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ECO Score: a new environmental standard for industry

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ABSTRACT

Companies have always used numerical data in decision making which can be easily communicated, analyzed, tracked and disclosed to stakeholders. However, environmental performance has not been historically managed in this manner despite being an integral part of business, making it, in many cases, complex to deal with and difficult to hold employees accountable for environmental performance. This is the background against which the ECO Score was conceived. The ECO Score is comprised of environmental indicators, representative of the activities performed by the Company. A scoring system based on objective and transparent measurements tracks the performance of each business unit within the Company. Once the scoring system was developed, environmental performance goals were incorporated into the annual performance executive compensation framework together with the more conventional metrics relating to production, profitability and safety goals. As a result, the ECO Score is effectively used to manage environmental matters, hold employees to account and create value for all stakeholders. It also generates revenue through the reduction of a Company's footprint, the efficient use of resources and the mitigation of risks while strengthening the Company's environmental, social and governance culture.

Keywords: ECO Score; environmental indicator; footprint; environmental corporate objective.

Introduction

With over 100 years of operating experience, Hochschild Mining PLC ("Hochschild", "Hochschild Mining" or the "Company") is a leading underground precious metals mining company specializing in high grade silver and gold mineral deposits. Currently, it operates three underground mines, two located in southern Peru and one in southern Argentina. The Company is listed on the Main Market of the London Stock Exchange and is headquartered in Lima, Peru. In addition, the Company has an office in Buenos Aires, Argentina, Santiago and Concepcion, Chile and a corporate office in London. Its manpower comprises more than 3000 employees.

In order to achieve its new corporate purpose –responsible and innovative mining committed to a better world - the Company is guided through the following cultural attributes: responsibility, innovation, seeking efficiencies and, inspiring and promoting talent. Regarding its approach to environmental management, the Company strives to contribute to a sustainable future, always acting with responsibility and environmental excellence (Hochschild, 2020).

Environmental management in the industry is an integral part of daily business. The Company's workforce includes environmental professionals whose main goal is to manage the Company's footprint. Often managing this footprint is a complex and intricate process involving many areas of expertise, dealing with diverse environmental cultural beliefs and values, as well as qualitative and quantitative matters, in many cases intangible in nature (Gallopin, 2008).

It is well known that companies have not been able to express their environmental performance in an objective and precise manner to decision-makers, despite collecting and storing large amounts of environmental data and despite being recognized as a vital tool for decision-makers (Gerrard, 2014). This data can be a source of valuable information (Pandit, 2015), so there is an ongoing challenge for companies to leverage its utility.

All of this has hindered the effective understanding and management of a company's environmental footprint. Therefore, back in 2015, Hochschild took on the challenge and developed the ECO Score. This tool has allowed Hochschild to distil the many facets of its environmental performance into a single numerical value.

Methods

The main input used to design the ECO Score is data generated by the Company during its daily operations. In that sense, the tool was developed internally at zero cost.

It is comprised of key performance indicators (KPIs), scored on two levels: at each mining operation and, overall, for the entire Company. The KPIs are based on measurable and transparent environmental metrics. These measurements are closely linked to the environmental footprint of Hochschild.

The measured environmental metrics are:

- *Environmental monitoring:* the Company has an extensive network of water quality monitoring stations at all operations to ensure compliance with the maximum permissible limits ("MPLs") established by the regulatory authorities. The objective is to have zero (0) deviations from the MPLs.
- *Environmental incidents:* all activities must be carried out in accordance with best environmental practices to minimize the risk of environmental incidents. The emphasis is placed on establishing preventative measures to avoid such events. The objective is to have zero (0) environmental incidents per year.
- *Environmental audits:* this element records the amount of observations received in each mining operation from the environmental regulator. The objective is to have a maximum of two (2) observations per year for each mining operation.
- *Environmental management:* the ECO Score also incorporates quantitative indicators directly related to environmental management at each mining operation. These indicators provide the crucial link between mine employees and the Company's environmental performance, since they are directly related to the daily activities performed by the Company. With these indicators, all employees co-operate to reduce the Company's environmental footprint. These indicators include the measurement of:
    - *Water consumption per worker:* the objective is to keep water consumption below 250 liters/person/day.
    - *Waste generation per worker:* the objective is to generate waste no more than 1.5 kg/person/day.
    - *Percentage of marketable waste:* the objective is to market or donate more than 75% of collected industrial waste.
    - *Environmental culture:* the objective is to achieve compliance of over 95% with respect to critical performance indicators established for each workstation.

    In this manner, the sum of these four environmental management metrics reflects the Company's culture of respect and care for the environment. Good environmental practices such as responsible water consumption, correct handling and separation of waste are the result of a sound environmental culture.

The ECO Score for each mining operation is compared against a scoring table (Table 1). Every year the Board of Directors reviews the scores and sets the goal for the

environmental corporate objective. This goal is integrated with the other corporate performance objectives[1] to determine annual bonuses.

Table 1. ECO Score standards

Environmental performance	ECO Score
Maximum	≥ 5.00
Target	4.80 – 4.99
Threshold	4.50 – 4.79
To be improved	< 4.50

Scoring system

The following table shows how the Company calculates the ECO Score for each mining operation.

Table 2. ECO Score calculation matrix

Environmental metric		Range	Score
Environmental monitoring		0	1.00
		1 - 2	0.75
		2 - 5	0.50
		>5	0.00
Environmental incidents		0	2.0
		1	1.0
		2	0.5
		>2	0.0
Environmental audits		0 - 2	1.5
		2 - 4	1.0
		4 - 6	0.5
		> 6	0.0
Environmental management	Water consumption per worker	<250 L	1.5
		250 – 350 L	1.0
		350 – 450 L	0.5
		>450 L	0.0
	Waste generation per worker	<1.5 Kg	1.5
		1.5 – 2.0 Kg	1.0
		2.0 – 2.5 Kg	0.5
		>2.5 Kg	0
	Percentage of marketable waste	>75%	1.5
		65% - 75%	1.0
		55% - 65%	0.5
		<55%	0.0
	Environmental culture	>95%	1.5
		90% - 95%	1.0
		85% - 90%	0.5
		<85%	0.0

Note: The maximum ECO Score is 6.0

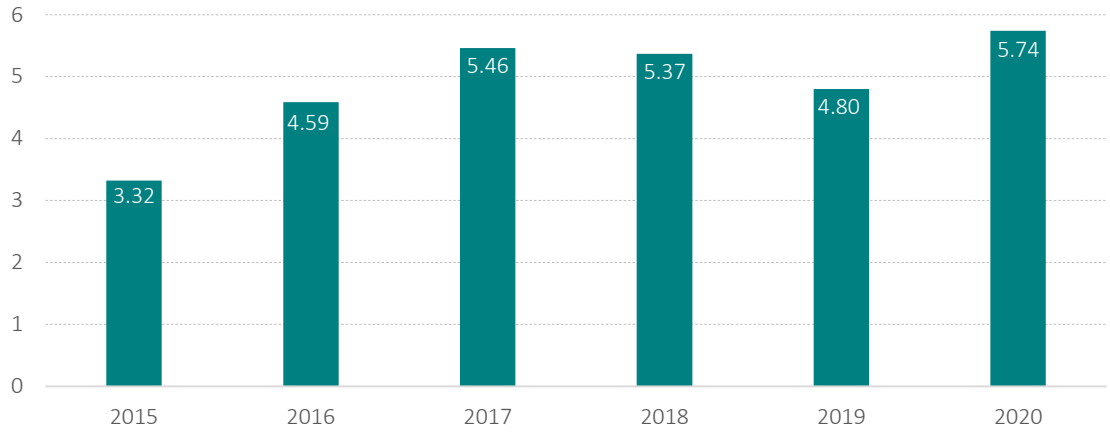
[1] Production, profitability and safety corporate objectives

Results and discussions

ECO Score

In 2020, the ECO Score was 5.74 out of 6, exceeding its most stretching target for the year of 4.75. Since 2015, the ECO Score has improved by 73%, reflecting a significantly higher level of environmental efficiency. To incentivize continuous improvement, the Company has set the challenging target of 5 out of 6 for 2021.

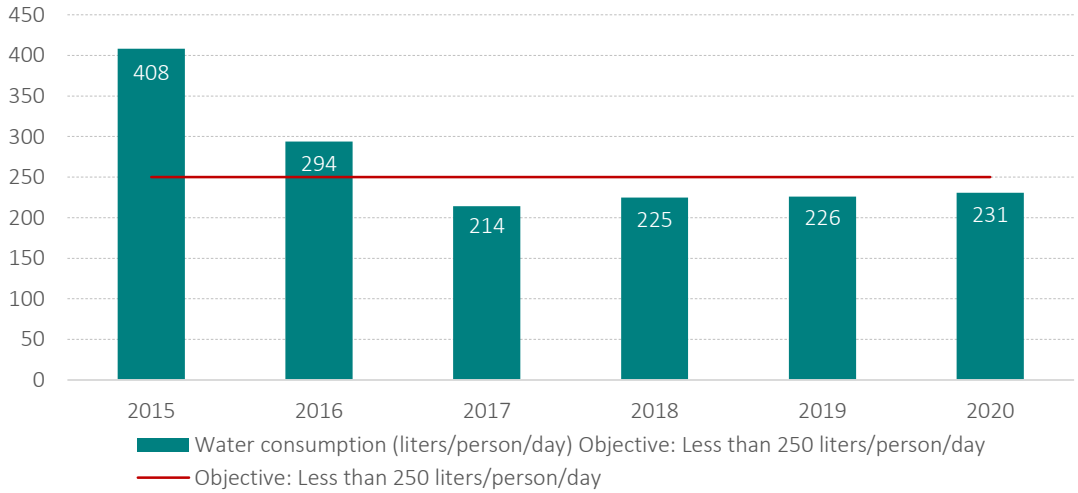
Figure 1. ECO Score Performance



Water consumption

In 2020, the Company's overall water consumption was 230.67 liters per person per day (l/p/d). This meant that the maximum set for the year of 250 l/p/d was achieved. Since implementation of the ECO Score, consumption of potable water has been reduced by 43%. In 2020, Hochschild has saved 268,305 m^3 of potable water[2]. This is equivalent to 429 million bottles of water[3]. Water is recognized as one of the resources most affected by climate change (Bates, Kundzewicz and Wu, 2008) and therefore the ECO Score focuses efforts on a key aspect of managing climate change risks.

Figure 2. Historical potable water consumption



[2] Volume of water considering the water consumption per capita of 2015 for the population of 2020.
[3] Of 625 ml

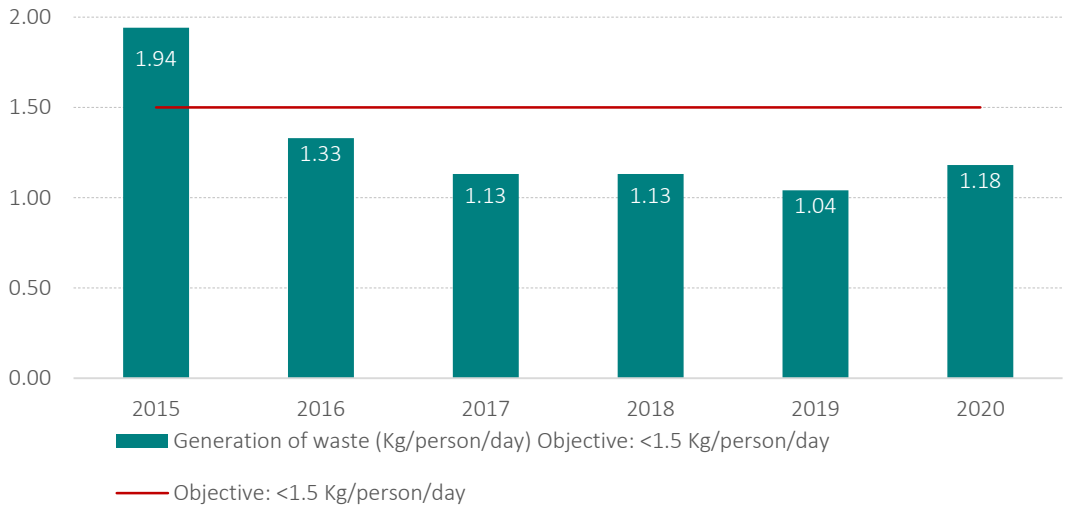
Waste generation

In 2020, the Company generated domestic waste equivalent to 1.18 kilogram per person per day (Kg/p/d). This is well below its objective of 1.5 kg/p/d. Since the implementation of the ECO Score, the Company has reduced its domestic waste generation by 39%, which in absolute terms is over 1.2 million kilograms of domestic waste. Likewise, Hochschild has been able to increase the amount of marketable waste by 220% since 2015.

Waste generation volumes are significant since non-hazardous waste is disposed of in on-site and off-site approved landfills. Therefore, by reducing waste generation, the Company can reduce its footprint while saving costs (Monahan, 2018).

In addition, with this indicator workers are encouraged to improve waste sorting at source. By doing so, the amount of actual waste is minimized, reducing the need for off-site disposal. Marketable waste is also increased through improved sorting, ensuring only non-reusable or non-recyclable waste is sent to landfill.

Figure 3. Historical domestic waste generation

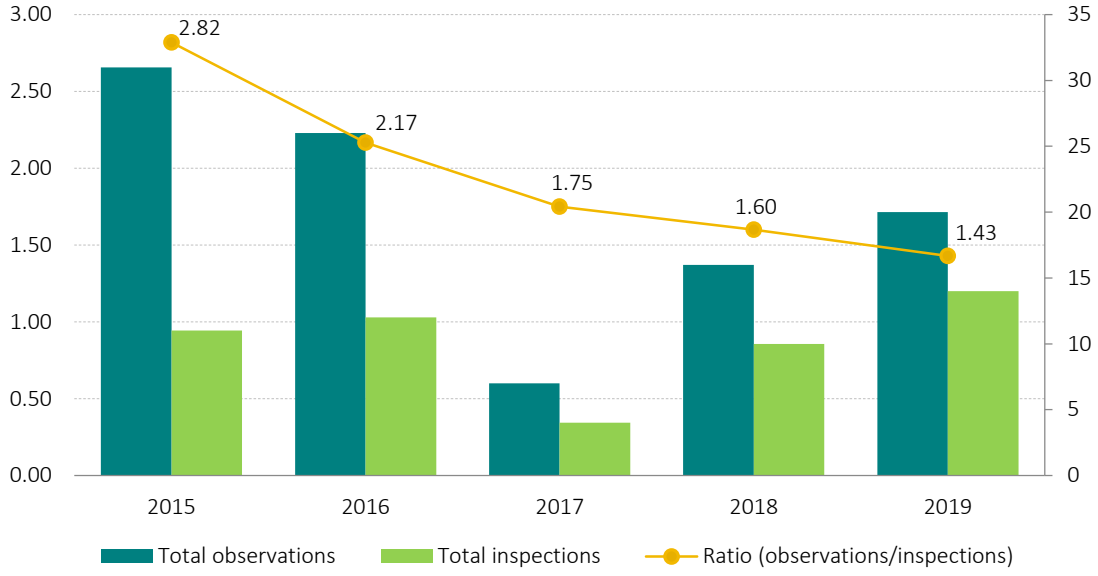


Good practices

Since the implementation of the ECO Score, Hochschild has significantly reduced the ratio of observations per inspection carried out by the environmental regulators. In 2019, the ratio of observations per inspection was 1.43, which is the best ratio since the implementation of the ECO Score in 2015. This translates to a 52% reduction in the ratio of observations per inspection. In 2020 the Company was not subjected to any inspections due to the COVID-19 pandemic.

This demonstrates the ECO Score is a tool that has improved the Company's overall environmental performance year on year. Furthermore, it ensures that good environmental practices are being carried out at all times.

Figure 4. Ratio of observations per inspection carried out by the environmental regulator



Through the "*Green Challenge*" program, Hochschild promotes healthy competition between its mining operations. Every year, the Company rewards the mining operation that achieves the highest score in the ECO Score. The results are tracked and shared with the whole Company on a monthly basis. In 2020, the Arcata mining operation achieved the perfect score of 6 out of 6.

Figure 6. Shared 2020 ECO Score results

Conclusions

The ECO Score is an effective and innovative tool used to manage environmental matters, hold employees accountable and create value for all stakeholders. This tool has allowed Hochschild to quantify its environmental performance and express intangible environmental management into a single numerical value; which is universally understood. Hochschild has demonstrated a high level of environmental efficiency, scoring 5.74 out of 6 in the ECO Score (representing a 73% improvement since 2015).

Through the implementation of this tool Hochschild has achieved significant savings directly as a result of the reduction in its environmental footprint, efficient use of resources and mitigation of environmental risks. In addition, through implementing the ECO Score, Hochschild has been able to encourage its workforce to achieve a common environmental purpose, that is, to contribute to a sustainable future.

The ECO Score can be seen as a tool that other companies within, or beyond, the mining industry can adopt to promote a sound environmental culture and align their workforce to work towards a common environmental mission. For instance, Resiter, a waste management company and strategic partner of Hochschild, adopted the ECO Score for use in its own operations.

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