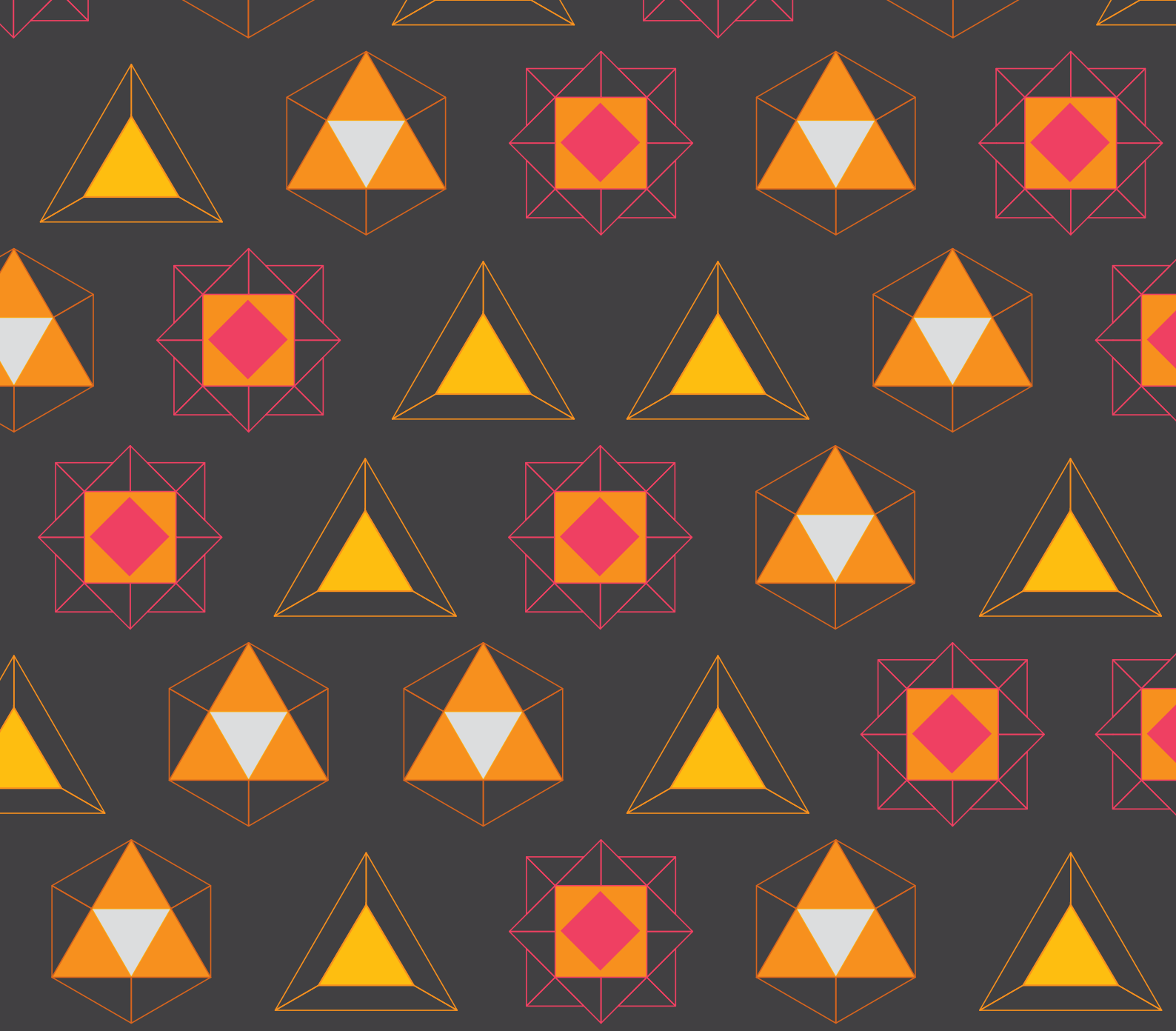

Aussie Mine 2021

Critical mining

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Executive summary

Welcome to the 16th edition of Aussie Mine, 'Critical mining'

Aussie Mine provides industry and financial analysis on Australia's mid-tier mining sector as represented by the mid-tier 50 (MT50) – the largest ASX mining companies outside the ASX50.

There has been a significant shift in the makeup of the MT50. For the first time ever, the rise in the value of critical minerals companies outshone gold's performance (October 2021). While gold companies still dominate (comprising 36% of the MT50 by number and 33% by value), critical minerals companies have soared, and now represent nearly a third of the aggregate MT50 value (34% by number and 31% by value).

Critical mineral companies recorded the most significant increases in market capitalisation in FY21 (largely thanks to lithium and nickel prices). While five of the seven new entrants to the MT50 this year are critical mineral projects.

Moreover, we expect high demand growth in critical minerals to continue for decades, presenting significant long-term value-creation opportunities. This includes opportunities to invest further along value chains, most notably in lithium chemicals.

There is clear evidence that environmental, social and governance (ESG) factors are starting to shape the strategies of the MT50. Our analysis also demonstrates that positive ESG strategies, including supporting the transition to a lower carbon global economy, aligns with long-term value creation. In an era where corporate trust has fallen, this focus on ESG increases the need for companies to clearly and fully communicate their strategies. It also requires companies to provide considerable additional information on their ESG ambitions, targets and performance, including data integrity and assurance.

In 2021, reducing carbon emissions dominates the ESG agenda. Some of the MT50 producers now have specific carbon emissions reduction commitments or policies. The MT50 has started the process of identifying strategies, programs, and investments to achieve meaningful emissions reductions.

The market capitalisation of the MT50 increased by 50% to a record $113 billion (as at 30 June 2021). Other than gold, the values of all mineral groups increased significantly from the heightened uncertainty of mid-2020. The market value of iron ore companies increased by 178%, reflecting the record price period during May-June 2021. Iron ore prices have subsequently halved from these record levels.

Record earnings and operating cash flows have supported a new period of growth in battery and critical minerals, gold, and energy transition metals (such as copper). This growth also provides MT50 companies with a strong platform to continue to focus on their ESG strategies and create long-term sustainable value.

Australian coal companies are an outlier, with continued low prices resulting in losses. While coal prices have subsequently increased to record levels through to October 2021, this is expected to be temporary, and an unsettled future remains.

Mining is critical to a low carbon global economy. Battery minerals, other critical minerals, and energy transition metals are needed to support the considerable investment in wind turbines, solar panels, batteries, electric vehicles (EVs) and infrastructure – all of which are required on the path to net zero.

MT50 overview

Net cash
$317m

50% increase

Market cap
$113bn

6 companies with market cap more than $5bn

17 critical minerals companies market cap
$35bn

167% increase

2641%
Largest market cap increase

18 gold companies market cap
$37bn

$10bn
operating cash flow

Market cap increase for
78%
of companies

178% Increase in market cap of iron ore companies

Contents

The MT50

The 50 largest mining companies listed on the Australian Securities Exchange outside the ASX50, with an average market capitalisation of just over $2.2 billion.

2021 Rank	Change to 2020 Rank	Company Name	Primary Commodity	Producer	Market capitalisation at 30/06/2021 $AUDm	Market capitalisation change (2020 to 2021)
1	No change	Northern Star Resources Limited	gold	✔	11,381	15%
2	▲ 3	Mineral Resources Limited	iron ore	✔	10,135	155%
3	▼ 1	Evolution Mining Limited	gold	✔	7,689	-20%
4	▲ 3	OZ Minerals Limited	copper (ETM)	✔	7,472	110%
5	▲ 4	IGO Limited	diversified (CM)	✔	5,777	101%
6	▲ 13	Lynas Rare Earths Limited	rare earths (CM)	✔	5,145	280%
7	▼ 3	Alumina Limited	alumina (ETM)	✔	4,772	2%
8	▲ 28	Pilbara Minerals Limited	lithium (CM)	✔	4,204	656%
9	▼ 3	Iluka Resources Limited	mineral sands (CM)	✔	3,867	7%
10	▲ 10	Champion Iron Limited	iron ore	✔	3,231	139%
11	▲ 34	Chalice Mining Limited	nickel / copper (CM)		2,574	752%
12	▼ 2	Yancoal Australia Limited	coal	✔	2,568	-4%
13	▲ 8	Nickel Mines Limited	nickel (CM)	✔	2,490	98%
14	New	Deterra Royalties Limited	iron ore	✔	2,378	n/a
15	▲ 18	Orocobre Limited	lithium (CM)	✔	2,227	248%
16	▲ 2	Whitehaven Coal Limited	coal	✔	1,937	37%
17	▲ 25	Galaxy Resources Limited	lithium (CM)	✔	1,856	485%
18	▼ 2	Perseus Mining Limited	gold	✔	1,791	17%
19	▼ 6	OceanaGold Corporation	gold	✔	1,781	-15%
20	▼ 9	Regis Resources Limited	gold	✔	1,779	-33%
21	▲ 3	De Grey Mining Limited	gold	✔	1,596	50%
22	New	Liontown Resources Limited	lithium (CM)		1,546	759%
23	▼ 9	Silver Lake Resources Limited	gold	✔	1,463	-22%
24	▼ 1	New Hope Corporation Limited	coal	✔	1,440	27%
25	▲ 1	Coronado Global Resources Inc.	coal	✔	1,408	58%

2021 Rank	Change to 2020 Rank	Company Name	Primary Commodity	Producer	Market capitalisation at 30/06/2021 $AUDm	Market capitalisation change (2020 to 2021)
26	▼ 11	Ramelius Resources Limited	gold	✔	1,380	-14%
27	Returning	Paladin Energy Limited	uranium		1,379	579%
28	▼ 3	Sandfire Resources Limited	copper (ETM)	✔	1,217	35%
29	▼ 17	St Barbara Limited	gold	✔	1,207	-45%
30	▲ 1	Mount Gibson Iron Limited	iron ore	✔	1,121	59%
31	▼ 14	Gold Road Resources Limited	gold	✔	1,110	-24%
32	New	Australian Strategic Materials Limited	mineral sands (CM)		1,088	n/a
33	▲ 2	Energy Resources of Australia Limited	uranium	✔	960	68%
34	▼ 6	West African Resources Limited	gold	✔	879	10%
35	New	Vulcan Energy Resources Limited	lithium (CM)		835	2098%
36	▼ 7	Bellevue Gold Limited	gold		816	12%
37	▼ 10	Westgold Resources Limited	gold	✔	797	-5%
38	▼ 8	Western Areas Limited	nickel (CM)	✔	769	6%
39	▲ 7	Grange Resources Limited	iron ore	✔	689	145%
40	▼ 8	Alkane Resources Limited	gold	✔	685	-2%
41	▼ 7	Capricorn Metals Limited	gold	✔	665	13%
42	New	ioneer Ltd	lithium (CM)		664	205%
43	▼ 6	Jupiter Mines Limited	manganese (CM)	✔	568	3%
44	▼ 22	Resolute Mining Limited	gold	✔	557	-55%
45	Returning	Syrah Resources Limited	graphite (CM)	✔	516	352%
46	▼ 8	Aurelia Metals Limited	gold	✔	506	16%
47	▲ 2	Mincor Resources NL	nickel (CM)		467	73%
48	New	Develop Global Limited (Venturex Resources Limited)	copper (ETM)		466	2641%
49	New	AVZ Minerals Limited	lithium (CM)		465	214%
50	▼ 3	Emerald Resources NL	gold		464	69%

6 companies with market cap greater than $5b

Only 11 companies had a decrease in market cap – mainly gold

CM = critical minerals ETM = energy transition minerals

Demand for critical minerals and other energy transition metals will continue to grow quickly as the transition to a lower carbon global economy accelerates. More than one-third of the MT50 comprises companies focused on the extraction of critical minerals.

Critical minerals: lithium, nickel, cobalt, graphite, manganese, rare earths, and mineral sands.	17 in MT50
Other energy transition metals: copper, aluminium, zinc.	4 in MT50

Opportunity knocking in critical minerals

The transition to a low carbon world will require trillions of dollars of investment, and critical minerals will play a significant role. Projected demand for many critical minerals is expected to outstrip near- and medium-term supply. This will require greater investment to facilitate development, extraction, and processing.

Accelerated growth in critical minerals production and processing will be necessary to deliver the global energy transition. Also, to meet the demand from renewable energy generation and storage technologies, and the electrification of transport. Over the next decade, EV production will need to increase tenfold, charging infrastructure will need to grow more than 30 times, and installed renewable power will need to triple in capacity.

Australia is poised to be a global leader in the new energy economy. This is due to our natural endowment of critical minerals like lithium, nickel, copper, graphite, rare earths, and cobalt. Also, thanks to Australia's track record as a credible and reliable exporter of commodities.

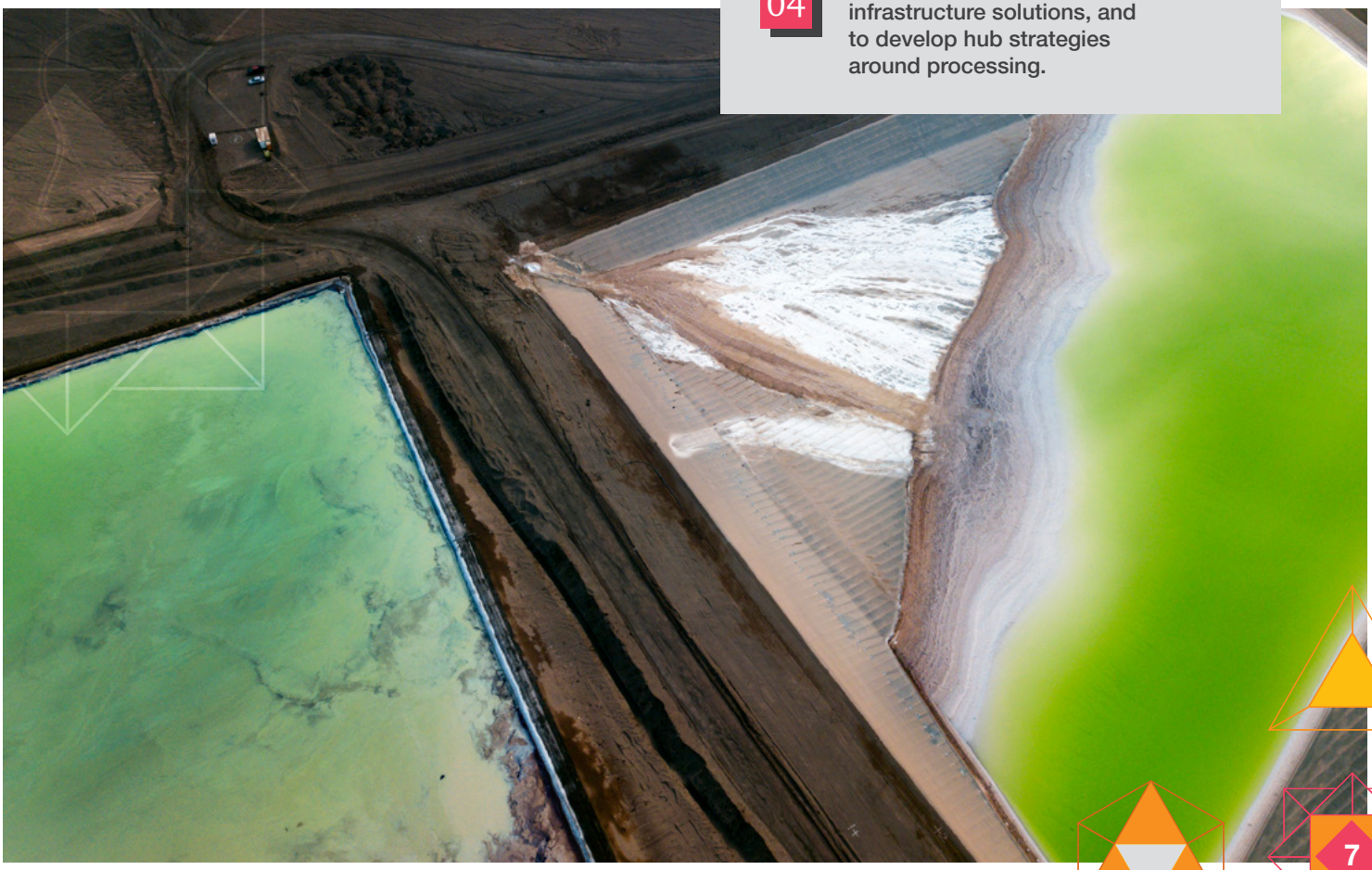
Important steps to capture the full extent of the opportunity include:

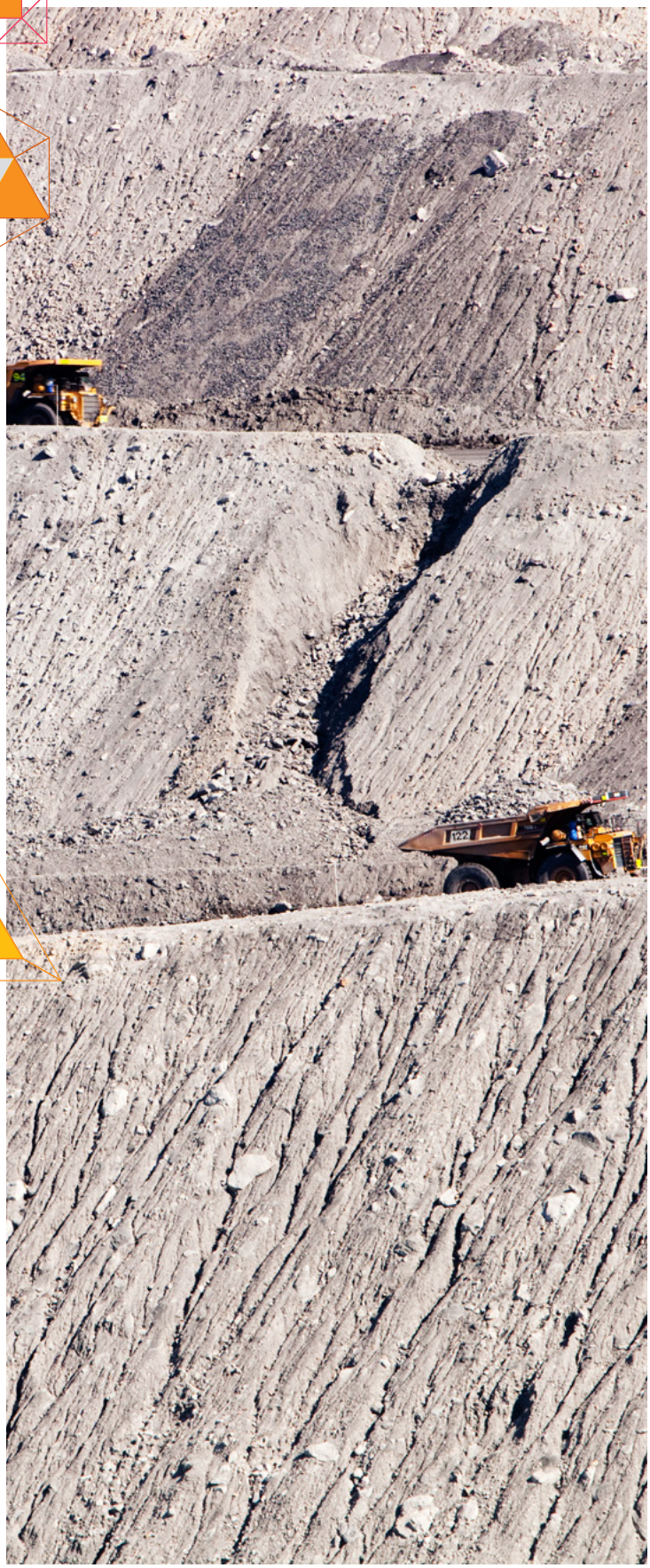
01 **The speedy development of critical mineral resources**

02 **The adoption of leading sustainability practices and maintaining social license**

03 **Moving deeper into the supply chains of value-add processing, refining, and manufacturing. This will support new, high-value, geopolitically strategic industries (for example, producing battery-grade lithium chemicals rather than spodumene).**

04 **Collaboration to deliver shared infrastructure solutions, and to develop hub strategies around processing.**





Producers will still face many of the traditional challenges that beset mining endeavours. This includes the need to secure offtake to underwrite fundraising efforts, against a backdrop of evolving critical minerals markets. These markets often feature opaque pricing, along with sudden and extreme supply and demand shifts.

Yet critical minerals are shaping up as a different story, too. Deposits are often smaller and more discrete, with unique chemical composition and mineralogy. Also, the required purifying, upgrading, processing and refining processes are more nuanced, creating a genuine opportunity for product differentiation.

Australian superannuation funds have great capacity to support the development of critical mineral resources and their associated infrastructure. The federal government has also made important policy progress in developing an Australian critical minerals strategy, including the establishment of a $2 billion Critical Minerals Facility, which is to be managed by Export Finance Australia.

Australia recently entered a Quadrilateral Security Dialogue with Japan, India and the United States that will focus, in part, on critical minerals and securing critical mineral supply chains. This is a welcome development for the domestic industry as it will open doors for Australian developers and producers to seek offtake, finance, and co-development opportunities in those countries.

Given the scale of the opportunity – not to mention the amount of investment and immediacy of action required – a coordinated approach is needed from all levels of government, institutional investors, and producers to develop shared infrastructure solutions and expand the industry in Australia.

The MT50 movers and shakers of 2021

An ESG-led shake-up of the MT50

2021 saw a reshuffle of the MT50. Gold companies continue to dominate (36% of the MT50 by number and 33% by value). However, this year sees a growing number of critical minerals companies (34% by number and 31% by value). Critical mineral companies have recorded the most significant increases in market capitalisation in FY21.

At the same time, critical minerals companies have shot up the list. For those critical minerals companies in the MT50 last year, the average movement in rank was an increase of 10 places. Lynas (rare earths) and Pilbara Minerals (lithium) catapulted their way into the top 10 for the first time (on the back of 280% and 656% increases in market capitalisation respectively). Across these companies, the average increase in market capitalisation was a huge 373%. Additionally, of the seven first-time entrants to the MT50, five are companies focused on critical mineral projects (predominantly lithium).

There has been considerable interest in battery minerals projects during FY21, and plenty of exploration funding, too. Of the 11 non-operating companies in the MT50, six have advanced battery minerals projects. New entrants, Develop Global (previously Venturex) and Vulcan Energy, saw the largest increases to market capitalisation across the MT50, on the back of strong project results and additional funding.

The volatility experienced across commodities in recent years is showing no sign of slowing. Iron ore prices are still seeing faster than expected declines. While further increases to coal and critical metals prices have been playing out on the Australian market since 30 June 2021.

Four coal companies remain in the MT50. While the market capitalisation of coal companies increased, they continued to have a tough time, with coal prices remaining relatively weak. However, coal prices have increased to record levels in the four months to October 2021, providing Australian coal companies with increased operating cash flows.

In deals activity, the merger between Orocobre and Galaxy, completed in August 2021, created a lithium powerhouse. The merged group is soon to be rebranded as ALLKEM, and its post-merger market capitalisation is at highs of over $6 billion.

Time will tell the makeup of the MT50 in 2022, but we are expecting that strategic shifts in ESG, as part of the transition to a low carbon future, will continue to impact the fortunes of the MT50.

Returning Entrants

- Paladin Energy Limited
- Syrah Resources Limited

New Entrants

#14 Deterra Royalties Limited - demerged from Iluka

#22 Liontown Resources Limited

#32 Australian Strategic Materials Limited (critical minerals) - demerged from Alkane Resources Limited

#35 Vulcan Energy Resources Limited

#42 ioneer Ltd

#48 Develop Global Limited (previously Venturex Resources Limited)

#49 AVZ Minerals Limited

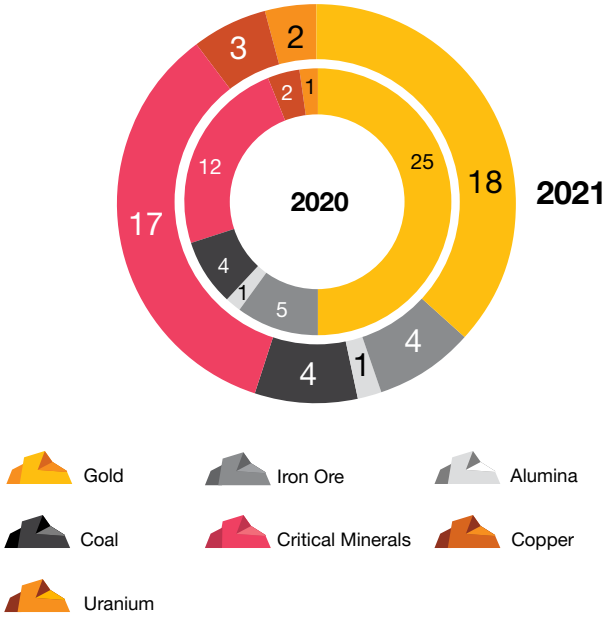
Critical Mining company

Northern Star Resources and Evolution Mining were excluded from the Aussie Mine 2020 report due to their market capitalisation exceeding the $5 billion cap placed on the previous year's analysis.

Exits due to merger

- Saracen Mineral Holdings (merged with Northern Star in FY21)
- Galaxy Resources (exits in FY22 after merger with Orocobre in August 2021)

MT50 companies by mineral group

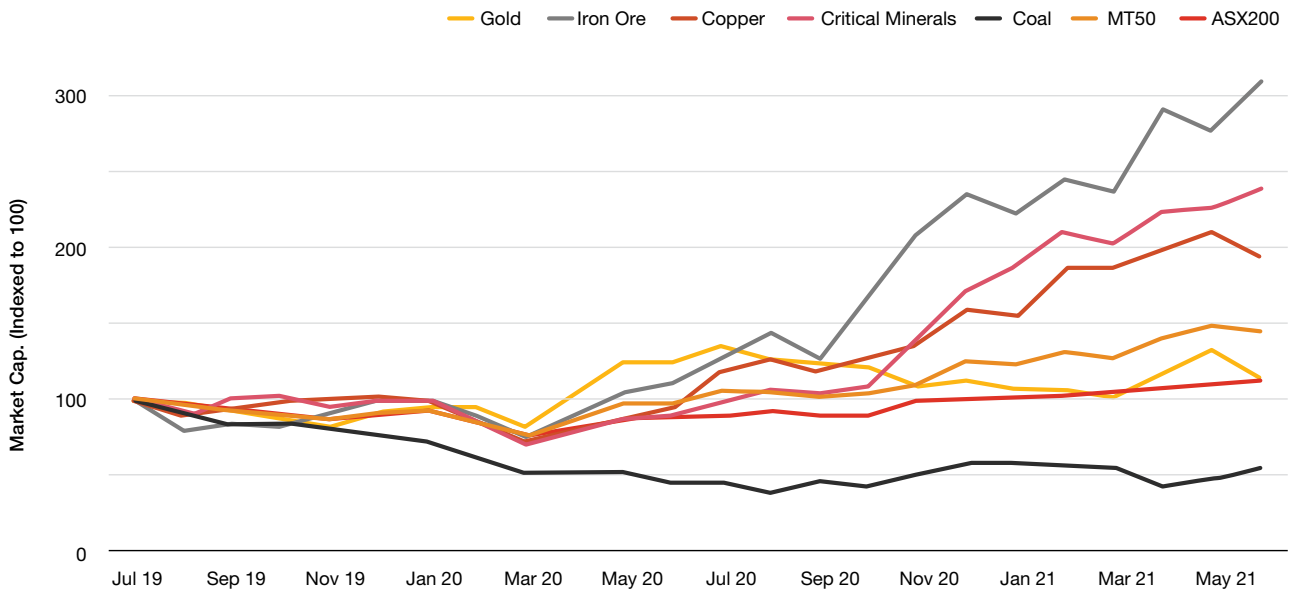


Source: Capital IQ, PwC analysis

Our analysis of the movement in the MT50 against the ASX200 over the past 24 months shows the two were closely aligned until April 2020, when the MT50 started to consistently outperform the market.

However, the story of coal is multifaceted. Only four coal miners remain in the MT50 (down from six in 2019), and coal comprises just 7% of the total market capitalisation (down from 22% in 2019). Coal still contributed the largest share of revenue out of any commodity. But coal prices fell to 2015 levels during FY21 and three of the four coal companies in the MT50 saw their operating revenues fall.

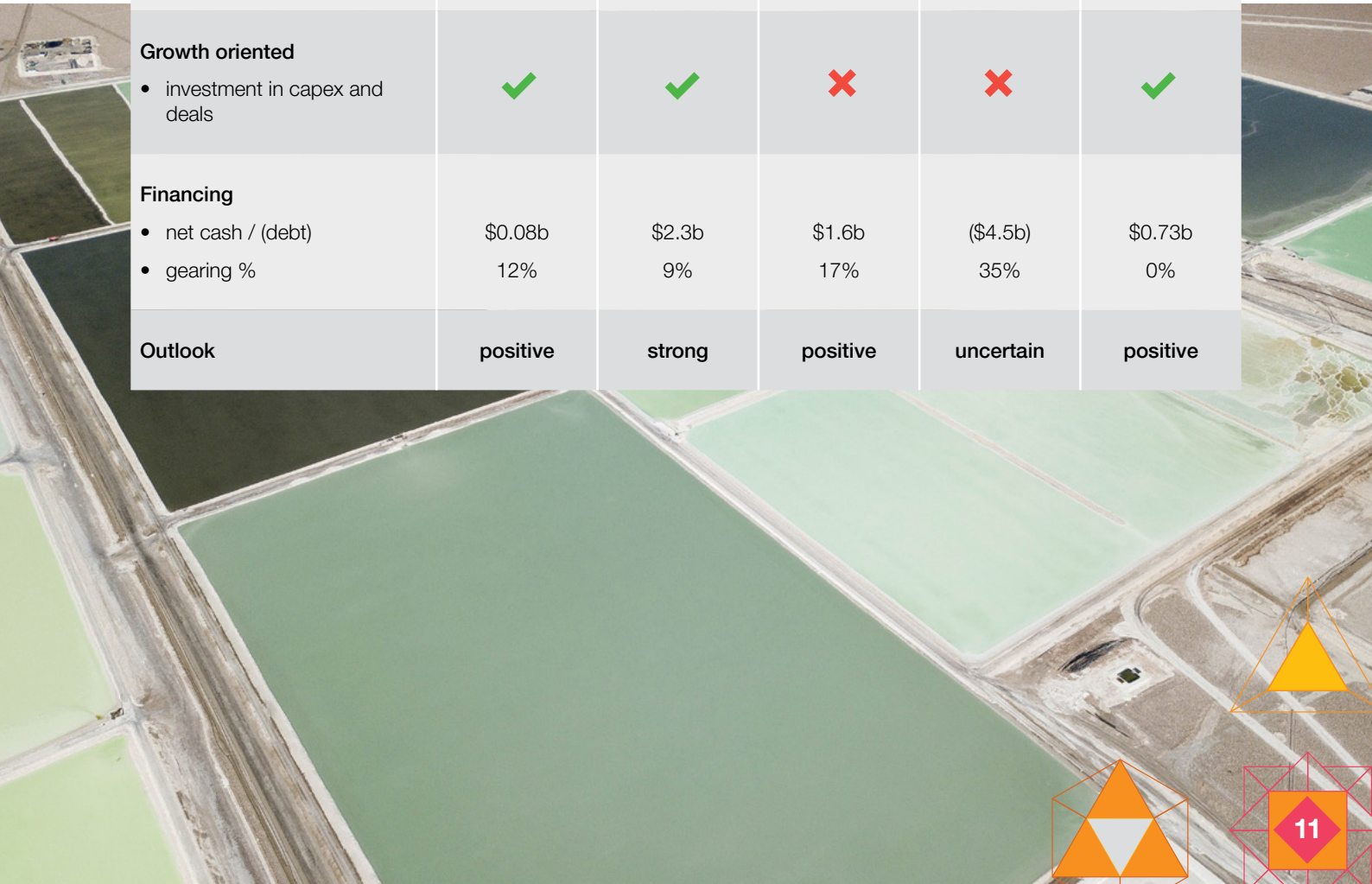
Market Cap. Analysis: ASX 200 vs MT 50 by commodity



Source: Capital IQ, PwC analysis

FY21 scorecard by mineral

	Gold	Critical Minerals	Iron Ore	Coal	Copper
Market capitalisation $b	$37b	$35b	$16b	$7b	$9b
• %MT50	32%	31%	16%	7%	8%
• % increase/(decrease)	-8%	167%	178%	20%	105%
Financial performance					
• revenue increase / (decrease)	$1.8b (18%)	-$0.14b (3%)	$2.8b (74%)	-$1.4b (15%)	$0.65b (34%)
• EBITDA margin %	33%	36%	56%	19%	45%
• adjusted profit / (loss)	$1.3b	$0.96b	$2.16b	($0.60b)	$0.47b
• operating cash flow	$4.3b	$1.1b	$2.5b	$0.8b	$1.3b
• dividends	$0.72b	$0.15b	$0.44b	$0.33b	$0.11b
Growth oriented					
• investment in capex and deals	✓	✓	✗	✗	✓
Financing					
• net cash / (debt)	$0.08b	$2.3b	$1.6b	($4.5b)	$0.73b
• gearing %	12%	9%	17%	35%	0%
Outlook	**positive**	**strong**	**positive**	**uncertain**	**positive**



Reframing ESG from risks to opportunities

ESG is not just about the risks facing the mining industry, but also very much about the opportunities. The ultimate benefit of a well-designed and well-executed ESG strategy is an increase in shareholder value and returns, and the MT50 is largely in good shape to achieve this. The MT50 is well placed in terms of strong profits, cash flows and balance sheets, and now is the time for long-term thinking about a more sustainable future, and the investment required to get there.

So, what are the opportunities and how can the industry maximise them? We look at these through the lens of the following key stakeholders: customers, lenders, and shareholders.

Positive ESG impacts

Customers: Premium pricing for low carbon lifecycle products.

Employees: Access to talented workforce.

Growth: Access to new projects and development.

Lenders: Availability of funding and at a lower cost.

Shareholders: Increased shareholder value and returns.

M&A: A sought-after partner for growth.

One way that mining companies can demonstrate product differentiation is by following standards, or receiving accreditation or certification for their operations or processes. There are a growing number of these product accreditations.

Customers

Demand for low- or zero-carbon minerals, which are also sustainable and conflict free, will dramatically increase over this decade. The community expects it. And so a (rapidly rising) number of businesses are adopting ESG policies and carbon reduction commitments, driving a need for sustainable mineral inputs. Already, we've seen examples of price premia on sales of low carbon aluminium and other metals.

Lenders

Lenders across the globe are increasingly reluctant to continue lending to certain resource projects – notably fossil fuel projects – and are using their financial muscle to influence the direction of the resources sector. Minimum ESG credentials are becoming an entry-level requirement for financing. Funding opportunities linked to sustainability are emerging with favourable pricing.

Shareholders

Large investor groups are also influencing mining companies, with increased investment restrictions based on ESG policies and metrics. The good news for mining companies (and their shareholders), is that getting it right on the ESG front leads to higher shareholder value and returns.

Emissions reduction in Australian mining

The global net zero transition has gained considerable momentum during 2021. The largest Australian mining companies now have clearer policies and targets for significant emissions reductions, including Scope 3 emissions (see below). The drive towards net zero is one that the MT50 is beginning to embrace. Meanwhile, the Minerals Council of Australia has announced an ambition for the industry to reach net zero emissions by 2050.

Scope 1

Direct emissions from a mining company's own operations, such as fugitive emissions from coal mining

Scope 2

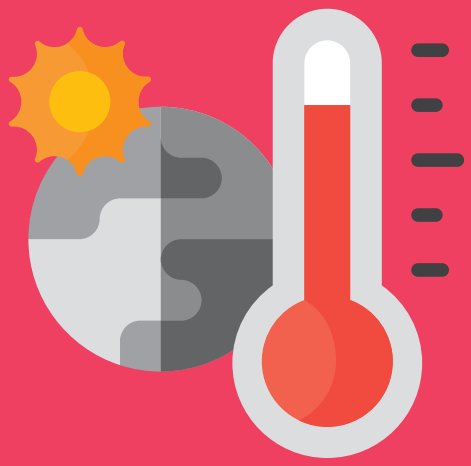
Purchased electricity consumed in minerals extraction and processing

Scope 3

Other non-controlled emissions along the value chain, upstream and downstream from the mining company's operations, including transportation

Reducing Scope 3 emissions is a significant challenge for some mining companies. Coal and iron ore producers, for example, face a tremendous hurdle as the emissions from downstream activities associated with their products (carbon steel and electricity) presently result in substantial emissions.

Critical minerals and energy transition minerals, on the other hand, have a distinct advantage in this area.



More than three quarters **(76%)** of global mining and metals executives in our 2021 CEO survey said they were concerned about climate change and environmental damage (up from **57%** in 2020).

Potential solutions to tackling the largest sources of emissions from Australian mining

Type of emissions	Examples of potential emissions reduction strategies	Maturity of related technologies
 **Scope 1** Fugitive emissions from coal mining	Fugitive methane capture, use of emissions	Early stage, significant technological developments required
 **Scope 2** Purchased electricity consumed in minerals processing	Renewable energy, re-engineered grinding strategies	Technologies are mature or maturing, make-up of grid power out of mining industry's control
 **Scope 1** Diesel used for power generation	Fuel switching including hydrogen electricity generation, on site or nearby renewable generation	Renewables technology maturing, green hydrogen at early stage with significant investment required, but strong interest from industry and government
 **Scope 1** Diesel used for mining fleets and transportation	Electric or hydrogen vehicles, ammonia-powered shipping	See above
 **Scope 3** Steel production	Hydrogen-based direct reduction and electric arc furnaces replacing blast furnaces	Concepts demonstrated in pilot plant stage, yet to be demonstrated in large commercial stage
 **Scope 3** Coal-fired electricity generation	Carbon capture and storage	Technology yet to be taken up and proven at large scale

The hydrogen opportunity

Hydrogen is an enabling fuel that can support the decarbonisation of hard-to-electrify sectors, including industrial manufacturing, agriculture and heavy-haulage transport. With abundant land and high-capacity factor renewable energy, Australia has the building blocks to produce low-cost renewable hydrogen to service both domestic needs and a growing international market. This is a huge opportunity for the industry.

For a start, hydrogen has the potential to displace diesel across mining fleets and on-site electricity generation. It also has advantages over electrification as a fast-fueling, lightweight and long-duration form of energy storage. And where EVs may not be an economic option in some mine site locations, hydrogen could be a workable alternative.

Adoption of hydrogen fleets in mining operations is already becoming a reality. There have been significant advancements in hydrogen fuel cell and electrolyser technologies in recent years. The trend towards hydrogen is only set to continue as the cost of production of green hydrogen (from renewable energy sources) is estimated to come down over time. So much so, that using hydrogen to decarbonise the mining fleet will be commercially viable by 2025 to 2030, especially where hydrogen displaces diesel.

Depending on specific mine site configurations, a combination of hydrogen and EV fleets may be the most appropriate and cost-effective option to pursue. Aside from the battery packs, all the components for a hydrogen vehicle are advanced enough to be available off-the-shelf. The current hurdle is getting this technology into vehicles. Redesigning fleets requires a lot of trial and error, with some shared learnings around design considerations.

Fortunately, MT50 mining companies can be fast followers of the major mining companies. Recent developments include:

- Equipment manufacturers and large mining companies are collaborating on fleet redesign for both hydrogen and electric equipment. In South Africa, for instance, Anglo American is piloting the world's largest hydrogen-powered mine haul truck, fuelled by green hydrogen produced on site. Validation trials in 2022 will test key questions that have only been answered theoretically to date. In Australia, Fortescue has commenced testing of a hydrogen-powered haul truck and blasthole drill rig at Hazelmere, Perth and intends to have operational vehicles on site by 2023.
- Energy companies and other investors are planning significant investments in hydrogen production projects across Australia. Notably, Fortescue Future Industries and Woodside are building strong portfolios of global green hydrogen projects, with aims to be producing green hydrogen by 2023.

Mid-tier and smaller miners who do not have the same resources to undertake their own hydrogen projects can collaborate to create opportunities. Innovative collaboration approaches, such as a 'hub and spoke' model, where various mines access a single hydrogen hub, would enable mines with fewer resources (or shorter mine lives) to access hydrogen in an efficient and cost-effective manner.

The future of coal

During the transition to net zero emissions, coal will continue to play an important role in electricity and steel production. Carbon reduction solutions require considerable time and cost, as well as significant action and investment.

Even so, Australian coal miners face an unsettled future.

Challenges include: threats to longer-term business continuity; increased financing hurdles as more investors and lenders retreat from fossil fuel connections; changes in market demand and pricing; and, ultimately, lower shareholder values and returns. The corporate strategies of Australian coal miners will need to reflect these challenges, and to consider the potential to pivot towards alternate low carbon business opportunities.

The significant increase in both thermal and metallurgical coal prices to record levels (in the period to October 2021) will provide a very substantial boost to operating cash flows. However, analysts do not see these high prices continuing throughout 2022. An important question for the coal companies will be: What to do with this additional cash? How much will go towards reducing debt, dividends to shareholders, and holding cash for additional financial flexibility? And how much can be directed to those strategic diversification opportunities?

How enhanced ESG strategies lead to higher shareholder value

It can be challenging to incorporate ESG impacts into valuations. For instance, it's not always possible to factor ESG implications into forecast cash flows, especially when it comes to demonstrating the positive impact that strong ESG credentials can have on value. Too often, companies only factor in the downside (such as the negative cash flow impacts of carbon abatement costs).

How, then, do we value the benefits of ESG?

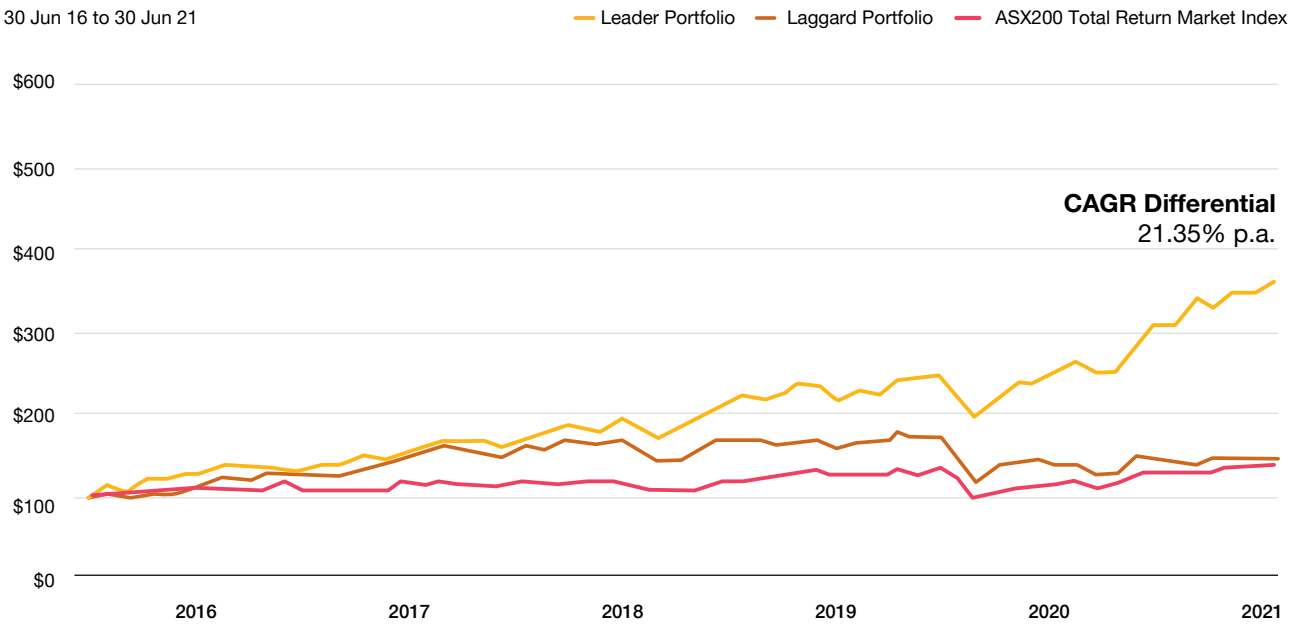
Investors typically use total shareholder return (TSR) as an objective measure of outperformance for companies. The TSR uplift from a strong ESG score has been well documented (for example, in metadata reports relating to relative ESG portfolio performances over the past 10 years). We have found the same in our analysis below, where ESG leaders (those with high ESG rankings) have outperformed their lower-ranked peers quite significantly.

A common critique is a question of correlation versus causation when it comes to TSR and ESG.

Is there sufficient evidence, for instance, to say that the outperformance is directly related to ESG? Or are companies with better earnings able to better afford ESG credentials, either through direct investment in attaining a stronger rating, or via 'greenwashing'?

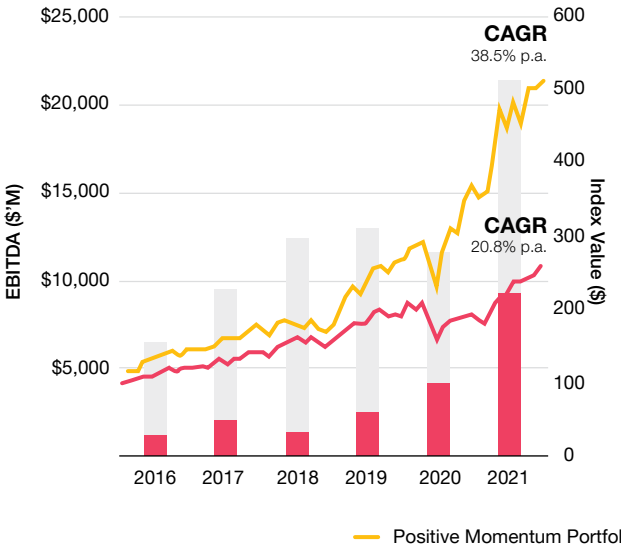
Fortunately, when it comes greenwashing the market is becoming more mature, and investors are recognising and rewarding those that are actually delivering on ESG goals and putting in place sustainability measures (as opposed to those that are setting lofty goals without any real substance or strategy for achieving those goals).

Value-Weighted Total Shareholder Return



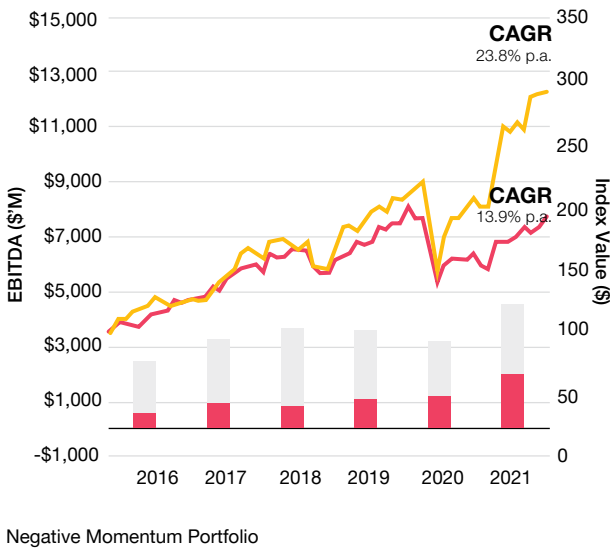
Australia (Positive Vs Negative Momentum)

Value-Weighted TSR vs. EBITDA, 30 Jun 16 to 30 Jun 21



Australia (Positive Vs Negative Momentum)

Equal-Weighted TSR vs. EBITDA, 30 Jun 16 to 30 Jun 21



Positive Momentum Portfolio — Negative Momentum Portfolio

To test the presumption that strong ESG portfolio returns are simply a measure of strong earnings, we tested the relative returns on two portfolios: i) a 'positive momentum' portfolio (i.e. those that have significantly improved their ESG credentials over time); and ii) a 'negative momentum' portfolio (i.e. those with declining ESG scores). We tested the portfolio returns by both value weighting (market capitalisation) and equal weighting the analysis, to remove the potential for large company bias.

Interestingly, we are seeing a surprising result. In both comparisons, we see strong outperformance from the positive momentum portfolio, even with a lower earnings base. This result seemingly debunks the argument that ESG performance comes only after stronger earnings.

The above analysis was conducted across the ASX. We have replicated this analysis across multiple other jurisdictions with the same outcome. (With one exception, which we believe represents a significant market opportunity).

We have also conducted similar analysis looking across various sectors, and looking into relative discount rate component differentials for 'leader versus laggard' portfolios and 'positive versus negative momentum' portfolios, to identify the potential discount rate impact that can be incorporated into impairment and investment decision models. While varying for different sectors, the results indicate upwards of a 100bps differential in the weighted average cost of capital (WACC) for carbon intensive companies.

This differential suggests that those with strong ESG credentials can achieve a lower required return on capital from either a reduction in risk of future earnings estimates, or investors finding them more attractive for portfolio purposes. (It is likely to be both). This is particularly important for carbon intensive sectors who should gain the most from investors' risk aversion.

Our conclusions strongly support the benefits of sustainable value creation from improved ESG strategy and performance. Many of the companies in the positive momentum portfolio were significant laggards in their industries and yet have demonstrated a proven track record of ESG turnaround, and their shareholders have reaped the benefits.

ESG reporting

The Australian regulatory environment currently has limited ESG reporting obligations, with no change on the immediate horizon. The large number of available frameworks and standards, and the relative lack of convergence to date, is frustrating.

Globally, a convergence of standards has commenced, and a more sophisticated regulatory system is emerging. Territories that Australian companies commonly operate in (including New Zealand, the UK, and the EU) have increasingly active regulators that are mandating specific ESG disclosures. These range from Task Force on Climate-related Financial Disclosures (TCFD) reporting, to detailed disclosures on the extent to which a company's revenue is sustainable (based on jurisdictional definitions and thresholds).

Outside of the regulatory system, efforts to achieve reporting harmonisation have improved thanks to the International Financial Reporting Standards (IFRS) Foundation's proposal for an International Sustainability Standards Board, which was formally announced during the recent COP26 summit in Glasgow.[1] Given the IFRS Foundation's global reach, this development creates an opportunity for the creation of globally accepted sustainability standards. The focus on climate is clear with the concurrent publication of prototype climate and general disclosure requirements. Regulators will inevitably follow the lead of the ISSB. All this means Australia's ESG reporting regulatory regime is becoming increasingly irrelevant.

The global landscape sees robust ESG reporting as a necessary hygiene factor for operating, and the most common standards and frameworks adopted or referenced by the mining industry, to date, are:

- International Council on Mining & Metals Mining Principles
- UN Sustainable Development Goals
- Global Reporting Initiative (GRI) Standards
- Sustainability Accounting Standards Board (SASB - now the Value Reporting Foundation) Standards

SASB has a specific standard focused on the metals and mining industry. While a mining sector-specific standard is also currently under development by the GRI.

1. https://www.ifrs.org/news-and-events/news/2021/11/ifrs-foundation-announces-issb-consolidation-with-cdsb-vrf-publication-of-prototypes/

Insights from current ESG reporting

We recently analysed the ESG reporting and governance of the ASX200, including 22 of the higher-ranked members of the MT50. Findings showed:

Areas where the MT50 is ahead of their peers within the ASX200

- Governance processes re: ESG, including board skills and commitment, and executive remuneration linked to ESG performance
- Disclosures around material ESG topics
- Alignment of strategies with the UN Sustainable Development Goals

Areas where the MT50 is lagging the ASX200

- Quality of communication with stakeholders
- Diversity and inclusion disclosures
- Response to the COVID-19 pandemic

Any miners that address these issues, and seize ESG opportunities, can expect to enjoy superior returns. Research shows that ESG-linked funds have delivered consistently high returns in recent years. This should not be a surprise, as a long-term strategy with a focus on risk mitigation and careful consideration of opportunities, with a lens on non-financial as well as financial aspects, sounds suspiciously like common sense.

Increase in transformational deals

The MT50 has seen several transformational deals in the past few years – across gold, battery minerals and copper.

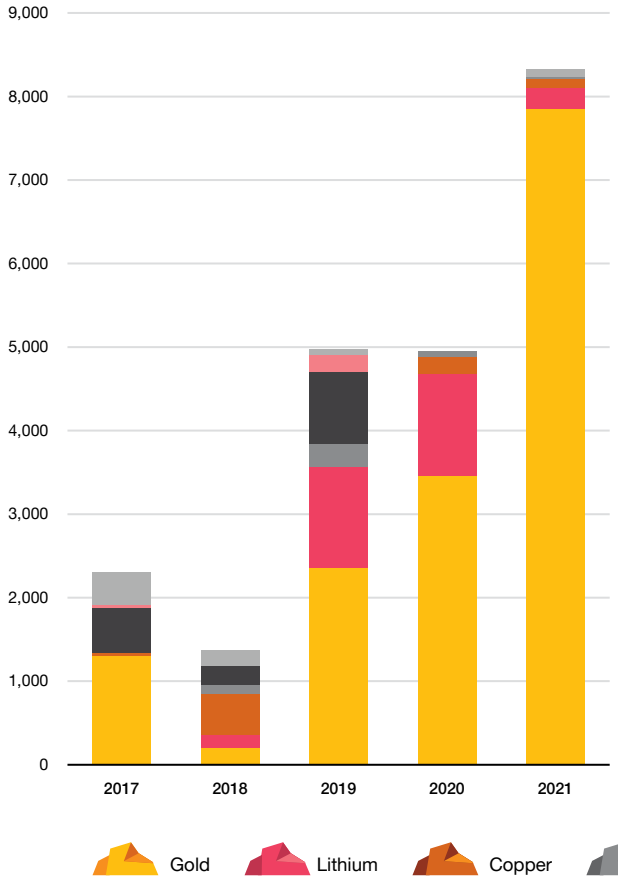
While the number of deals completed in 2021 was at the lowest level since 2017, the $8.3 billion value of these deals was significantly higher. In fact, we haven't seen deal value this high since the coal and gold transactions in the 2010-12 period. Gold is again the dominant theme in deal activity, by both value and number of transactions.

The standout deal of the year was the Northern Star Resources/Saracen Mineral Holdings merger, which brought together the Super Pit ownership interests. The previous year saw Saracen acquiring Barrick's half of the Super Pit interest and Northern Star acquiring Newmont's half. Northern Star emerges from these transactions as Australia's second largest gold producer after Newcrest Mining.

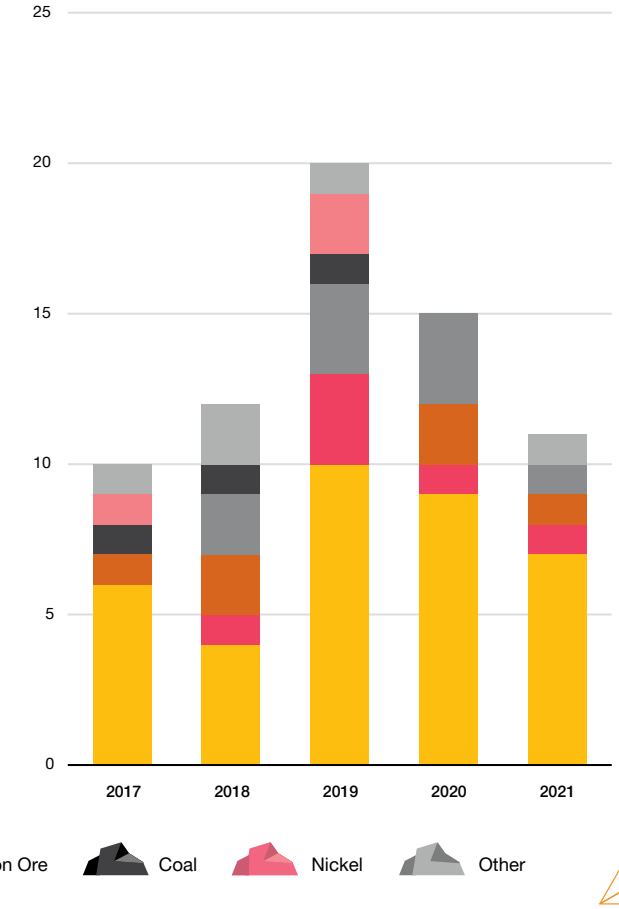
Evolution Mining also continues its growth through acquisitions, with the Battle North transaction during the year and the Kundana transaction announced shortly after.

Deals by number, value and commodity

Deal activity - estimated aggregate deal value ($m)



Deal activity by number of transactions



Deal activity is reshaping the Australian mining landscape

Several Australian mid-tier miners are undergoing significant transformations, built heavily on deal activity over the past few years:

Company	Acquisitions 2020-21 $b	Significant deals
Northern Star Resources	7.4	Acquired 50% of the Super Pit in FY20 and merged with Saracen Minerals in FY21, forming Australia's second largest gold producer
Mineral Resources		Sold 60% of Wodgina Lithium Project to Albermarle in FY20, including a 40% interest in planned Kemerton Lithium Hydroxide Processing Plant
Evolution Mining	0.9	Acquired the Red Lake gold mine in Canada in FY20, and added the adjacent Battle North's assets in an FY21 acquisition. Acquired Northern Star's Kundana joint venture (JV) interests to support its Mungari operation in Kalgoorlie
IGO	1.9	$1.86b acquisition of a 49% interest in a lithium JV with Tianqi Lithium and divested its 30% interest in the Tropicana gold mine in an $889m deal with Regis Resources
Allkem (Orocobre)	1.8	Australia's two largest listed lithium companies, Orocobre and Galaxy Minerals, announced a merger during FY21 (completed in August 2021). The merged group will be renamed Allkem and aspires to become the 5th largest lithium chemical producer
Sandfire Resources	2.6	Announced the proposed acquisition of MATSA Copper for US$1.9b in September 2021
Regis Resources	0.9	Acquired IGO's 30% interest in the Tropicana gold mine in FY21

Deal outlook

We expect the higher level of deal activity to continue in FY22. In particular, we anticipate continued consolidation of gold companies, and interest in increased exposure to battery minerals, other critical minerals and energy transition metals.

Completed deals in 2021

Completion date	Target	Acquirer	Sector	Deal value (AUDm)	Percent sought (%)	MT50 connection	MT50 role
31-May-21	Tropicana Project	Regis Resources Limited	gold	889.0	30	IGO Limited / Regis Resources Limited	seller/ acquirer
19-May-21	Battle North Gold Corporation	Evolution Mining Limited	gold	371.5	100	Evolution Mining Limited	acquirer
16-Apr-21	Jupiter Mines Limited (ASX:JMS)	Ntsimbintle Holdings (Pty) Ltd	manganese	84.0	13.8	Jupiter Mines Limited	target
01-Apr-21	Altius Resources (Kamistiatusset Iron Ore Project)	Champion Iron Limited	iron ore	32.3	100	Champion Iron Limited	acquirer
22-Mar-21	Lithium Assets	Reed Industrial Minerals Pty Ltd.	lithium	17.5	100	Westgold Resources Limited	seller
03-Feb-21	Saracen Mineral Holdings Limited	Northern Star Resources Limited	gold	5,107.2	100	Northern Star Resources Limited	acquirer/ seller
20-Jan-21	Altura Lithium Operations Pty Ltd.	Pilbara Minerals Limited	lithium	244.9	100	Pilbara Minerals Limited	acquirer
17-Dec-20	Dargues Gold Mine Pty Ltd	Aurelia Metals Limited	gold	199.4	100	Aurelia Metals Limited	acquirer
15-Dec-20	Julimar Nickel-Copper-PGE Project	Chalice Mining Limited	gold	17.9	100	Chalice Mining Limited	acquirer
05-Oct-20	Cassini Resources Limited	OZ Minerals Limited	copper	98.7	100	OZ Minerals Limited	acquirer
25-Sep-20	Exore Resources Limited	Perseus Mining Limited	gold	64.9	100	Perseus Mining Limited	acquirer
01-Jul-20	Cracow Gold Mine of Evolution Mining Limited	Aeris Resources Limited	gold	75.0	100	Evolution Mining Limited	seller

Completed deals post June 2021

Completion date	Target	Acquirer	Sector	Deal value (AUDm)	Percent sought (%)	MT50 connection	MT50 role
16-Aug-21	Galaxy Resources Limited	Orocobre Limited	lithium	1,840.4	100	Orocobre Limited	acquirer/ target
16-Sep-21	Central Tanami Project	Northern Star Resources Limited	gold	15.0	10	Northern Star Resources Limited	acquirer / seller
18-Aug-21	Kundana Assets	Evolution Mining Limited	gold	400	-	Evolution Mining Limited Northern Star Resources	acquirer
03-Sep-21	Red Hill Iron Ore Joint Venture	Mineral Resources Limited	iron ore	400	40	Mineral Resources Limited	acquirer
19-Aug-21	Bibiani Gold Mine in Ghana	Asante Gold Corporation	gold	122.1	100	Resolute Mining Limited	seller
14-Jul-21	Kin Mining NL	St Barbara Limited	gold	25.3	19.8	St Barbara Limited	acquirer

2021 deals pending completion

Completion date	Target	Acquirer	Sector	Deal value (AUDm)	Percent sought (%)	MT50 connection	MT50 role
19-Apr-21	Additional properties at Jullmar Nickel-Copper-PGE Project	Chalice Mining Limited	base metals	17.9	100	Chalice Mining Limited	acquirer
16-Oct-20	Nickel Project in North Maluku	Nickel Mines Limited	base metals	723.7	80	Nickel Mines Limited	acquirer
21-Sep-20	Manono Lithium and Tin Project	AVZ Minerals Limited	lithium	21.5	10	AVZ Minerals Limited	acquirer
04-Aug-21	New Lenton Coal Pty. Limited	Bowen Coking Coal Limited	coal	27.5	100	New Hope Corporation Limited	seller
23-Sep-21	Minas de Aguas Teñidas, S.A.U.	Sandfire Resources Limited	copper/ zinc/lead	2,556.5	100	Sandfire Resources Limited	acquirer
30-Sep-21	Gascoyne Resources Limited	Westgold Resources Limited	gold	164.5	100	Westgold Resources Limited	acquirer
21-Oct-21	Apollo Consolidated Limited	Gold Road Resources Limited	gold	132.3	80.1	Gold Road Resources Limited	acquirer
25-Oct-21	Kiaka Gold Project Located in Burkina Faso	West African Resources Limited	gold	120.7	81	West African Resources Limited	acquirer

2010-12 was the peak deals period for Australian MT50

The higher level of deal activity in FY21 remains quite modest compared to the

$45b

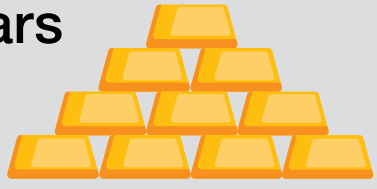
in deals recorded in 2010-12. Almost half the deal value in this period was in coal transactions.

The

$5.1b

Saracen Minerals acquisition by Northern Star is the second highest value deal in the past

15 years



Communicating your tax contributions

The tax and royalty contributions of miners have never been more in the public spotlight. Due to the COVID-19 pandemic, governments around the world are not only grappling with a combined health and economic crisis, but also: how to fund it. Add surging ESG expectations, and the nation's gaze is firmly on miners to show how they are making a positive fiscal contribution to society.

Would the public say Australian miners are playing their part?

Our analysis suggests the MT50 are contributing, and they have a good ESG story to tell. But do the public, regulators and governments agree?

Income tax payments of the MT50 were up by more than 50% ($551 million) in the past financial year, to $1.6 billion. Additional increased tax payments look likely, as companies' tax losses from investment spending are being used up fast. It follows miners' investments in exploration and long-term projects that have reached commercial production.

This story should be told, but our review of the MT50's reporting suggests it's not being communicated. Less than 20% of the MT50 report on tax in a substantive way. Within that small cohort, there is a large variance in the level of detail in reporting. While it may be understandable for an explorer (who is more focused on the dollars going into the ground), the MT50 should not lose sight of what governments and society increasingly expect from that investment. It all comes down to demonstrating accountability.

In previous editions of Aussie Mine and Global Mine, we reported on various compulsory and voluntary tax transparency regimes. Only six of the MT50 have signed up to Australia's voluntary tax transparency code, voluntarily reporting their tax payments in detail. This is a missed opportunity to tell a good story beyond minimum reporting requirements of regimes such as the Extractive Industries Transparency Initiative (EITI), or country-specific requirements such as the Extractive Sector Transparency Measures Act (ESTMA).

The expectations around tax governance and transparency will only continue to increase. That bar seems to be set even higher for miners, particularly in more emissions-intense parts of the sector. The MT50 should communicate the positive contributions they make to governments. And they should embrace the increasing expectations, because their story is a good one to be told.

Income tax payments payments up

>50% to $1.6b

Less than 20% of the MT50 report on tax in a meaningful way

Financial analysis

Profitability

Aggregate Income Statement	Consolidated			
	2021 ($m)	2020 ($m)	2021 v 2020 Var ($m)	2021 v 2020 Var (%)
Revenue from ordinary activities	32,793	29,215	3,578	12%
Operating expenses	(20,840)	(19,664)	(1,175)	6%
EBITDA	**11,953**	**9,551**	**2,403**	**25%**
Depreciation and amortisation	(5,493)	(4,847)	(646)	13%
Adjusted EBIT	**6,461**	**4,704**	**1,757**	**37%**
Impairments and one-off expenses	(2,918)	(1,510)	(1,408)	93%
Other non-operating items	4,829	1,936	2,893	149%
Profit before interest and tax	**8,371**	**5,130**	**3,242**	**63%**
Net interest expense	(713)	(637)	(76)	12%
Income tax expense	(2,276)	(1,516)	(759)	*50%*
Net profit	**5,383**	**2,977**	**2,406**	**81%**
Adjusted net profit	**4,822**	**2,675**	**1,193**	**80%**

Profitability measures	2021	2020
EBITDA Margin	36%	33%
Net profit margin	16%	10%
Return on capital employed	11%	8%
Return on equity	7%	6%

Source: Capital IQ, PwC analysis

The trends we reported in Aussie Mine 2020 continued into 2021, with iron ore and gold on the rise, and coal continuing to slide. However, the tides might be turning in 2022.

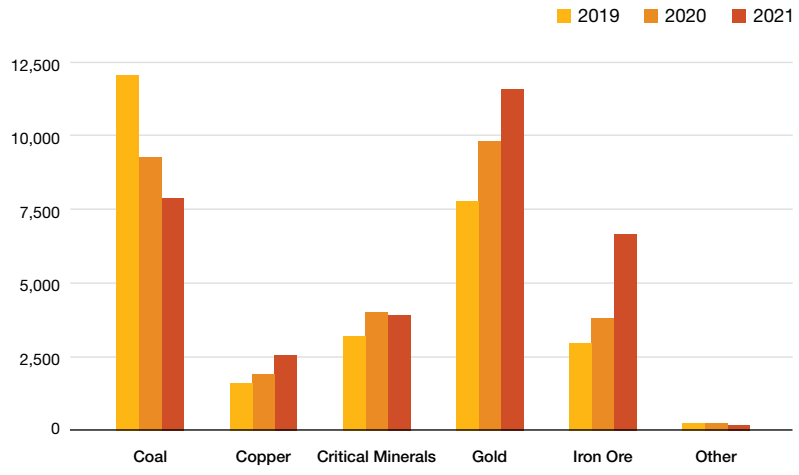
Strong prices for iron ore, copper, nickel and lithium during FY21 supported higher revenues, while coal prices remained relatively weak. The four months to October 2021 have seen reversed fortunes for coal and iron ore, with coal prices reaching record highs, and iron ore prices halving from the record highs achieved in late FY21.

The trend over the past two years for iron ore, gold and coal is significant. Iron ore revenue in FY21 was more than double the revenue in FY19, while gold revenue increased by 50%. Revenue from the MT50 coal producers, however, was one-third lower than FY19 revenue, reflecting weaker coal prices.

Three transactions during the year resulted in significant other non-operating income items:

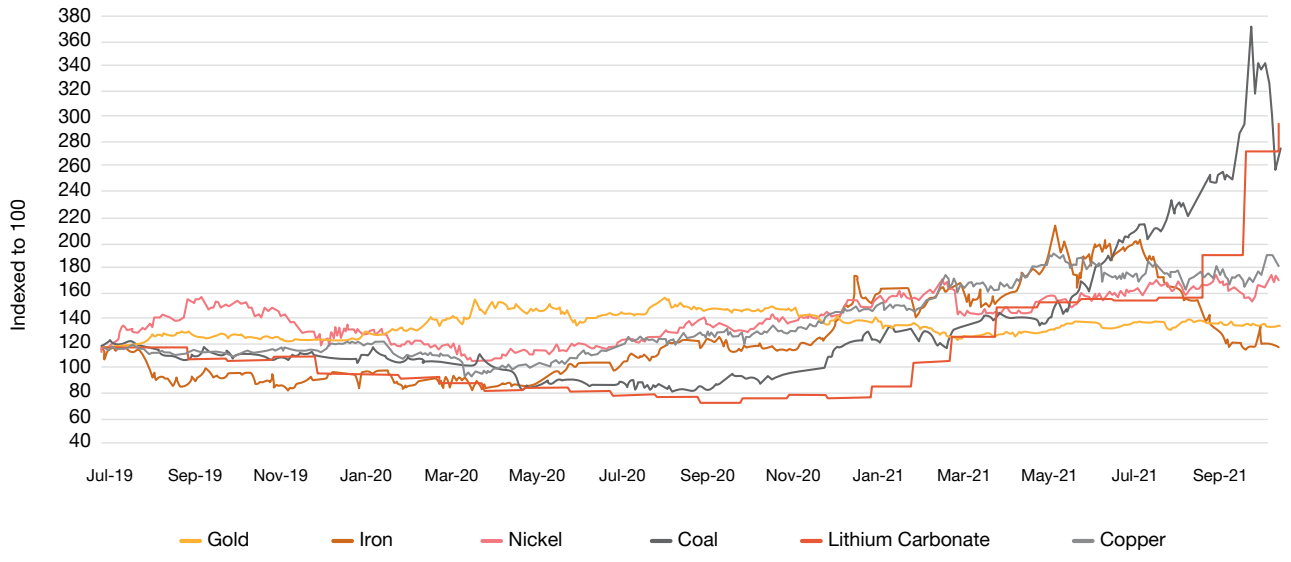
- The demerger of **Deterra Royalties** from **Iluka Resources** saw Iluka recognise a $2.2 billion fair value gain.
- **Northern Star/Saracen Minerals** merger, which resulted in a $1.3 billion gain from the revaluation of Northern Star's existing KCGM JV interest.
- A gain of $385 million from the sale of IGO's 30% interest in the Tropicana gold mine to **Regis Resources**.

Revenue by mineral group ($m)



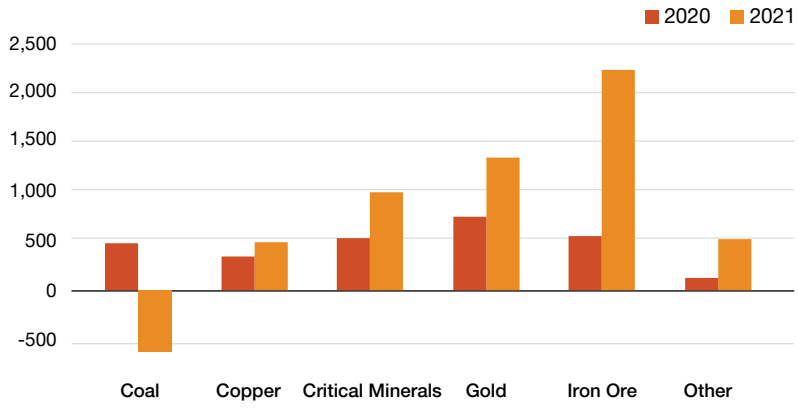
Source: Capital IQ, PwC analysis

Price index for key commodities (in A$)



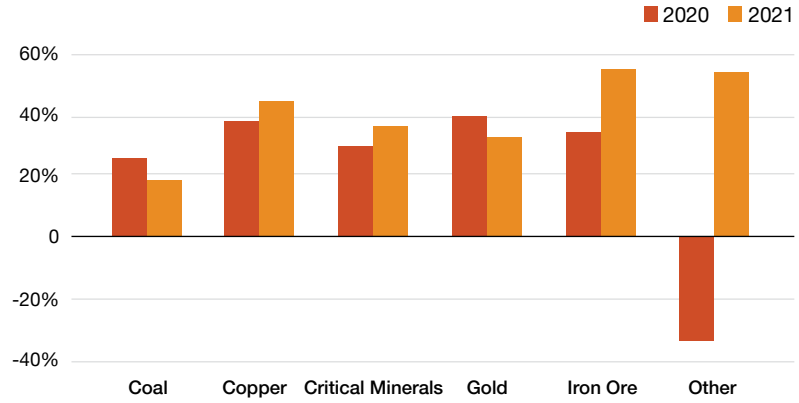
Source: Capital IQ, PwC analysis

Adjusted net profit by mineral group ($m)



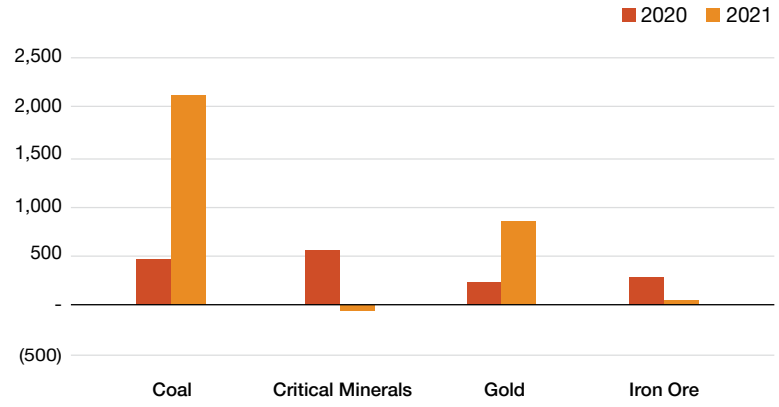
Source: Capital IQ, PwC analysis

EBITDA margin by mineral group ($m)



Source: Capital IQ, PwC analysis

Impairment and one-off expenses by mineral group ($m)



Source: Capital IQ, PwC analysis

Gold

2021 was a year of continued growth for Australian gold miners with acquisitions, expansions and new projects. While several existing mines saw a decline in volumes, overall production grew in 2021.

Northern Star and **Evolution Mining** have led Australian gold's transformational growth in the past few years. **St Barbara** recognised a $350 million impairment loss on Atlantic Operations' mineral rights due to significant delays in commencement of mining from these future mines.

Iron ore

Iron ore companies enjoyed rising prices during 2021, which, along with strong production volumes, contributed to increased revenues (74%). The combined profit from the four iron ore companies represented more than half of the aggregate adjusted profit of the MT50. The **Mineral Resources** result of $1.2 billion was the standout contributor, at nearly half the total profit from iron ore and 23% of the aggregate MT50 profit. However, in the first quarter of 2022, property and construction industry challenges in China contributed to a drop in demand, applying downward pressure on the prices. Notably, **Mount Gibson** suspended operations at its Shine iron ore project post year end in order to contain expenses following a drop in prices and rise in shipping costs. The outlook for 2022 and beyond is uncertain. However, further price drops seem to be the consensus with analysts.

Critical minerals

Lithium and nickel prices increased significantly from the beginning of FY21 and are continuing to increase through to October 2021. While lithium product prices were weak in the first half of FY21, demand is increasing significantly and FY22 looks set to be a period of tight supply and very high prices. Nickel also reached a new decade-high price milestone in October 2021.

Coal

Coal prices remained suppressed throughout FY21, with reduced demand from China, as well as environmental pressures on coal proving a growing concern for producers and investors. These factors led to a 15% drop in revenue, putting pressure on mine lives and pricing assumptions. Impairment losses in coal have continued and the coal sector is the only one with book values of net assets exceeding market capitalisations. **Whitehaven** recognised a $650 million impairment as a result of revised mine plans and a subsequent reduction in reserves. **Yancoal** also recorded a $1.4 billion loss on the reconsolidation of its investment in Watagan upon restructuring and refinancing the bond arrangement with external financiers.

The first quarter of FY22 saw increased prices, driven by increased demand, resulting from the northern hemisphere winter and supply challenges in the largest coal mining hub in China. Analysts do not expect these record high prices to be sustained during 2022.

Copper

Price growth to record levels and strong production volumes contributed to a 34% increase in copper revenues and an even higher profitability growth of 80%. Profits generated by the MT50 copper companies continue to be invested in new projects and acquisitions, most notably a US$1.9 billion acquisition by Sandfire Resources announced in September 2021.

Balance sheet analysis

Aggregate balance sheet	Consolidated			
	2021 ($m)	2020 ($m)	2021 v 2020 Var ($m)	2021 v 2020 Var (%)
Current assets				
Cash	11,241	9,121	2,120	23%
Inventories	4,319	3,804	515	14%
Receivables	3,489	2,339	1,150	49%
Other current assets	815	599	216	36%
Total current assets	**19,864**	**15,863**	**4,001**	**25%**
Non-current assets				
Property, plant and equipment	55,944	46,586	9,359	20%
Other non-current assets	11,514	9,523	1,991	21%
Total non-current assets	**67,458**	**56,109**	**11,350**	**20%**
Total assets	**87,322**	**71,972**	**15,350**	**21%**
Current liabilities				
Accounts payable & other liabilities	6,284	5,263	1,022	19%
Borrowings	1,111	1,903	(792)	-42%
Leases	659	589	70	12%
Income tax payable	761	1,004	(243)	-24%
Total current liabilities	**8,815**	**8,759**	**57**	**1%**
Non-current liabilities				
Borrowings	9,815	8,760	1,055	12%
Leases	1,906	1,465	442	30%
Deferred tax liability	3,382	2,497	885	35%
Other non-current liabilities	6,448	5,559	889	16%
Total non-current liabilities	**21,551**	**18,281**	**3,270**	**18%**
Total liabilities	**30,367**	**27,040**	**3,327**	**12%**
Net assets, shareholder equity	**56,955**	**44,932**	**12,023**	**27%**

Source: Capital IQ, PwC analysis

The MT50 is in good shape after the sector's strong financial performance in FY21. Also due to equity raises mainly supporting growth. High prices (notably iron ore and copper), and the resulting higher operating cash flows, allowed debt to be repaid and boosted cash balances.

This balance sheet strength and positive outlook supports the MT50's ESG strategic shifts. This, in turn, supports long-term value, trust and growth.

Net assets and market capitalisation

Net assets increased 27% to $57 billion. The record increase was led by gold, iron ore and critical minerals, each with a 50% increase in net assets (partly offset by a drop in coal net assets of 14%). Over $10 billion in equity was raised during the year. In fact, equity was the dominant feature of the increase in net assets. **Northern Star** represented more than half of this equity, realised via its merger with **Saracen Mineral Holdings**, resulting in $5.1 billion of new equity and a $1.3 billion gain on revaluing its existing 50% interest in the KCGM JV. **IGO's** net assets increased by $1.3 billion, mainly from the $766 million equity raised to fund the Tianqi Lithium JV interest and the $385 million after-tax gain from the sale of its 30% interest in Tropicana. **Mineral Resources** led the increase for iron ore with a $1.2 billion profit and finished the year with a cash balance of $1.5 billion.

Other notable observations include:

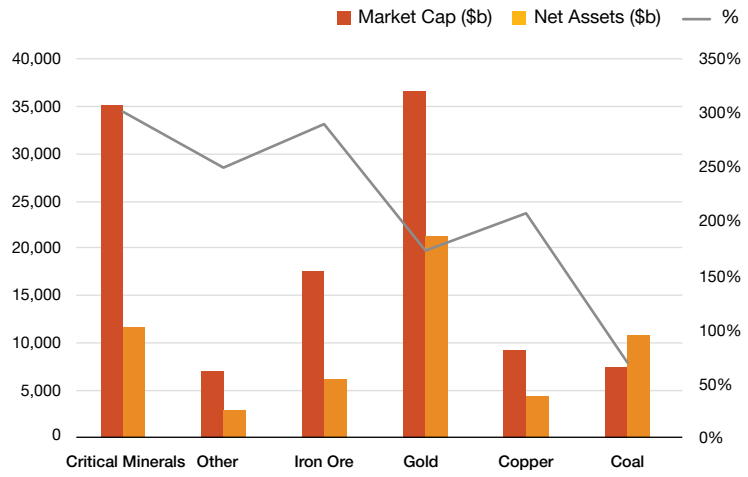
- Property, plant and equipment is up by 20% or $9.3 billion. More than two-thirds of this is attributed to the **Northern Star/ Saracen** merger.
- Deferred tax liabilities are up 35% ($0.9 billion) as the MT50 continues to utilise tax losses, signalling increased tax payments in coming years.

The aggregate market capitalisation of the MT50 increased by 50% to a record $113 billion, mainly driven by iron ore, critical minerals and copper.

Market capitalisation

Gold 8% decrease **$36.5b**	**Northern Star** increased 15% to $11.4b (after $5.1b new equity raised in the Saracen merger) **Evolution Mining** decreased 20% to $7.7b **Perseus Mining** increased 17% to $1.8b	9% decrease to Oct 21 in line with the gold price tapering off
Critical minerals 167% increase **$35.1b**	**IGO** increased 101% to $5.8b **Pilbara Minerals** increased 656% to $4.2b **Lynas Rare Earths** increased 280% to $5.1b	46% increase to Oct 21 as lithium and nickel prices continue to increase
Iron ore 178% increase **$17.6b**	**Mineral Resources** increased 55% to $10.1b **Champion Iron** increased 139% to $3.2b	24% decrease to Oct 21 as prices came off record highs
Copper 105% increase **$9.2b**	**Oz Minerals** increased 110% to $7.5b **Sandfire Resources** increased 35% to $1.2b	20% increase to Oct 21 as prices continue to increase and new record prices seen
Coal 20% increase **$7.4b**	**Whitehaven Coal** increased 37% to $1.9b **Coronado Coal** increased 58% to $1.4b **Yancoal** decreased 4% to $2.6b	56% increase to Oct 21 as prices shot up to record levels

MT50 Market Capitalisation vs Net Assets by mineral group ($m)

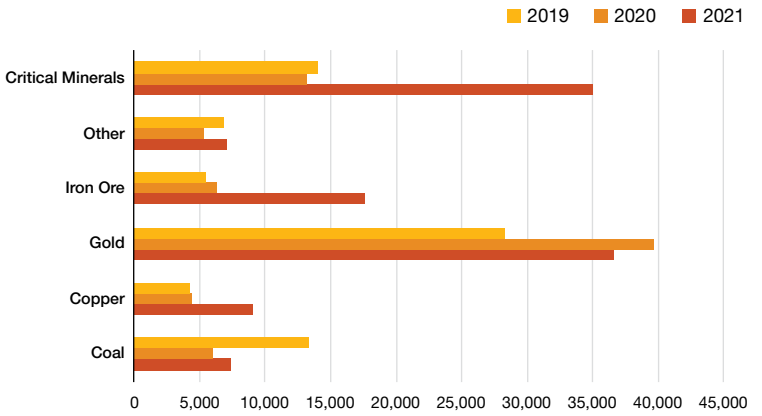


Source: Capital IQ, PwC analysis

The recorded book value of net assets for the MT50 coal miners continues to exceed market capitalisation (as at 30 June 2021). In particular, **Yancoal's** net assets exceeded its market capitalisation by approximately $4 billion, and **Whitehaven** by approximately $0.8 billion. By October 2021 however, this gap has closed as a result of the observed record coal prices.

There has been a dramatic shift in the iron ore and coal markets in the four months to October 2021. Iron ore prices have halved from their record highs during May-July 2021. The significant price decline has resulted in **Mt Gibson Iron** suspending production at its Shine project until market conditions improve. Both thermal and metallurgical coal prices have shot up to record levels as a result of a sharp increase in demand. This is welcome relief to coal producers who have endured several years of lower prices. Coal prices are not expected to stay at these record highs into 2022.

Trend in Market Capitalisation by mineral group ($m)

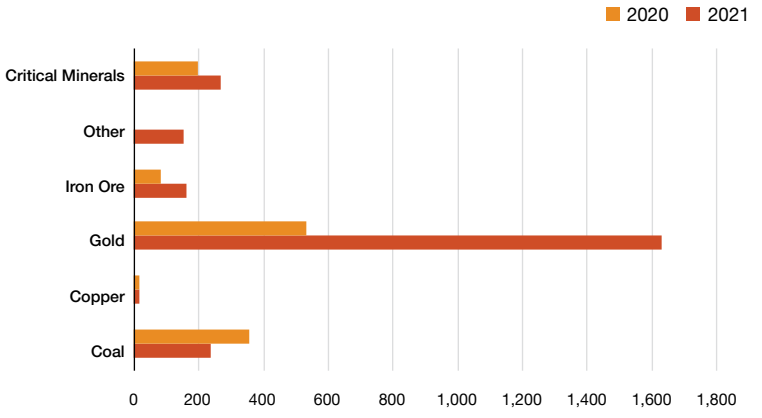


Source: Capital IQ, PwC analysis

Debt repayments continue, while gearing ratios keep falling

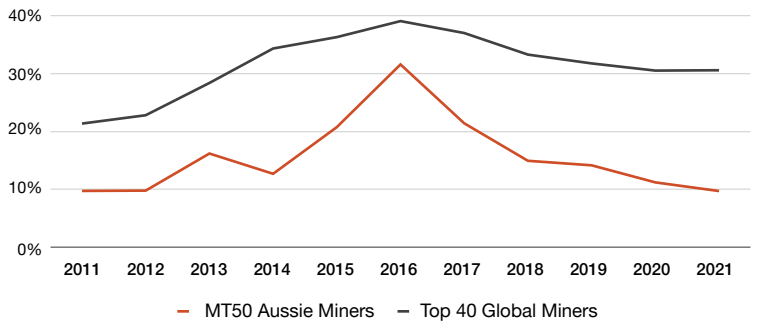
With the additional free cash flow generated during the year, most miners are continuing to repay debt, with total debt repayments up by approximately $2.5 billion in the current year. On the back of sustained higher gold prices, gold miners repaid a total debt of $1.6 billion, led largely by **Northern Star** ($1.1 billion) and **St Barbara** ($233 million). Gearing ratios continue to decline from the highs in 2016.

Debt repayments by mineral group ($m)



Source: Capital IQ, PwC analysis

MT50: Gearing Ratio (Average)



Source: Capital IQ, PwC analysis

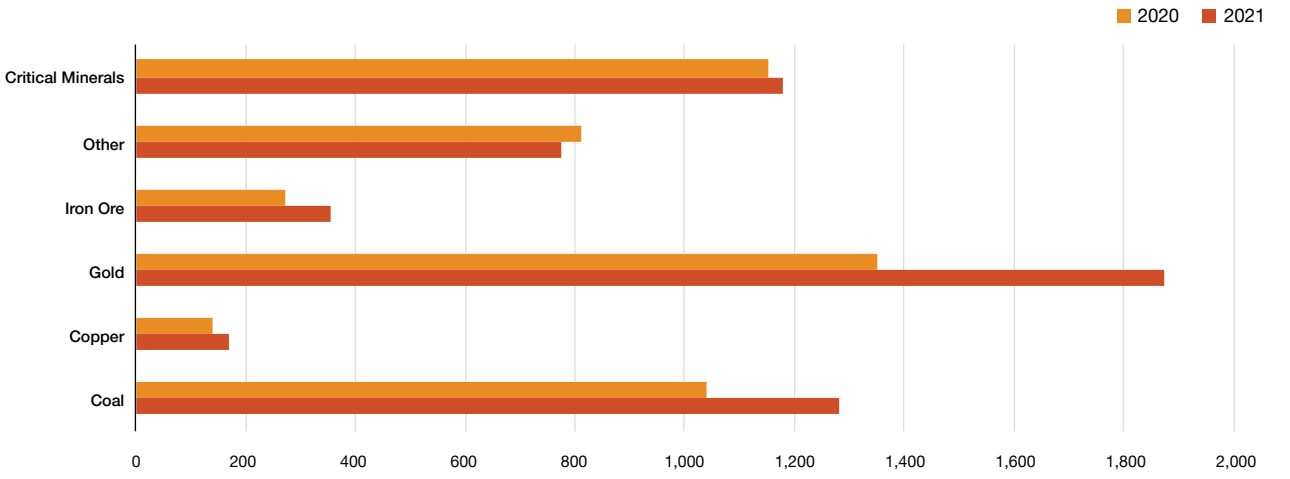
Equity raises

Twenty-six MT50 companies raised equity during FY21. This equity was mainly used to support growth activities, although several companies also needed to raise funds to manage uncertainty associated with the global pandemic (especially at the beginning of the financial year). **Northern Star** was the standout, with $5.1 billion issued as a result of the **Saracen Minerals** transaction. Other significant equity issuers were IGO ($766 million) to part-fund the acquisition of the Tianqi Lithium JV interest and **Regis Resources** ($650 million) to fund the Tropicana acquisition (from **IGO**). The trend to raise equity to support acquisitions has continued into the new financial year, with **Sandfire Resources** raising $1.2 billion in October 2021 to fund the MATSA copper project acquisition.

Rehabilitation provisions

Rehabilitation provisions have increased by approximately $0.9 billion or 18%. The most notable increases related to **Northern Star** which increased by $0.3 billion or 72% as a result of its merger with **Saracen**. The other notable increase was driven by **Yancoal** as a result of the Watagan reconsolidation. (This reconsolidation meant that Yancoal obtained control, and the financial results of Watagan are being fully consolidated into the Yancoal results. This has increased the rehabilitation liability for Yancoal by $0.3 billion or 80%.) The rehabilitation provisions for all other commodities have remained relatively flat compared to the prior year.

Analysis of rehabilitation provisions by mineral group ($m)



Source: Capital IQ, PwC analysis

Cash flows

Aggregate cash flow statement	Consolidated			
	2021 ($m)	2020 ($m)	2021 v 2020 Var ($m)	2021 v 2020 Var (%)
Cash generated from operations	**10,140**	**8,992**	**1,147**	**13%**
Investing activities				
Capital expenditure	(6,623)	(5,943)	(680)	11%
Cash acquisitions	(3,223)	(3,269)	46	-1%
Divestments	953	1,229	(1,146)	-93%
Other investing activities	(808)	(570)	631	-111%
Net investing cash flows	**(9,702)**	**(8,552)**	**(1,150)**	**13%**
Financing activities				
Debt issued	1,719	2,772	(1,053)	-38%
Debt repaid	(2,461)	(1,185)	(1,276)	108%
Proceeds from share issues	4,846	3,149	1,697	54%
Dividends paid	(1,636)	(2,758)	1,122	-41%
Share buybacks	(99)	(262)	162	-62%
Other financing activities	(531)	(329)	(201)	61%
Net financing cash flows	**1,838**	**1,386**	**452**	**33%**
Net cash flows	**2,277**	**1,827**	**450**	**25%**

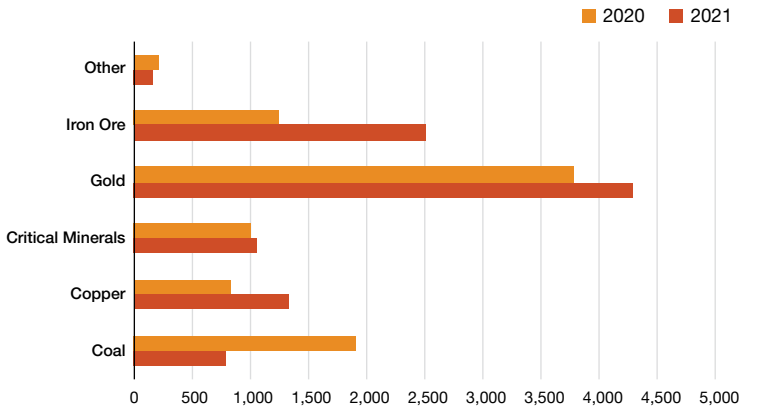
Source: Capital IQ, PwC analysis

Operating cash flows

Operating cash flows across the MT50 increased by 13%, boosted by iron ore and copper, which saw operating cash flows increase by 101% ($1.3 billion) and 60% ($0.5 billion) on the back of higher prices. The biggest decline in operating cash flows came from coal miners, with a decline of 58% ($1.1 billion) in operating cash flows due to continued low coal prices throughout the year.

Mineral Resources reaped the benefits of high iron ore prices, with a $715 million (30%) increase in operating cash flow to $1.3 billion (13% of the aggregate for the MT50). **Yancoal Australia** and **Coronado** saw large operating cash flow declines of $548 million (30%) and $504 million (67%), due to lower coal prices throughout the year. The coal miners' fortunes have changed dramatically since 30 June 2021, with prices soaring to record levels in the subsequent four months.

Operating cash flows by mineral group ($m)

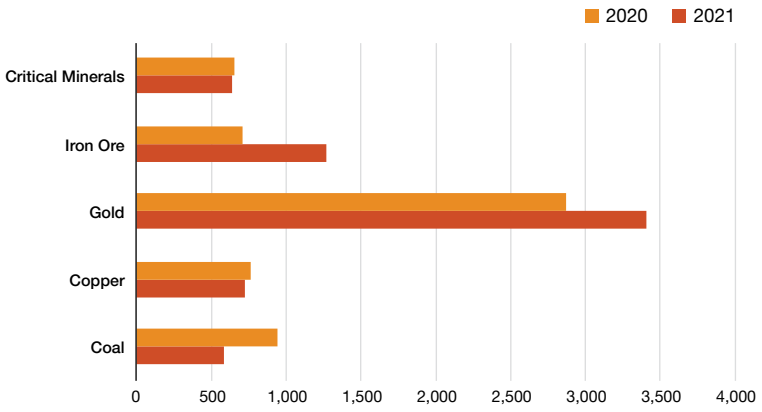


Source: Capital IQ, PwC analysis

Capital expenditure

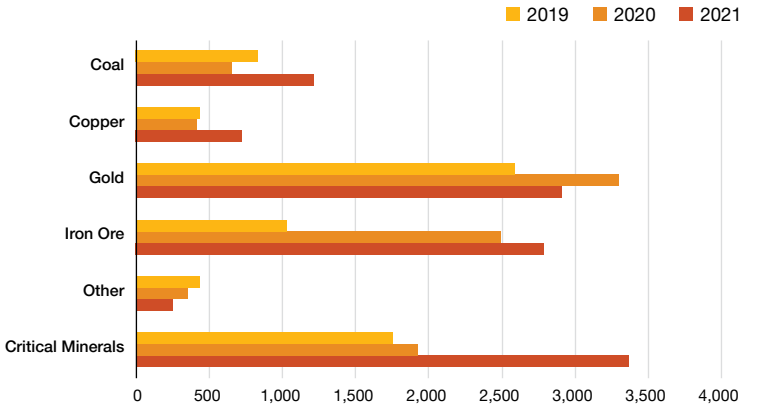
The $1.1 billion increase in operating cash flows across the MT50 was largely absorbed by a $680 million increase in capital expenditure to $6.6 billion (an 11% increase). The increase in capital expenditure shows that miners are benefiting from stronger operating cash flows, enabling them to invest in capital activities. Iron ore and gold miners saw the largest increase in capital expenditure, on the back of higher commodity prices. The top three spenders were **Mineral Resources, Northern Star** and **Oz Minerals.** They had a combined capital expenditure of approximately $2 billion.

Capex by mineral group ($m)



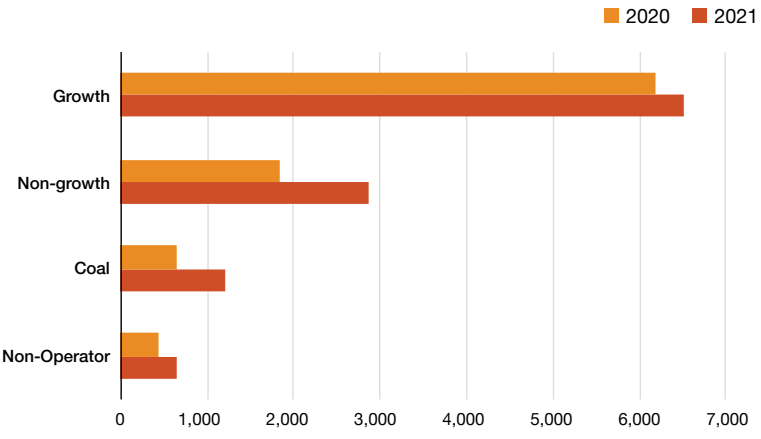
Source: Capital IQ, PwC analysis

Cash balances by mineral group ($m)



Source: Capital IQ, PwC analysis

Cash reserves by mineral group ($m)



Source: Capital IQ, PwC analysis

An expanded war chest

Such substantial cash reserves present the MT50 with some interesting capital allocation decisions. Strategies could include expansions, acquisitions, strengthening of existing infrastructure, and investments up and down the value chain. Execution of these strategies, however, will require disciplined, long-term, sustainable mindsets.

We have analysed the cash reserves of the MT50, as well as their growth plans and spending patterns. A group of growth-oriented companies ('growth miners') has emerged. These miners are characterised by significant acquisitions and substantial spending in growth capital. We have analysed the cash flows of growth miners separately from coal miners and other producing companies ('non-growth miners').

The cash reserves for growth miners increased by just 5%, while non-growth miners increased their cash holdings by 55%. Cash held by coal miners increased by 85%.

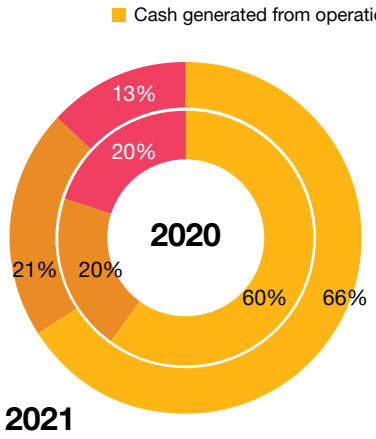
Growth miners

Our analysis shows the majority of cash inflows for operating companies were generated from operating activities, largely on the back of higher commodity prices. This is particularly the case for iron ore, copper and gold prices. Operating companies have also raised a significant amount of cash through equity. However, growth miners have raised more debt during the year compared to the other miners to fund their growth strategies.

A key divergence has been identified from our analysis. Growth miners reinvested 70% of their operating cash flows into capital expenditure and acquisitions. (Equity also contributed to funding growth projects.) Net debt repayments for growth miners represented only 7% of operating cash flows. Meanwhile, more than half of the $2.1 billion operating cash flow of non-growth miners was directed to reducing debt. The capital expenditure of growth miners increased by approximately 25%, while the capital expenditure decreased for coal companies (down 38%) and non-growth miners (down 3%).

Northern Star has proven the big spender, through its merger with Saracen. Also, **IGO** with its acquisition of a 49% interest in a lithium JV with Tianqi.

Growth Miners - cash inflows

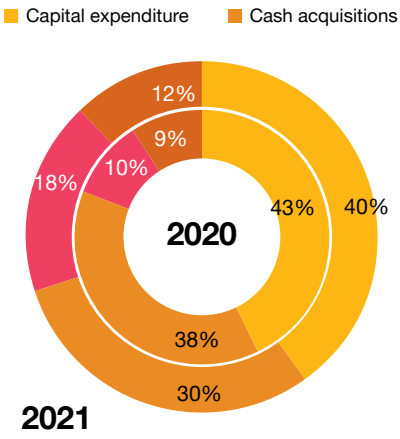


Cash inflows ($11.2b)

- Operating cash inflow increased by $1.7b (29%) to $7.4b
- Equity raises increased by $482m (26%) to $2.3b
- Net cash position increased by $327m (14%)

Source: Capital IQ, PwC analysis

Growth Miners - cash outflows



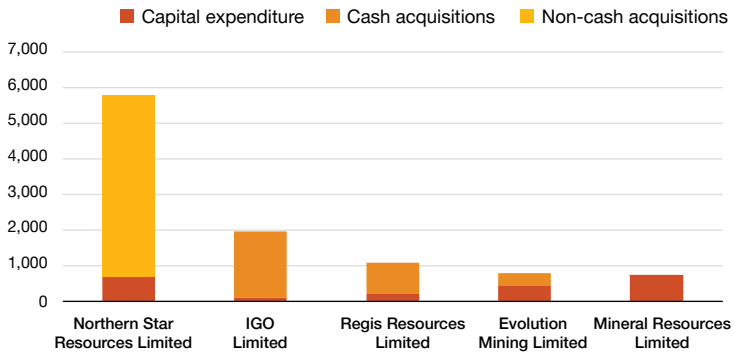
Cash outflows ($10.9b)

- Investment in capex and cash acquisitions increased by $939m (14%) to $7.6b
- Dividends increased by $539m (72%)

Source: Capital IQ, PwC analysis

Top 5 Growth miners ($m)

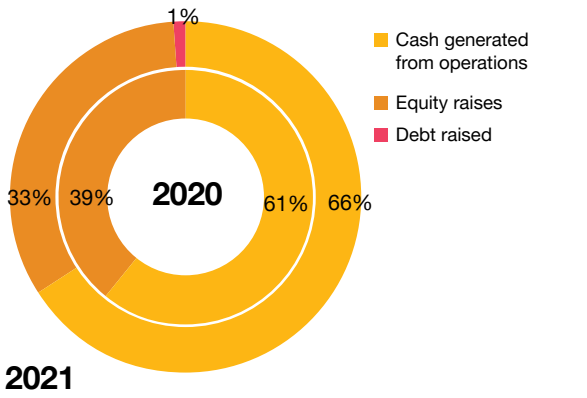
$m on capex and acquisitions



Source: Capital IQ, PwC analysis

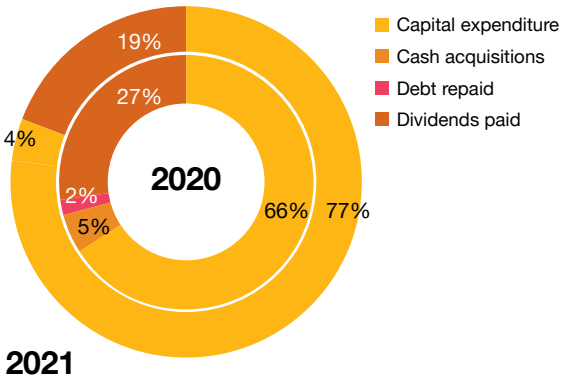
Non-growth miners

Non-growth - cash inflows



Source: Capital IQ, PwC analysis

Non-growth - cash outflows



Source: Capital IQ, PwC analysis

Cash inflows ($3.2b)

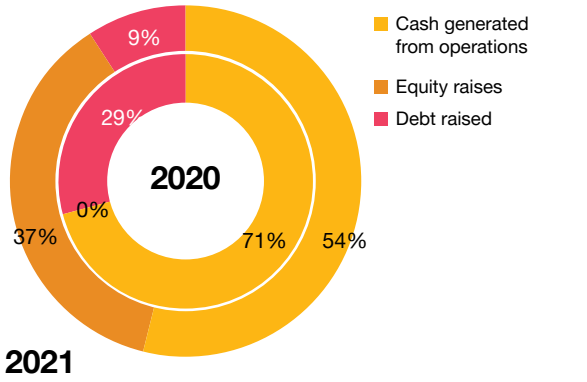
- Operating cash inflows increased by $628m (44%) to $2.1b
- Equity raises increased by $150m (17%) to $1.1b
- Net debt decreased by $1b (27%)

Cash outflows ($1.7b)

- Investment in capex and cash acquisitions decreased by $143m, funded by equity (85%) and operating cash flows 15%
- Dividends decreased by $232m (43%)

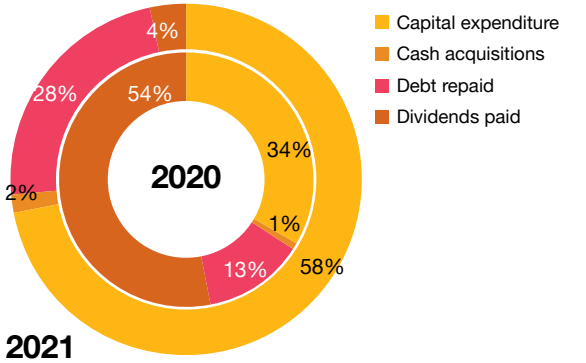
Coal miners

Coal miners - cash inflows



Source: Capital IQ, PwC analysis

Coal miners - cash outflows



Source: Capital IQ, PwC analysis

Cash inflows ($1.5b)

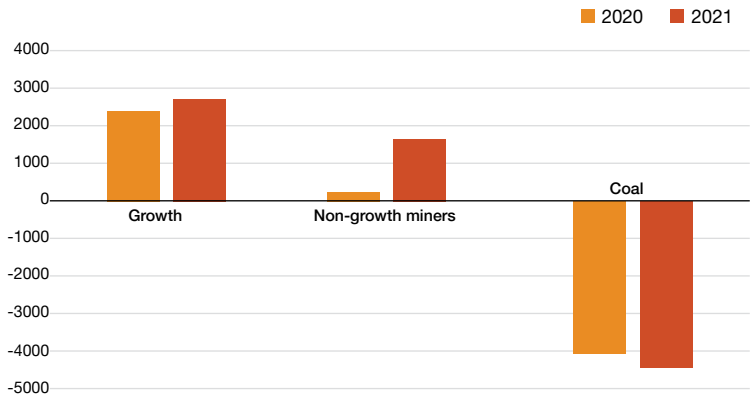
- Operating cash inflows decreased by $1.1b (58%) to $796m
- Equity of $555m raised (nil in FY20)
- Net debt increased by $380m (10%)
- Cash holdings increased by $558m (85%) to $1.2b

Cash outflows ($0.9b)

- Investment in capex and cash acquisitions decreased by $376m
- Dividends decreased by $1.4b (98%)

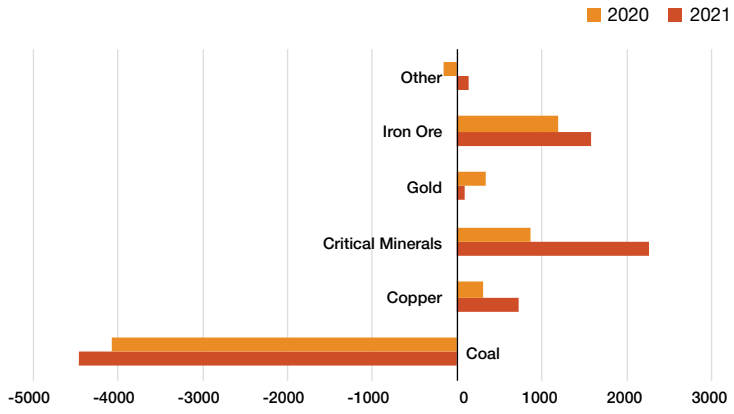
The market has been willing to support undeveloped critical minerals, gold and copper projects with equity funding. A total of $468 million has been raised by the MT50 non-operating companies, and cash reserves of $829 million remain for their respective projects (as at 30 June 2021). The exploration spend for non-operators was up by 13%.

Net cash / debt position ($m)



Source: Capital IQ, PwC analysis

Net cash / debt by mineral group ($m)



Source: Capital IQ, PwC analysis

When analysing the net cash (or net debt) position by mineral group, there is a substantial increase in the net cash position for critical minerals. This was mainly driven by **Lynas Rare Earths**, through its equity raise during the current year.

The net debt position of coal miners increased by $380 million to $4.5 billion, which was led by **Yancoal** and **Whitehaven**.

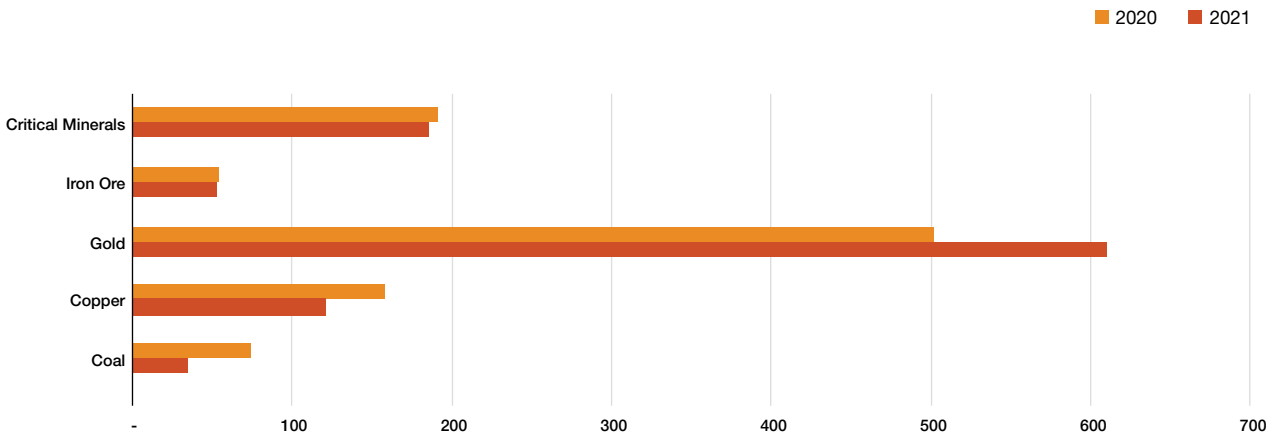
Exploration

The market has been willing to support undeveloped critical minerals, gold and copper projects with equity funding. A total of $468 million has been raised by the MT50 non-operating companies, and cash reserves of $829 million remain for their respective projects (as at 30 June 2021). The exploration spend for non-operators was up by 13%.

Decrease in shareholder cash returns

Shareholder returns were significantly lower this year, with a $1.1 billion (41%) decrease in dividends. Coal miners were largely behind the decrease. **Coronado Coal** and **Yancoal** paid no dividends in FY21 (compared to $1 billion in FY20). Only 17% of operating cash flow was directed to shareholders through dividends and share buybacks (compared to 33% in FY20).

Exploration spend by mineral group ($m)



Source: Capital IQ, PwC analysis

10-year trend

MT50 Aggregate (unless specified)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Market Cap ($bn)	72.5	50.7	35.4	36.6	36	53.2	46.9	78.4	79.8	85.4	112.8
Total Revenue ($bn)	11	18.8	21.3	23.8	28.7	23	16.8	23.5	30.4	30.1	32.8
EBITDA ($bn)	4	5.4	4.7	5	6.7	8.8	6.1	8.7	11.7	10	12
Operating Cashflow ($bn)	2.6	3.7	3.9	4.4	4.6	7.3	5.3	7.7	10.4	9.6	10.1
Impairment ($bn)	-0.1	1	3.2	1.7	5.4	1	0.9	0.1	0.5	1.6	2.9
Net Assets ($bn)	26.7	36.7	36.9	35.3	35	36.6	29.7	38.5	44.9	47.4	57
Dividends Paid ($bn)	0.4	1.2	0.7	0.6	0.5	0.8	0.6	1.5	2.8	2.3	1.6
Average ROE (%)	8.75%	7.01%	-1.10%	0.03%	0.20%	7.47%	9.29%	13.64%	14.10%	5.84%	7.23%

Source: Capital IQ, PwC analysis

Glossary

Terms	Definition
Battery minerals	The raw materials used in the production of batteries, including lithium, nickel, cobalt, manganese and graphite.
Capital employed	Property, plant and equipment plus current assets less current liabilities
Capital expenditure (capex)	Purchases of property, plant and equipment plus exploration expenditure CEO
Critical minerals	Minerals that are considered essential to the economy which have potential supply risks, including cobalt, lithium, graphite, manganese, mineral sands (titanium, zirconium), nickel, rare earth elements (REE).
EBIT, Adjusted EBIT	Earnings (profit) before interest and tax. Adjusted EBIT excludes the impact of impairments and one-off gains/losses
EBITDA	Earnings before interest, tax, depreciation, amortisation and impairments
EBITDA margin	EBITDA divided by revenue
Energy transition minerals	Minerals with application to energy transition technologies - batteries, EVs, hydrogen, solar and wind.
Gearing ratio	Net borrowings divided by (net borrowings plus equity)
M&A	Mergers and acquisitions
Market capitalisation	The market value of the equity of a company, calculated as the share price multiplied by the number of shares outstanding
Mid-tier 50 (MT50)	The 50 largest Australian listed mining companies outside of the ASX50. Some judgement is required for individual ASX-listed companies that may be managed outside of Australia or have been included in the ASX50 index for part of the year.
Net assets	Total assets less total liabilities
Net borrowings	Total borrowings less cash
Net profit margin	Net profit/revenue
Net profit, Adjusted net profit	Net profit after tax. Adjusted NPAT excludes the impact of impairment and other non-recurring one-off gains/losses
Return on capital employed (ROCE)	Net profit excluding impairment divided by capital employed
Return on equity (ROE)	Net profit divided by equity
Total borrowings	Long-term borrowings plus short-term borrowings (excluding lease liabilities)

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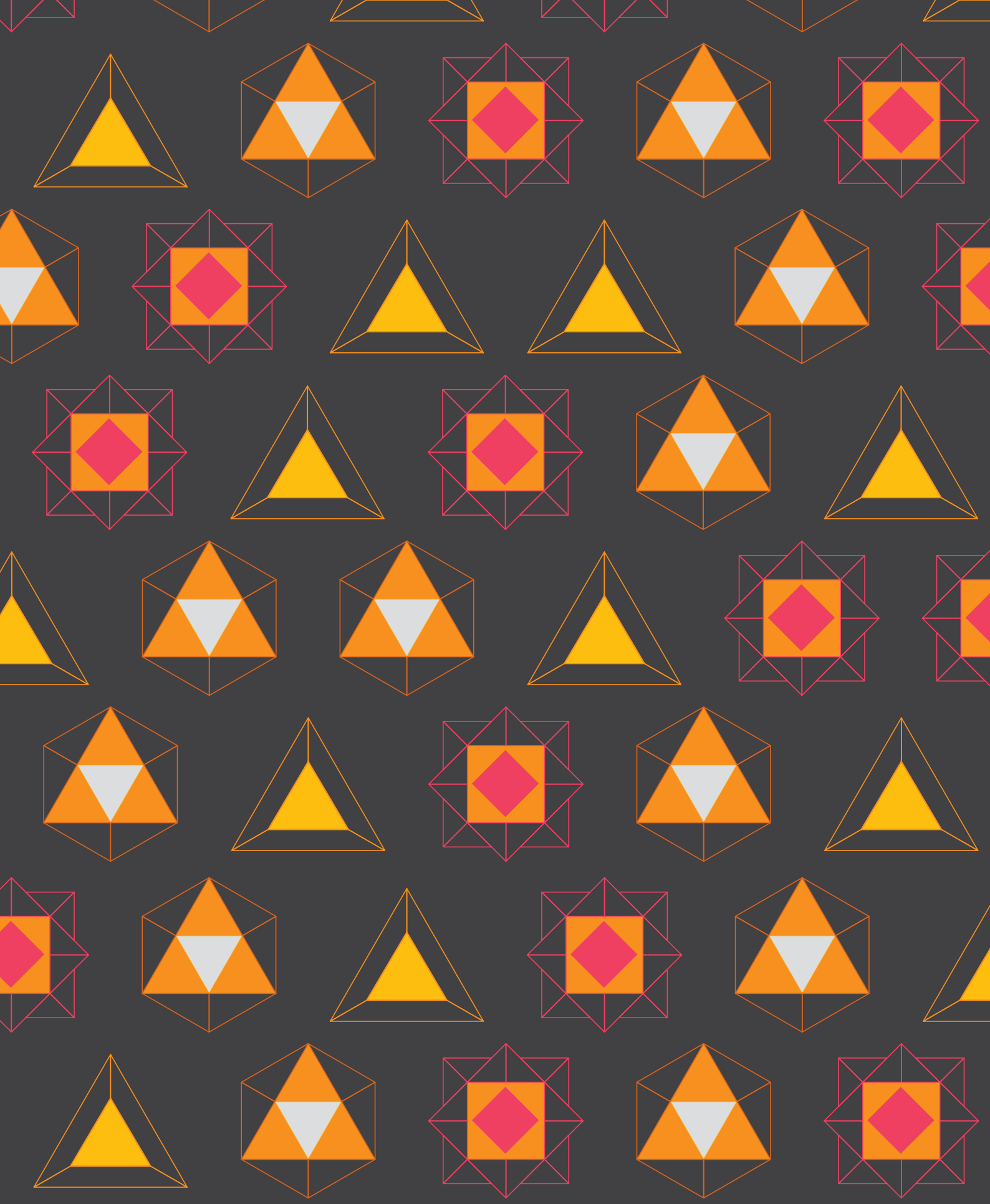

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