's look at how the supply side has behaved. Between 2010 and 2017(E), primary copper output has grown by 5.9 Mtpa keeping the market largely at balance, with some slight year-to-year stock variations. Companies have a slight preference for greenfield projects, representing 55% of the total growth or 3.3 Mtpa of new deposits inaugurated in 2010 or later. Conversely, companies use the brownfield strategy for 45% of the total volume expansion, or 2.7 Mtpa of output increase from existing assets.

World primary copper demand (2010-2017)



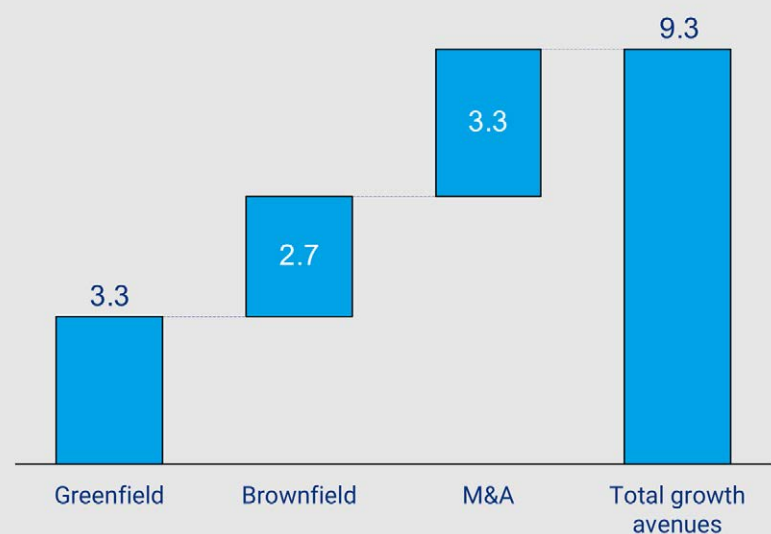
Source: Wood Mackenzie

On top of gross capacity additions (green- and brownfield), approximately 3.3 Mtpa of 2010 output has changed hands in the same period through M&A transactions. Summing all together, companies have had a total of 9.3 Mtpa in growth opportunities. This total has an equal share for greenfield projects and M&A transactions (build or buy, at 35% each) and a slightly smaller share for the lower-risk brownfield expansions.

The most significant M&A transaction in the period was the Glencore-Xstrata acquisition, which involved 1.0 Mtpa of capacity. As a result, Glencore moved from 18th to 3rd in the global production ranking. Other relevant acquirers in the period included Nor Nickel (acquired RAO Norilsk), Cuprum Holding Group (Kazakhmys), China Molybdenum (Freeport's and Rio's assets) and Lundin Mining (Freeport's assets).

“Some players have dodged the ‘value versus volume’ trade-off by shaping up a high-margin portfolio while delivering more tonnages and gaining market share.”

Growth avenues (2010-2017)



Source: Wood Mackenzie



Who's who in the growth game? (2010-2017)

Irrespective of the route pursued – M&A, greenfield, brownfield or a combination of these – the resulting growth movements by each company have combined to produce significant changes to the ranking of the largest copper producers between 2010 and 2017.

One of the corollaries of capital discipline is that value should be prioritised over volume. This is based on the perception that some managers might have led companies into expensive growth raids without a rigorous judgement of value, and ended up wasting cash and destroying shareholder value. This 'empire-building' mentality has resulted in CEO replacements and heavy criticism from active and institutional investors alike.

But have companies really prioritised volume over value? We compared the growth path followed by each company and cross-referenced it against its margin position to shed some light on this apparent trade-off.

We were actually surprised to witness some players have dodged the 'value versus volume' trade-off by shaping up a high-margin portfolio while delivering more tonnages and gaining market share. For this analysis, we cross-referenced the relative growth performance of each major copper player against their value-generation capability, measured by the resulting all-in cash profitability of the portfolio of assets (the margin resulting from the LME price deducted from direct and indirect cash costs, as well as from sustaining capex).



N. Company 2010

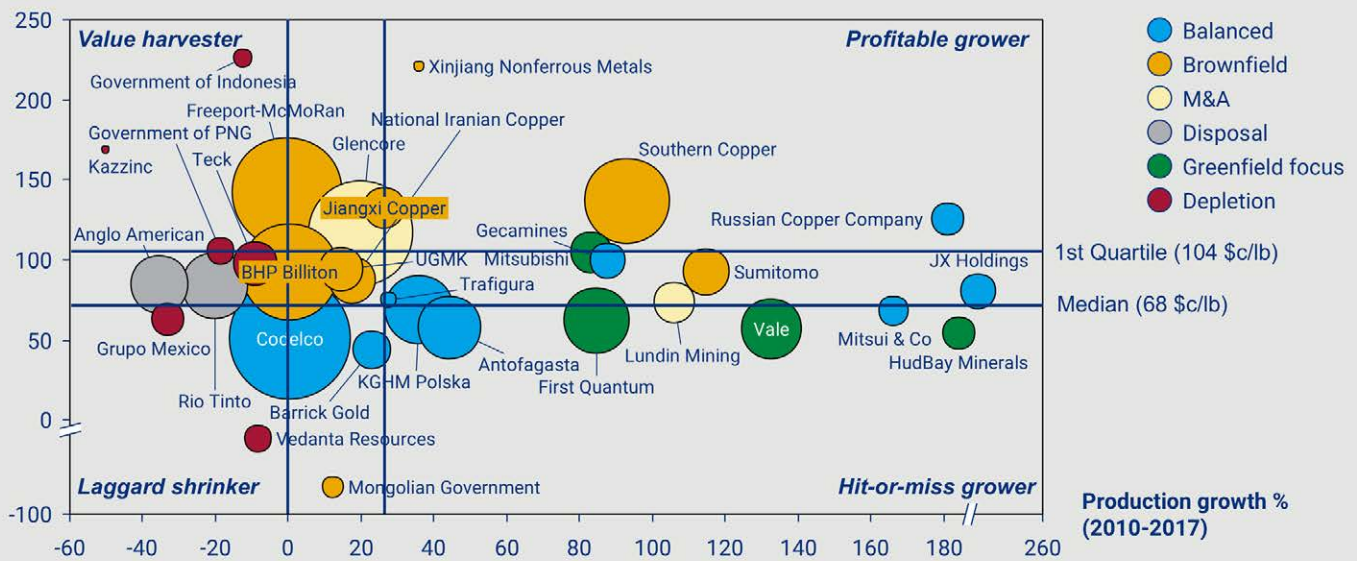
| | | |
|----|---------------------------|--------|
| 1 | Codelco | 1,1784 |
| 2 | Freeport-McMoRan | 1,474 |
| 3 | BHP Billiton | 1,124 |
| 4 | Xstrata AG | 902 |
| 5 | Rio Tinto | 702 |
| 6 | Anglo American plc | 640 |
| 7 | Southern Copper (ex SPCC) | 476 |
| 8 | KGHM Polska Miedz | 425 |
| 9 | RAO Norilsk | 384 |
| 10 | Antofagasta plc | 336 |
| 11 | Kazakhmys | 335 |
| 12 | First Quantum Minerals | 293 |
| 13 | Teck | 285 |
| 14 | National Iranian Copper | 243 |
| 15 | UGMK | 208 |
| 16 | Grupo Mexico | 204 |
| 17 | Vale | 192 |
| 18 | Glencore International | 191 |
| 19 | Jiangxi Copper Company | 169 |
| 20 | Barrick Gold Corp | 162 |
| 21 | Newmont Mining | 156 |
| 22 | Equinox Minerals | 147 |
| 23 | Government of PNG | 131 |
| 24 | Sumitomo Metal Mining | 125 |
| 25 | Mitsubishi Corp | 115 |
| 26 | Vedanta Resources | 115 |
| 27 | OZMinerals Ltd | 112 |
| 28 | Lundin Mining Corporation | 110 |
| 29 | Yunnan Copper | 105 |
| 30 | China Minmetals Corp | 99 |

N. Company 2017

| | | |
|----|---------------------------|-------|
| 1 | Codelco | 1,794 |
| 2 | Freeport-McMoRan | 1,472 |
| 3 | Glencore | 1,314 |
| 4 | BHP Billiton | 1,132 |
| 5 | Southern Copper (ex SPCC) | 920 |
| 6 | KGHM Polska Miedz | 578 |
| 7 | Rio Tinto | 563 |
| 8 | First Quantum Minerals | 541 |
| 9 | Antofagasta plc | 485 |
| 10 | Vale | 446 |
| 11 | MMG Limited | 418 |
| 12 | Anglo American plc | 414 |
| 13 | Nornickel | 372 |
| 14 | National Iranian Copper | 286 |
| 15 | Sumitomo Metal Mining | 268 |
| 16 | Teck | 260 |
| 17 | KAZ Minerals | 244 |
| 18 | UGMK | 239 |
| 19 | Cuprum Holding Group | 233 |
| 20 | Lundin Mining Corporation | 227 |
| 21 | Jiangxi Copper Company | 214 |
| 22 | Mitsubishi Corp | 211 |
| 23 | Barrick Gold Corp | 200 |
| 24 | JX Holdings | 170 |
| 25 | China Molybdenum | 157 |
| 26 | Gecamines | 153 |
| 27 | Hudbay Minerals | 145 |
| 28 | Russian Copper Company | 141 |
| 29 | Grupo Mexico | 137 |
| 30 | China Aluminium Group | 136 |

Growth vs. profitability

All-in cash margin
(\$/lb)



Source: Wood Mackenzie

Interestingly, all companies showing an abnormal output growth in the period (more than double) have included the greenfield ingredient in their growth recipe.

Some players have expanded their output and gained market share at the expense of their profitability, ending up with a portfolio ranked below the industry's average margin. These companies have indeed prioritised volume and compromised value creation potential.

Value harvesters have also been active. They have a good portfolio of assets in terms of cost position and profitability, but have preferred to reduce their long copper positions due to corporate restructuring or to reduce net debt. Others have opted to invest the proceedings in other sectors, selling them off later to settle debts down.

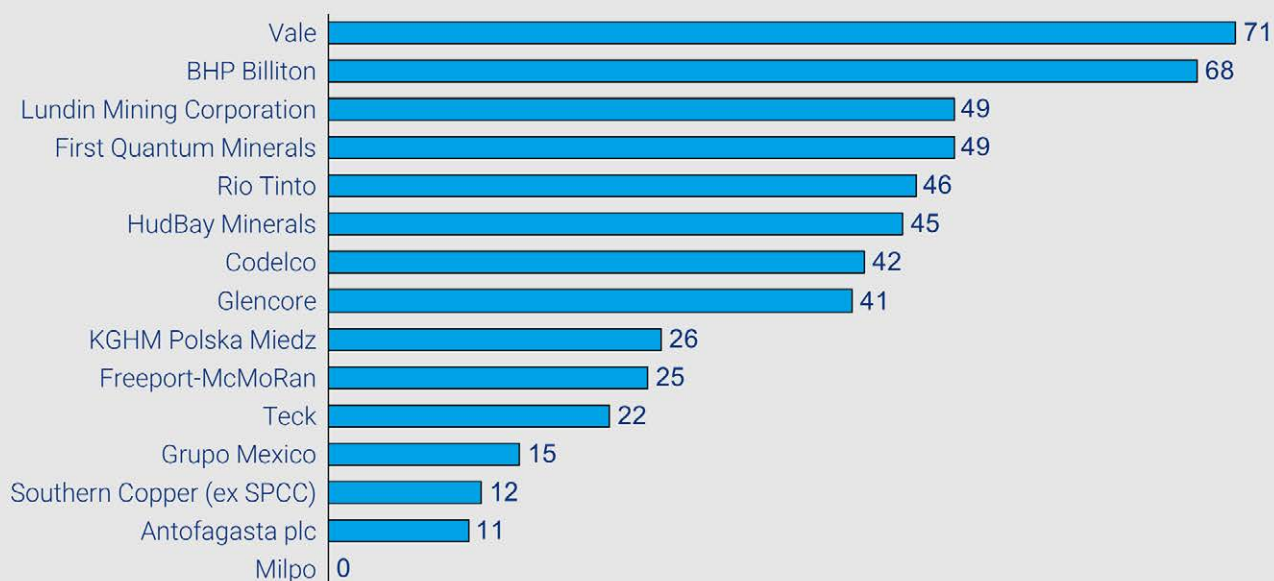
A look into the next investment cycle (2017-2024)

Sizing the opportunity

Looking ahead, the primary copper demand growth rate will halve to 1.7% a year (from 3.4% in the previous period) reaching a total volume increment of 2.5 Mtpa or 12% by 2024. The implication for companies is that they must grow by 12% in the same period to keep their market share intact. Even more interesting, though, is the steep depletion and production attrition rates that will affect most companies.

When added to the inertial demand growth, the total opportunity up for grabs will sum up to 6.8 Mtpa by 2024, which is a higher amount than in the previous cycle (6.0 Mtpa from 2010 to 2017). Depletion and production attrition alone will average 63% or approximately two-thirds of the total growth opportunity.

Average depletion for deposits operating in 2017

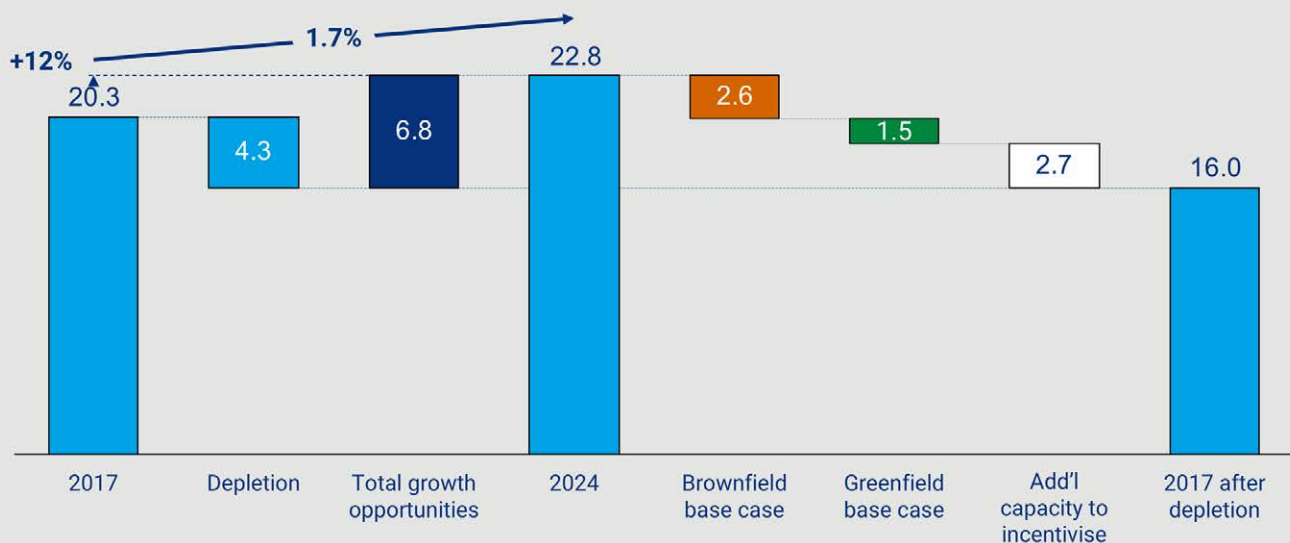


Source: Wood Mackenzie

Seizing the opportunity

On the supply side, our base case scenario admits more brownfield (+2.6 Mt/38%) than greenfield (+1.5 Mt/22%) expansion. Although a significant amount of unknown capacity addition (+2.7 Mt/40%) yet to be incentivised remains, either through brown- or greenfield undertakings.

World primary copper demand (2017-2024)



Source: Wood Mackenzie

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Several barriers to current project development exist. There are mounting concerns about demand growth, with fears of global recession and a potential debt crisis in China. New projects on the menu have lower grades, are more complex to exploit, and require higher economies of scale (in other words, higher capital requirements). This combination of factors is keeping investor interest low, and access to capital restricted. Even the few good projects left might still rank low on the priority list of the companies that own them.

There is one certainty, though: even with zero global demand growth, the market will still need new supply due to natural geological erosion. Giving up equity or access to funding through partnerships and joint ventures, inviting avid Chinese partners eager to share risks, and taking a more phased and modular approach to development will be likely trends in this new era of growth.



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