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Alquity

**LIFE
CHANGING
INVESTMENTS**

Investing in Higher ESG Risk companies: Antofagasta

We believe it is possible and necessary to invest in higher risk segments, so long as the ESG performance is excellent and that the companies show continuous improvement.

We have compared our holding Antofagasta with regional and global peers across many ESG factors, to demonstrate where the company sits relative to global best ESG practice.

ANTOFAGASTA – COMPARISON AGAINST GLOBAL PEERS

Antofagasta is one of the world's largest copper miners, based in Chile. They own and operate some of the world's highest quality mining assets.

Copper has a unique combination of properties which has made it central to mankind's development. It is a key component of everyday life and plays a vital role in addressing some of the world's major challenges, such as clean energy and sustainable urban development. You cannot have electric vehicles, which have a significant positive impact on the environment, without copper.



ANTOFAGASTA
MINERALS

We have analysed both major and minor copper producers to contrast their commitment to environmental, social and governance factors. Based on this comparative review, we conclude that:

- 1) Antofagasta is amongst the best peers with regards to the environment given its energy, water and carbon efficiency.
- 2) Waste generation looks optically high, but we note that the difference is most likely due to differing reporting standards, where Antofagasta appears to disclose more data than peers.
- 3) Antofagasta performs best on social performance with lower Lost Time Injury Frequency Rates (LTIFR) and fatality rates and also performs well on governance.

Environmental commitment

We contrast the major copper miners on energy consumption, GHG emissions, water usage (total and freshwater) and waste production. Antofagasta is consistently one of the best companies on these metrics, compared to both global and smaller copper producers. Antofagasta has both practices and disclosures on a par with the highest performing companies in the sector globally.

Environmental performance (absolute level)

	Total Energy Consumption (MWh)	GHG Emissions (tonnes CO ₂)	Total Water Use (m ³)	Total Freshwater Use (m ³)	Total Waste (metric tonnes)
Antofagasta	6,747,021	2,483,630	67,200,000	38,623,810	467,804,832
BHP Group	41,475,000	14,800,000	599,360,000	133,749,760	180,500,000
First Quantum Minerals	8,324,722	2,097,677	729,230,000	160,931,193	252,845,801
Freeport-McMoRan	26,222,200	4,915,691	1,712,000,000	300,137,677	754,916,992
Glencore	58,333,300	29,239,000	1,576,000,000	1,034,683,871	2,590,880,000
Grupo México	27,237,200	7,890,900	158,428,000	-	615,302,016
Jiangxi Copper	3,742,260	21,459,136	-	82,213,882	1,070,541,077
Rio Tinto Group	113,056,000	26,800,000	1,084,999,936	539,130,846	902,280,000
Southern Copper	-	414,849	-	361,570,013	29,101,005
Vale	46,055,600	12,600,000	810,000,000	306,471,644	626,961,024
Vedanta	151,803,008	58,500,000	310,430,016	250,843,728	13,093,147

Sources: Bloomberg and company sustainability reports, 2019

Note that environmental data is only disclosed at the company level for all companies. For the diversified miners, this will include emissions related to their entire production (i.e. copper as well as other minerals, such as gold)

Whilst this is a useful starting point, we need to normalise for production volumes. Antofagasta is a pure copper player whilst many of its competitors are diversified miners. The ESG industry standard is to normalise by revenues (see appendix, pg. 8). However, this method favours miners who produce meaningful amounts of higher value commodities – such as gold and silver – as well as copper. Therefore, we look at the extractive industry standard which is to normalise by copper equivalent production.

Environmental performance (standardised by copper equivalent production)

	Total Energy Consumption (MWh)	GHG Emissions (tonnes Co2)	Total Water Use (m³)	Total Freshwater Use (m³)	Total Waste (metric tonnes)
Antofagasta	8.8	3.2	87.3	50.2	607.6
BHP Group	6.1	2.2	88.5	19.7	26.7
First Quantum Minerals	15.0	3.0	1,038.8	229.3	360.2
Freeport-McMoRan	12.8	2.4	838.7	147.0	369.8
Glencore	7.9	3.9	212.1	139.3	348.7
Jiangxi Copper	11.0	63.1	-	241.8	3,148.7
Southern Copper	-	-	-	363.8	29.3
Vedanta	94.9	36.6	194.0	156.8	8.2

Sources: Bloomberg and company sustainability reports, 2019
 Note that environmental data is only disclosed at the company level for all companies. No copper equivalent production data available for Vale, Rio Tinto and Grupo México. Data calculated using company reports.

The "copper equivalent" figure is calculated by scaling commodities by the number of equivalent units of copper they represent in value. This normalises several mined commodities into one comparable figure which we believe to be the least biased comparative methodology. The results above show that **Antofagasta is amongst the best on all the environmental factors.**

Waste: Is Antofagasta penalised for best in class disclosure?

Antofagasta has a significantly higher waste intensity than almost all other competitors in our comparison. However, the scale of the difference suggests that the only plausible explanation is due to **different reporting standards**, thus making a direct comparison misleading. For example, BHP, despite producing over four times as much as Antofagasta, reports just over a third of Antofagasta's waste figure. The data would likely be different if both companies reported waste production in the same way. BHP only report waste in the two categories (shown below) which may exclude others such as waste rock and spent ore that make up the vast majority of Antofagasta's figure. Others, such as Vedanta and Southern Copper, do not provide a clear breakdown of their total waste figures. Hence, Antofagasta's higher waste figure should be seen as a commendable effort to fully report the waste impact of their production.



Comparison of BHP vs Antofagasta's reporting

BHP

VS



Waste			
Hazardous waste - Mineral total (including tailings) ⁽¹⁾	kilotonnes	13,500	13,100
Non-hazardous waste - Mineral tailings ⁽²⁾⁽³⁾	kilotonnes	167,000	137,000
Accidental discharges of water and tailings ⁽²⁾⁽³⁾	megalitres	0	0

MINING WASTE					
Mining waste					
Waste rock	Million tonnes	MM3	307	286	274
Tailings	Million tonnes	MM3	93	96	89
Spent ore	Million tonnes	MM3	66	63	38
Non-mining waste					
Non-hazardous industrial waste	Tonnes	306-2	36,178	27,787	30,822
Hazardous industrial waste	Tonnes	306-2	9,085	10,015	8,933
Domestic	Tonnes	306-2	2,036,662	3,793	3,826

Sources: Company sustainability reports, 2019

Other environmental factors

	Renewable energy (as % of total consumption)	Waste Recycled
Antofagasta	22%	56%
BHP Group	0.21%	-
First Quantum Minerals	24%	29%
Freeport-McMoRan	30%	-
Glencore	13%	-
Grupo México	0%	65%
Jiangxi Copper	0%	-
Rio Tinto Group	33%	-
Vale	27%	53%

Sources: Bloomberg and company sustainability reports, 2019

No data available for Vedanta and Southern Copper.

Despite the higher (reported) waste data, it is encouraging to see that Antofagasta is still amongst the best in terms of waste recycling and it is disappointing that few miners produce data on this. Antofagasta does report this information and has one of the higher recycling rates from this limited data set. Antofagasta's commitment to renewable energy is better than many peers as shown by the percentage of renewable energy consumed. This will continue to rise further as Antofagasta has made further commitments to increase their usage of renewable energy.

100% of the power supplied to Antofagasta's Centinela operations will be from renewable sources by 2022



In addition, the **granularity and scope** of Antofagasta's disclosure is impressive and superior to peers. For example:

- The company has reported its Scope 1 and Scope 2 GHG emissions annually to the Carbon Disclosure Project since 2009. **Antofagasta is targeting a 300,000-tonne reduction in CO2 emissions in the five years to 2022.** The group has already delivered on commitments, with renewable energy consumption increasing from 5% in 2015 to 23% in 2018.
- Antofagasta discloses key water indicators such as: total water consumption, % water supply from sea water and % water recirculated. There is zero water discharge and in 2018, Antofagasta's water reuse rate varied between 80-96%. Furthermore, 45% of water was sourced from the sea rather than fresh water sources (up from 9% a decade ago).
- From 2022, Antofagasta's Centinela mining operations will be entirely powered by renewable energy sources.
- Antofagasta was the first mining company to receive a green loan (rated by S&P) for their Los Pelambres expansion.
- There have been zero major environmental incidents in the last 3 years



Sustainalytics and RobecoSAM Environmental Ratings

The above comparative and qualitative analysis demonstrates that Antofagasta ranks amongst the best in terms of its environmental performance. As a cross check, we also contrast this with independent ESG research aggregator and rating systems Sustainalytics and RobecoSAM. Antofagasta ranks highest compared to peers in the Sustainalytics' methodologies, and second best using RobecoSAM's rating system.

	Sustainalytics Ranking	Sustainalytics Environmental Ranking	RobecoSAM Sustainability Ranking
Antofagasta	84	89	85
BHP Group	68	40	62
First Quantum Minerals	37	19	33
Freeport-McMoRan	57	10	58
Glencore	42	52	57
Grupo México	-	-	73
Jiangxi Copper	-	-	20
Rio Tinto Group	73	63	87
Southern Copper	-	-	67
Vale	41	27	62
Vedanta	-	-	70

Source: Bloomberg, 2019
In the rankings, best = 100

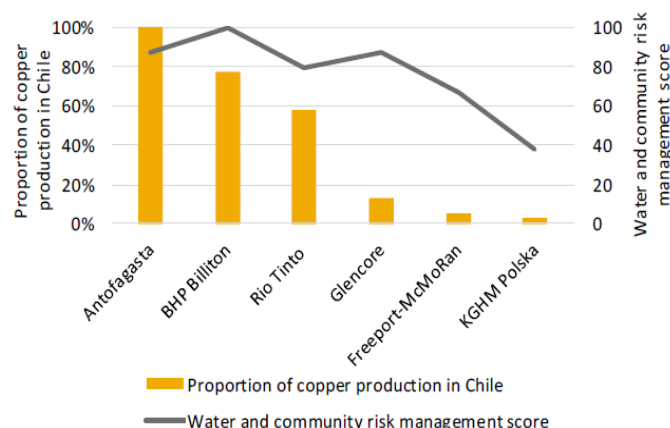
Sustainalytics Case Study - Well positioned to meet water use and community relations demands in Chile

"We profile Antofagasta as the industry leader"

Sustainalytics produced a study in 2018 detailing the social risks with regards to miners consuming large amounts of water. They explain that there are community relations risks – for example, Chilean farmers and local communities have been affected increasingly by drought which increases the likelihood of controversies and local opposition.

Their assessment of Chilean copper miners showed that *"Antofagasta's water management and efficiency programmes demonstrate a clear focus on mitigating water risks related to its own operations, as well as community water needs, on a local and a regional basis"*. For example, some upcoming projects, including expansions at its Centinela and Los Pelambres mines, will make exclusive use of seawater. Antofagasta was ranked the second highest amongst peers based on their water and community risk management score.

Water risk and community risk management assessment



Source: Sustainalytics, company reports, 2018
Water and community risk management score is based on Sustainalytics' assessment of companies' water management policies, water risk and community involvement programmes.

However, Sustainalytics actually profiled Antofagasta as the "industry leader" because they are best positioned to navigate stakeholder challenges in Chile, and for their superior ability to *"reposition community development initiatives that support future business growth"*.

Social factors – Antofagasta is significantly better than peers

There are relatively few social factors that miners report in a consistent way. However, Antofagasta performs significantly better than peers in terms of both LTIFR and fatalities.

	Average fatalities 2017-2019	LTIFR
Antofagasta	0.3	0.8
BHP Group	1.3	4.4
First Quantum Minerals	2.5	0.3
Freeport-McMoRan	2.7	3.5
Glencore	13.0	1.0
Grupo México	4.0	3.6
Rio Tinto Group	2.0	2.2
Southern Copper	2.0	-
Vale	83.0	2.3
Vedanta	7.0	-

Lost time injury frequency rate has fallen from 3.2 accidents in 2011 to 0.8 in 2019

Source: Bloomberg and company sustainability reports, 2019
No data available for Jiangxi Copper

In addition to the comparative quantitative data, Antofagasta operates global best practice in terms of their social disclosures and initiatives:

- Employees are provided with functional training, and **health and safety targets are embedded in the contracts signed by third party contractors**. Furthermore, safety performance is reported weekly to the Executive Committee and monthly to the board. Fatal and serious accidents are reviewed in detail by the Board's Sustainability and Stakeholder Management Committee. Operational safety reviews are conducted by the Executive Committee across all operations.
- Antofagasta is an equal opportunities employer and **the minimum wage paid by Antofagasta and its contractors is 41% above the legal minimum wage in Chile**.
- 78% of employees are unionised.
- Since the outbreak of COVID-19 Antofagasta has implemented multiple measures to prevent the spread of infection across their operations and launched a \$6 million fund to support the communities they work in.



Governance

There are also relatively few governance factors that miners report in a consistent way. We highlight workforce gender diversity and board independence below:

	Gender diversity (%)	Independent Directors (%)	Free Float (%)
Antofagasta	10	60	35.0
BHP Group	24	91	99.8
First Quantum Minerals	-	78	80.0
Freeport-McMoRan	13	83	99.4
Glencore	16	63	90.9
Grupo México	6	64	80.9
Jiangxi Copper	-	36	79.0
Rio Tinto Group	18	78	85.0
Vale	13	23	73.0
Vedanta	11	50	42.0

Source: Bloomberg and company sustainability reports, 2019
No data available for Southern Copper

Antofagasta has a similarly low level of gender diversity in the workforce to peers. 60% of its directors are independent, which is significantly higher than its stock market free float of 35%.

In addition, Antofagasta has a high level of board attendance (95% attendance in 2018), fully independent audit and remuneration committee and non-executive directors meet separately.

CONCLUSION

Many ESG funds choose to not own copper, often citing environmental concerns. At Alquity, we understand that as a whole, the copper extractive industry is a large contributor of emissions and it has a negative direct impact on the environment. However, **we acknowledge that copper plays a key role in addressing climate change, as it is a requirement for electronic goods such as electric vehicles**, which are positive for the environment. In addition, copper is also a requirement for electrical wiring – where a lack of electrification (particularly in rural areas) puts the local population at a severe social disadvantage. Thus, copper is a positive contributor towards the achievement of SDG 11

At Alquity, we take a holistic approach towards ESG – **we believe that it is necessary to actively invest in these sectors in order to achieve sustainable economic and social development**. However, we believe it is only right to invest in the companies that are best versus peers. **We will only invest in companies that have already made a significant commitment to reducing their global footprint and will continue to invest in technologies that contribute to a more sustainable world**. We believe that the detailed comparative analysis in this report demonstrates this.



Many Antofagasta peers are diversified miners; thus, we have to normalise the data by "copper-equivalent" production to compare their performances. **We can conclude that Antofagasta is amongst the best out of the peer group with regards to the environment given its energy, water and carbon efficiency**. Waste seems high if we compare it to the other miners, nevertheless this difference is most likely due to their different reporting standards, disclosing Antofagasta more data than its peers. In addition, **Antofagasta performs best than the rest on social, and it also performs well on governance**.

Therefore, we believe Antofagasta demonstrates global best practice in ESG.

transformation

APPENDIX

Environmental performance (standardised by \$1m revenue)

	Total Energy Consumption (MWh)	GHG Emissions (tonnes Co2)	Total Water Use (m ³)	Total Freshwater Use (m ³)	Total Waste (metric tonnes)
Antofagasta	1,359	500	13,536	7,780	94,230
BHP Group	936	334	13,533	3,020	4,076
First Quantum Minerals	2,592	516	179,304	39,570	62,170
Freeport-McMoRan	1,821	341	118,872	20,840	52,418
Glencore	271	136	7,326	4,810	12,044
Grupo México	2,549	739	14,829	-	57,594
Jiangxi Copper	108	619	-	2,370	30,861
Rio Tinto Group	2,619	621	25,136	12,490	20,903
Southern Copper	-	57	-	49,628	3,994
Vale	1,220	334	21,461	8,120	16,611
Vedanta	12,878	4,963	26,335	21,280	1,111

Sources: Bloomberg and company sustainability reports, 2019

Note that environmental data is only disclosed at the company level for all companies

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