Making the grade

Are some miners chasing fool's gold?

November 2015

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CDP's sector research for investors provides the best and most tailored environmental data in the market. CDP's team of analysts takes an in-depth look at high emitting sectors one-by-one, starting with the automotive industry, electric utilities, diversified chemicals and now metals & mining. Forthcoming sectors include oil & gas and consumer goods.

This is the executive summary. The full report is available to CDP investor signatories and includes detailed analysis, methodology and recommended areas of engagement for investors to raise with company management teams. In addition, a separate engagement booklet providing further detail on company specific engagement ideas is available to CDP signatories on request.

For more information see

For more information see https://www.cdp.net/en-US/Pages/events/2015/sector-research-for-investors.aspx

Linking emissions-related metrics to earnings for diversified miners

- We launch our Super-League Table for diversified miners, ranking companies based on a number of emissions-related metrics which in aggregate could have a material impact on company performance.
- Highest ranked companies are: Vale and BHP Billiton.
- Lowest ranked companies: Glencore, First Quantum Minerals and Vedanta Resources.

Overview

This report, covering diversified miners, is the fourth in a series of investor-focused reports based on six high-emitting sectors (transport, electric utilities, materials, metals & mining, oil & gas and consumer goods). We have previously published reports on global auto manufacturers (February 2015), European electric utilities (May 2015) and global chemical companies (August 2015). Each report features the CDP Super-League Table (SLT) which ranks companies in an industry grouping on a number of mostly emissions-related metrics relevant to that industry. When taken in aggregate, we believe these metrics could have a material impact on company earnings and therefore investment decisions. In this report, we present a Super-League Table for diversified miners that ranks 11 of the largest (by market capitalization) and highest-emitting diversified mining companies.

Scope of report: key areas

There are five key areas in our SLT assessment:

- **Energy efficiency:** against a backdrop of deeper mining and lower ore qualities, which require greater energy to process, and increasingly remote locations of mining operations, with potential grid and transport constraints, leaders in energy efficiency will gain a competitive advantage and potentially enhanced earnings. Using emissions profiles as proxies, we assess each company's historical performance and future reduction targets.
- **Water resilience:** we assess the companies' exposure to water risk and how aware they are of these risks. We undertake facility-level analysis to assess which companies are at a greater risk of future production issues due to water stress.
- **Coal exposure:** coal faces tightening regulation and increasing competition from cleaner alternatives with implications for its economics. We examine the companies' exposure to both thermal and coking coal.
- **Carbon cost exposure:** we assess the emissions-related carbon cost exposure of mining companies in our study and the potential impact on earnings under current and future carbon price scenarios.
- **Carbon regulation readiness:** using InfluenceMap's[1] proprietary analysis, we assess each company's actions in supporting or opposing climate legislation. We believe that supportive firms are most likely to benefit from progressive climate agreements.

We note that the recent tragic Samarco mining disaster involving BHP and Vale has highlighted issues relating to tailings dams. This topic is outside the scope of our research, which focuses on climate change-related metrics; thus our SLT and this executive summary does not include analysis on tailings dam incidents. We have, however, undertaken some separate research (attached as an appendix to the full report) that assesses the companies' exposure to tailings dams incidents. BHP and Vale are in the lower half of companies assessed. We reiterate this analysis is not included in our SLT.

1. A UK-based not-for-profit organization whose remit is to map, analyze and score the extent to which corporations are influencing climate policy and legislation (www.influencemap.org).

Condensed summary of the Super-League Table for diversified miners

SLT rank	Company	Country	Market cap YTD 2015 (US$m)	Overall SLT Score	Energy efficiency grade	Water resilience grade	Coal exposure grade	Carbon cost exposure grade	Carbon regulation readiness grade	CDP performance band (2015) (ii)
1	Vale	Brazil	29,764	3.98	B	A	C	A	A	B
2	BHP Billiton	UK	109,548	4.26	A	B	D	B	C	B
3	Sumitomo Metal Mining	Japan	8,200	4.71	C	C	A	B	C	B
4	Rio Tinto	UK	75,617	5.66	B	C	C	C	D	B
5	Teck	Canada	6,078	5.76	C	B	D	D	B	B
6	Antofagasta	UK	10,017	5.79	D	E	A	B	A	D
7	Anglo American	UK	18,050	5.93	A	C	E	D	D	B
8	Freeport-McMoRan	USA	17,378	6.33	D	D	A	B	C	C
9	Vedanta Resources	UK	2,130	6.49	D	E	A	C	B	C
10	First Quantum Minerals	Canada	6,419	6.74	E	D	A	B	B	C
11	Glencore	Switzerland	45,814	8.95	E	D	E	E	E	C
Weights for each area (i)					**40%**	**20%**	**15%**	**10%**	**10%**	**5%**

(i) Weightings are adjusted for Vedanta Resources, as it was not sent CDP's 2015 water questionnaire.
(ii) This is the CDP annual performance band (A to E) awarded to companies that respond to CDP's climate change questionnaire. The distribution of A to E grades is awarded relative to 2,233 companies that respond to CDP.

Source: CDP

Non-responders to CDP

Organisation	Country	Market cap YTD 2015 (US$m)	First year approached by CDP	Reason for 2015 non-disclosure	Public disclosure of GHG emissions	Public disclosure of water use	Business activities & main commodity production
Norilsk Nickel	Russia	26,534	2005	Unable to disclose this year but want to in the future.	No	Partially	Vertically integrated metals & mining company with activities across exploration, extraction and mining spanning a number of commodities. World's largest nickel and palladium producer as well as a large copper and platinum producer.
Grupo Mexico	Mexico	21,838	2009	Company policy not to respond.	Partially	Partially	Integrated metals & mining company with operations in mining, smelting and refining areas with a focus on copper.
KGHM Polska Miedź	Poland	5,582	2009	No response.	Partially	No	Mining and processing activities of various metals. World leader in the production of silver, also produces copper.

Source: CDP, company data

Key Findings

The diversified mining industry has significant work to do on emissions-related topics. Areas of concern include:

- Lobbying: the industry's lobbying activities are generally against low carbon regulation. Only two companies (Antofagasta and Vale) were found to be mildly supportive of low carbon regulation, the remaining nine companies appear to be obstructive.

- Coal exposure: more than half of the companies are involved in coal production, and together they represent 40% of the global seaborne (export) market in coking coal and 27% in thermal coal.

- Emissions reduction target setting: the diversified mining industry compares poorly with other industry groups featured in our previous research reports. Only six of the 11 companies have meaningful emissions reduction targets and none of the companies have both an absolute emissions and intensity target.

We differentiate between the higher ranked companies and the lower ranked companies in our SLT:

- The largest non-responding companies to CDP's 2015 climate change questionnaire were Norilsk Nickel, Grupo Mexico and KGHM Polska Mied. These companies collectively represent US$54bn of market capitalization.

- Vale is ranked first with an overall SLT score of 3.98, notably ahead of second place (SLT score of 4.26). It ranked consistently well and achieved A or B-grades in all key areas, except for coal exposure where it received a C-grade (the highest grade available for companies with exposure to coal). It ranked first in both carbon cost exposure and water resilience and is supportive of progressive climate regulation - it achieved one of only two A-grades awarded for carbon regulation readiness.

- BHP Billiton is ranked second. It performed well in the two most important (and therefore highest-weighted) key areas. It is a leader in emissions reductions and related forward-looking targets. In May, BHP Billiton spun-off some of its assets to South32, a separate listed entity. This is not accounted for in our analysis as the latest available environmental data is for FY 2014.

- Sumitomo Metal Mining is ranked third. It is one of only two companies that achieved C-grades or higher across all key areas. It has amongst the lowest carbon cost exposure and has no coal activities.

- Rio Tinto is ranked fourth. It performed in the top half of companies in most key areas of our study, except for carbon regulation readiness where it is received a D-grade. This suggests that, although Rio Tinto appears to be obstructive to climate change regulation, particularly in Australia, it seems to be planning for a longer-term transition to a low-carbon environment.

- Glencore is a clear last place (SLT score of 8.95), with E-grades across all key areas except for water resilience. Its emissions intensity has been increasing over 2008-14 and it has significant thermal coal activities. It also appears to be obstructive to carbon regulation.

- Canadian miner First Quantum Minerals is ranked second from last. It performed badly in the two most important (and therefore highest-weighted) key areas; its emissions intensity has risen the most over 2008-14 and it has poor water resilience. However, it performed well across the other key areas, including carbon cost exposure, carbon regulatory readiness and coal exposure (it has no exposure to coal).

- The other Canadian company, Teck, is ranked fifth and receives a D-grade in both coal exposure and carbon cost exposure. It performed well in water resilience and carbon regulation readiness, receiving a B-grade in both key areas.

- Vedanta Resources, which primarily operates in India, ranked in the bottom three. It has the highest emissions intensity and received a D-grade for energy efficiency. In addition, it has the greatest proportion of its mining facilities in high risk areas for water stress and received an E-grade for water resilience.

- Antofagasta is ranked in the middle of the table (sixth place). Its performance was mixed. It performed well in three key areas, including carbon regulation readiness where it was one of only two companies that received an A-grade as it appears to be supportive of positive climate regulation. On the other hand it performed poorly in the two most important key areas, including water resilience where it received an E-grade, not helped by its operations being exclusively in Chile, a country with water stress issues.

- Freeport-McMoRan, the only American company, is in the lower half of the table (in eighth place). It performed badly in the two most important key areas and received D-grades for energy efficiency and water resilience. That said, it performed well in two of the key areas, carbon cost exposure and coal exposure (it has no exposure to coal).

Scope of report: company selection

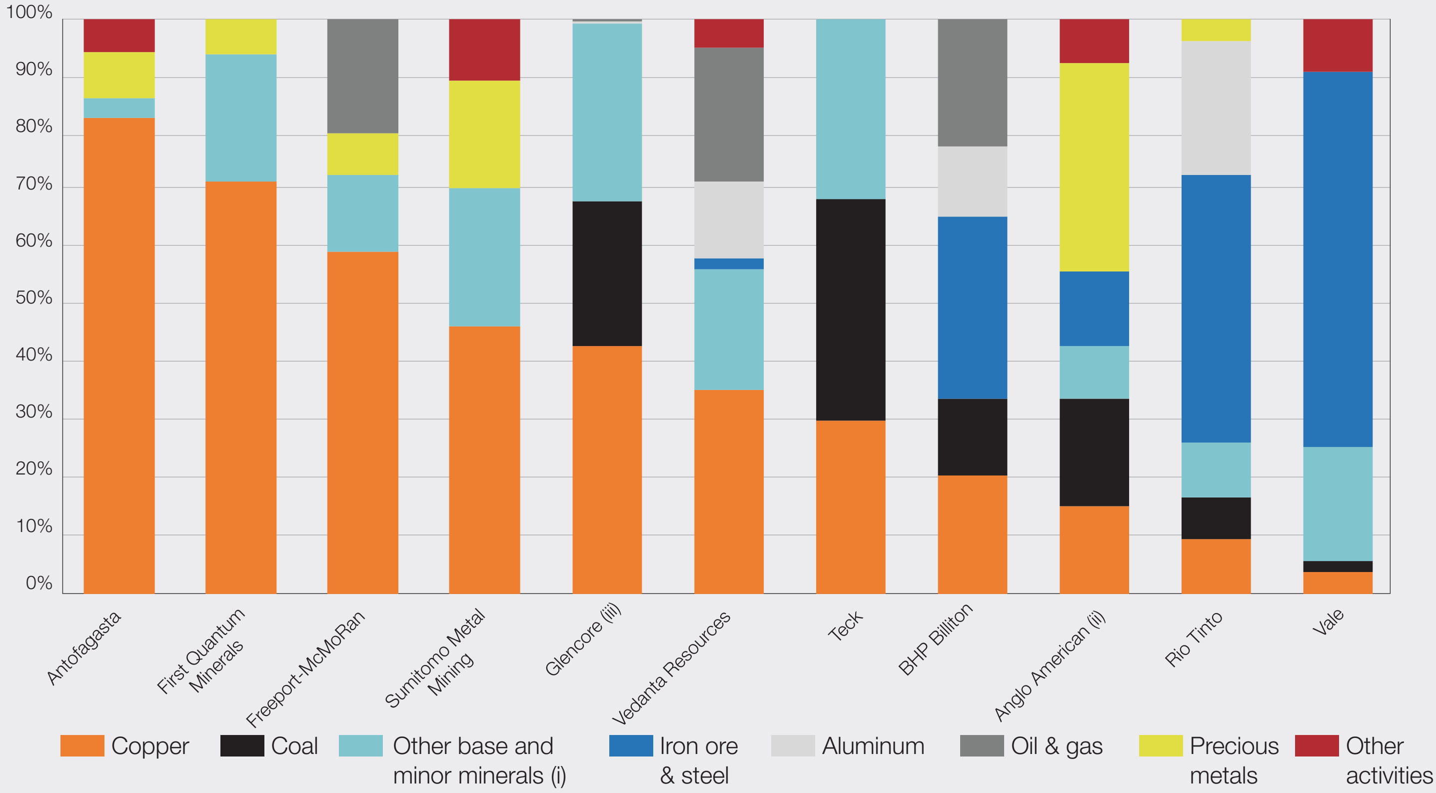
We selected the group of companies for our study as follows:

- Started with the 30 diversified metals & mining companies that responded to CDP's 2015 climate change questionnaire.
- Added Vale (often classified under the iron & steel sub-industry).
- Ranked the companies by market capitalization and selected the top 15 companies. This equated to companies with a total market value of about US$358bn.
- Reviewed the business activities of the 15 companies which resulted in the exclusion of:
    - Hindustan Zinc and Vedanta Limited – two subsidiaries of Vedanta Resources. However, we added Vedanta Resources to the list as environmental and financial information reported on its behalf covers both subsidiaries.
    - Mitsubishi Materials as its operations are largely focused downstream.
    - Boliden and Lundin, not only for their lower emissions, but also due to their small market capitalization relative to the remaining companies.

The chosen 11 companies together represent approximately US$329bn in market capitalization and account for 85% of the combined emissions (Scope 1+2) of the 30 companies that responded to CDP their operations span several commodity groups (see chart below) and are mostly upstream and extractive in nature, although several have mid-stream operations including metal refining and smelting (e.g. aluminum). Due to the dispersion of natural resources the majority of the companies' operations are global.

The SLT companies in aggregate represent 50% of the global seaborne (i.e. export) market in iron ore, 45% in copper, 40% in coking coal and 27% in thermal coal.

Revenue split by commodity in 2014



(i) Other base and minor metals include manganese ore and alloys, molybdenum, nickel and zinc.
(ii) Precious 'metals' component for Anglo American relates mostly to De Beers diamonds.
(iii) Glencore's revenue from marketing activities (85% share of its total revenue) is not included in the chart.

Source: CDP, company data

Linking our findings to investment choices

We recognize that investment decisions are based on a multitude of different factors and that some of these can be misaligned with emissions reduction efforts.

Our SLT rankings are not intended as definitive winners and losers for investment purposes, rather as a proxy for business-readiness in an industry likely to be significantly impacted by the more stringent carbon regulation needed to meet long-term climate objectives.

We would flag that companies towards the bottom of our SLT are possibly higher risk-investments from a sustainability perspective than those towards the top.

Methodology

We score each mining company based on a number of different metrics which are first ranked and then weighted within each of the five key areas (see below for individual weightings) to produce a weighted rank for each key area with an accompanying grade (A to E). We calculate the overall SLT score by apportioning the weighted ranks for each key area according to their respective weights.

Each of the key areas has a separate chapter within this report with accompanying information on the precise methodology for how we rank and grade each metric.

In addition to the five key areas, we also include CDP's climate score for 2015 in the SLT. It scores the 2,233 companies that respond to CDP's investor-backed climate change questionnaire based on their climate change readiness. A high overall score is a sign of completeness of the response to the questionnaire and implies a well-run business and forward-looking management team that is transparent about how climate change affects its business.

For further study

Areas of further interest to investigate include:

- Advanced carbon pricing modeling which would consider how companies alter their commodity production mix and choice of energy sources.
- Assessment of the economics of captive renewable plants versus fossil fuel alternatives in key mining locations.
- Assessment of how a low-carbon transition impacts demand across different commodities and where opportunities for miners exist.
- Undertake a forward-looking assessment of company exposure to forecasted future water-stressed locations.

Summary of key areas, associated metrics and relative weighting within the Super-League Table

Key area in SLT	Link to company earnings	Metric	Key area weighting in overall SLT	Metric weighting within each key area
Energy efficiency	Improvements in energy efficiency can lead to cost savings and thus enhanced earnings. This is especially pertinent against a backdrop of deeper mining and lower ore qualities and increasingly remote locations of mining operations.	i) Reduction in emissions intensity 2008-2014. ii) Emissions intensity 2012-2014. iii) Quality of emissions targets. iv) Performance against targets. v) Emissions data transparency.	40%	24% 6% 25% 25% 20%
Water resilience	Water stress issues at mining locations pose significant risks to production or require significant expenditure to rectify.	i) Water stress exposure. ii) Water governance and strategy. iii) Water performance.	20%	60% 30% 10%
Coal exposure	Coal faces increasing regulatory and market pressure in its downstream use which will negatively impact the economics of its upstream production.	i) Share of revenue from coal. ii) Percent thermal coal production. iii) Emission intensity of coal activities. iv) Life of reserves.	15%	40% 30% 20% 10%
Carbon cost exposure	Financial exposure to meeting carbon emission cost, both present and potential future.	i) Current carbon cost exposure. ii) Potential future carbon cost exposure. iii) Internal carbon price.	10%	40% 40% 20%
Carbon regulation readiness	Companies that are supportive of regulation which facilitate a low-carbon transition are more likely to be better placed to benefit from it.	i) InfluenceMap score.	10%	100%
CDP performance band	A good annual CDP score is a proxy for a generally well-run company. Well-run companies are better placed to succeed in a changing marketplace.	i) CDP annual performance score.	5%	100%

Source: CDP

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