

Research Report

Environmental, Social, and Governance Stewardship:

Safety's Involvement

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Executive Summary

This research report examines Environmental, Social, and Governance (ESG) reporting in different companies within Oil & Gas, Specialty Chemicals, and Pharmaceutical companies. Ten different companies were selected from different industries and were evaluated on the prevalence of the metrics indicating their environmental, social, and governance performance. The companies also looked into their process and personnel safety metrics. The scope of the research was the information provided in their public annual report.

About two dozen metrics were found to appear multiple times between different reports, so the prevalence of those metrics in each industry was reported. It was found that when comparing the Oil & Gas and Specialty Chemical Companies, they included very similar content consistently throughout each company, with about 65% of each metric from both industries reporting all the metrics in environmental, social, and governance. However, Oil & Gas industries provided more information about their process and personnel safety as opposed to other industries.

There was additionally a large absence of information provided by the pharmaceutical companies discussing process and personnel safety metrics, specifically TRIR, LTIR, and a number of Tier 1/Tier 2 Incidents. Companies within the industry that reported more of their metrics ended up having stronger ESG performance, so it is recommended that there should be a larger push from pharmaceutical companies to discuss their safety metrics within their report.

In addition, multiple relationships with commonly discussed metrics were evaluated with safety to see if there was a relationship between a company that discussed their topic and having stronger safety reports. This evaluation indicated that there was no correlation between the strength in the metric for an industry that related to safety.

Finally, two separate third-party rating agencies were used to see how well the individual companies were reporting with ESG: MSCI and Sustainalytics. This was then evaluated with safety to see if companies that reported stronger safety were performing well in ESG, which did not end up being the case. These results indicate that safety currently holds a minimal portion of weight in ESG evaluations.

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Introduction

Environmental, Social, and Governance (ESG) is a growing framework investors are using to determine the strength of a company. Evidence shows that companies that perform well on ESG are less risky and are better positioned for the long term compared to their competitors¹. In addition, companies that report ESG translate to having a lower cost of capital, as well as a lower unit-cost structure. In terms of strong social benefits, companies that focus more on their social metrics within ESG recruit better talent who want to do more ‘purposeful work,’ and have stronger retention rates as well¹. There are multiple reasons why companies have shifted to become more focused on ESG, but there is not a strong indication if safety is considered part of the ESG model.

Companies are now shifting to increasingly discuss their ESG performance over the past few years. The 2020 Survey EY Climate Change and Sustainability Services Institutional Investor Survey found the number of companies that started reporting their ESG data in a more structured review has doubled². This can be rationalized as investors are now finding that companies that report strong ESG data have an increase in value, as shown in Figure 1 below.

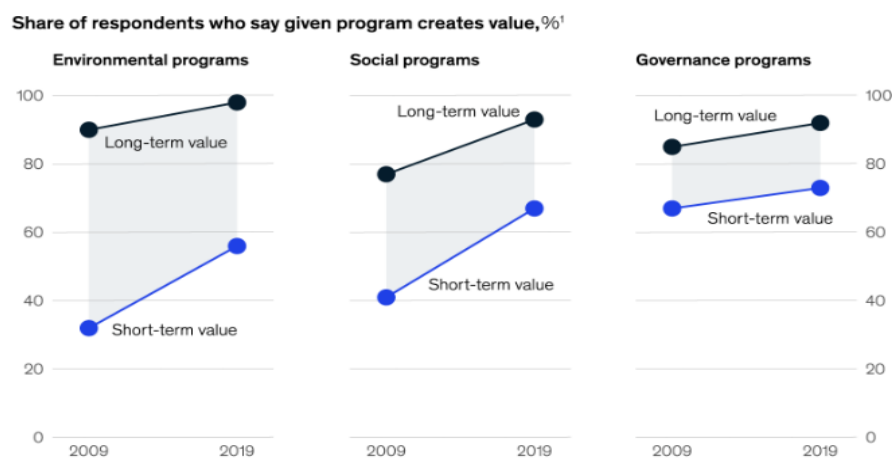


Figure 1: Investor report on requiring companies to add short and long-term value from 2009-2019¹

The purpose of this analysis is to look into different aspects of safety from some of the biggest companies in Oil & Gas, Specialty Chemicals, and Pharmaceuticals, to see how much different companies are publicly putting in their reports about ESG, and if it is highly valued in the overall ratings.

Methodology

The top ten companies for each industry were evaluated from the highest amount of revenue earned over the course of 2021. From here, each company was further evaluated by looking at their reports which focused on their ESG efforts. Each report was thoroughly examined to see which data and reports were provided by the company. Any key performance indicators that were repeatedly discussed about the topics of environmental, social, governance, process safety, or personnel safety were recorded.

This was then later checked and verified with two different ESG Rating Agencies, MSCI and Sustainalytics. These two rating agencies have criteria for the different metrics they include in their evaluation of the company's ESG performance. These metrics were then compared with what was available in the reports, and a selected amount of ESG metrics were chosen. After the recording of all the metrics was completed for each company, the prevalence of how often each metric was reported within the industry. Finally, each company was evaluated based on the overall strength of the value they reported. All companies were then listed in the order of decreasing total recordable incident rate (TRIR) and with this ordering system, all trends that had over 60% reporting were then highlighted and evaluated to see if they follow a similar trend.

The only information that was reviewed was what was publicly provided on the company website and the company reports. There appeared to be no need to review additional databases for extra information, as it would likely take more energy for the average investor to find the appropriate amount of information.

Lastly, an evaluation was done with the industry's safety metrics compared to the rating provided by the ESG agencies to determine how correlated the metrics are to safety. This can also be present if there is a trend in how well different industries are evaluated in terms of ESG.

Results and Comparison

The following companies were reviewed based on their respective market cap on January 1st, 2022, which would encapsulate the entire 2021 calendar year and nothing additional from the 2022 fiscal year. They are shown in Table 1 below::

Table 1: List of All Oil & Gas, Specialty Chemicals, and Pharmaceutical Companies Evaluated

Company	Oil & Gas	Specialty Chemicals	Pharmaceuticals
1	Marathon Oil	Eastman Chemical	AstraZeneca
2	Valero	Linde	Gilead
3	Chevron	Corteva	Pfizer
4	Shell	BASF	Merck
5	BP	Dupont	Johnson & Johnson
6	ExxonMobil	Evonik	Vertex
7	ConocoPhillips	Celanese	Amgen
8	Total	DOW Chemical	Roche
9	Phillips 66	Sabic	Johnson Matthey
10	Saudi Aramco	Chevron Phillips	Abbvie

All the companies listed here not only had information and performance data listed on their website but had reports designed to showcase and advertise this data to the general public. After evaluating 30 different reports for common metrics that were discussed by all industries, the following metrics were found, shown in Table 2:

Table 2: Metrics commonly found between Environmental, Social, and Governance

	<u>Metric</u>	<u>Unit</u>
Environmental	Total Greenhouse Intensity	kg CO ₂ equivalent/barrel of oil equivalent produced
	Greenhouse Gas Emissions	million metric tonnes of CO ₂ equivalent
	VOC Emissions	Million metric tonnes
	Progress to Carbon Neutrality	Percentage (%)
	Waste Deferred from Landfill	Percentage (%)
	Total Spills	Quantity above 1 barrel
	Hydrocarbons Spilled	Barrels
	Volume recovered	Percentage (%)
Social	Women in Leadership	Percentage (%)
	Minorities in Leadership	Percentage (%)
	Community Investments	Millions USD (\$\$)
	Employee Volunteerism	Hours
Governance	Independent Board Members	Number of Members
	Corporate Political Contributions	Millions USD (\$\$)
	% Shares represented in Annual Meeting	Percentage (%)
	Reported Completion of Compliance Audits	Percentage (%)

Some noticeable findings from the amount of information provided was the difference in quantitative metrics between all three aspects of ESG. There was far more discussion from the companies about the quantitative metrics to evaluate the environment (8) as opposed to governance (4). The reports in governance focused much more on the description of the different members that are on the board and what plans or committees are being developed for better alignment with the company's goals. Evaluations for governance in this aspect become much more qualitative. In addition, another concern was looking at the consistency of units, specifically when it came to greenhouse gas intensity. Different industries reported these values using entirely different units. Figure 2 below showcases the differences in units to measure the same metric: greenhouse gas intensity.

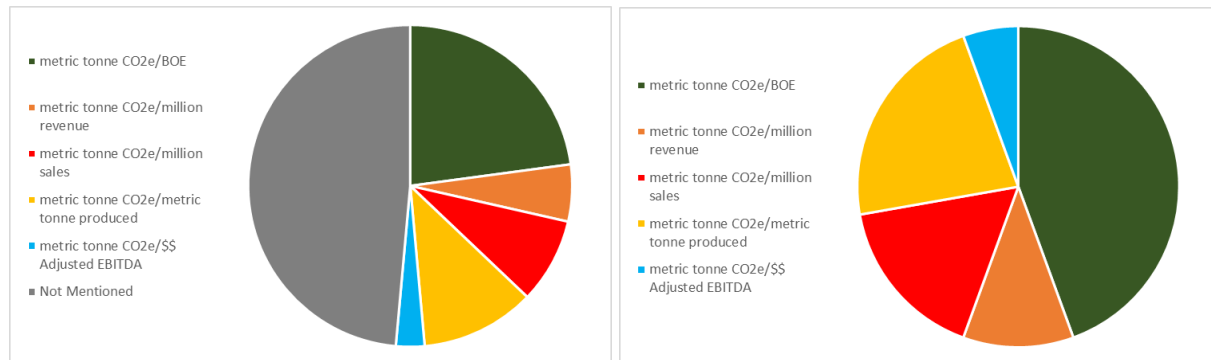


Figure 2: Units used for Greenhouse Gas Intensity Reporting. All reporting is shown on the left, and units of just the companies that reported are on right.

This same process was continued, but by looking at process safety metrics that were commonly discussed between all the different reports. In terms of all the process safety metrics that were found from the companies, the ones listed below in Table 3 were the most common:

Table 3: Metrics commonly found for Personnel and Process Safety

	<u>Metric</u>	<u>Unit</u>
Personnel Safety	Total Recordable Incident Rate	Number of recordable injuries * 200000/total hours worked
	Loss Time Incident Rate	Number of lost time incidents * 200000/total hours worked

	Fatalities	Number of Fatalities
	Serious Injuries	Number of Injuries
Process Safety	Tier 1 & Tier 2 Process Safety Rate	Tier 1 Incidents * 200000/total hours worked
	Tier 1 Incidents	Number of Tier 1 Incidents

After finding the most common metrics that were discussed in each company, the next evaluation that was done was trying to determine the prevalence of each metric discussed in the reports. This leads to Table 4 shown below, where values that are highlighted in red indicate more than half the industry reports this metric in their ESG report.

Table 4: Prevalence of information provided in ESG Reports from different industries*

	Oil & Gas	Specialty Chemicals	Pharmaceuticals
GHG Emissions	100%	90%	100%
GHG Intensity	70%	60%	20%
VOC Emissions	80%	70%	10%
% Waste Deferred from Landfill	20%	40%	60%
Women in Leadership	100%	90%	100%
Minorities in Leadership	70%	80%	70%
Community Investments	70%	40%	50%
Employee Volunteerism	10%	20%	50%
Independent Board Members	70%	60%	70%
Corporate Political Contributions	30%	40%	40%

% Shares represented in Annual Meeting	10%	0%	0%
Reported Completion of Compliance Audits	30%	40%	60%
Total Recordable Incident Rate	100%	100%	60%
Loss Time Incident Rate	80%	40%	70%
Fatalities	90%	90%	70%
Serious Injuries	20%	60%	0%
Tier 1 & Tier 2 Process Safety Rate	80%	70%	0%
Tier 1 Incident	70%	50%	10%
Spills Reported	100%	20%	10%

*all information found from 2021 ESG reports of all inspected companies

An overall industry analysis is shown below where the average amount of information of each metric is reported. The shaded part of the circle represents how much each industry discusses and publicly reports the information below in Table 5:

Table 5: Evaluation of Metrics Disclosed by Industry

	Oil & Gas	Specialty Chemicals	Pharmaceuticals
Environmental			
Social			
Governance			
Personnel Safety			
Process Safety			

After finding out how much each topic is discussed by every industry, any topic that was discussed by over half of each industry was then compared with safety metrics. Below is a figure that organizes the TRIR & LTIR of all companies investigated. Using the order of companies found to make this graph consistently decrease, the axis remains the same while comparing different ESG Metrics to see if there is a relationship between the two. This is shown in Figure 3 below:

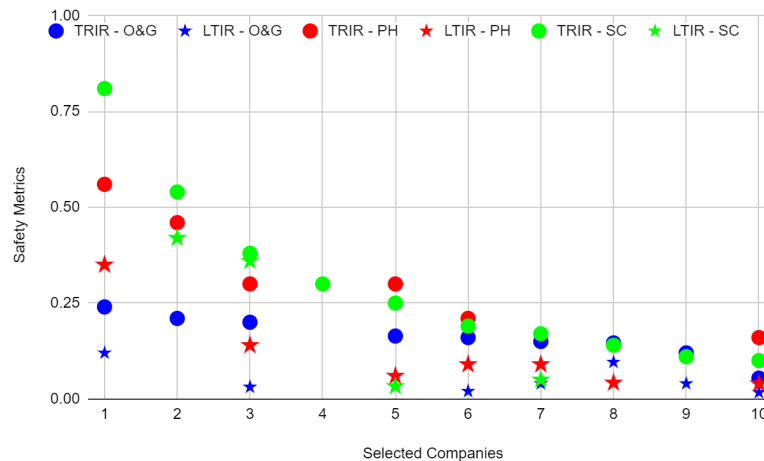


Figure 3: Graph of all companies TRIR & LTIR¹

Using the same X-axis, this graph is plotted for each metric looking if there is a decrease in any other metric as well. Figure 4 below shows the graph of all the greenhouse gas emissions that were reported. The quantities varied so much via industry demand that the Y-axis was measured in log-scale to properly show the trend these companies followed.

¹ Order of Companies in X-Axis provided in Table 1

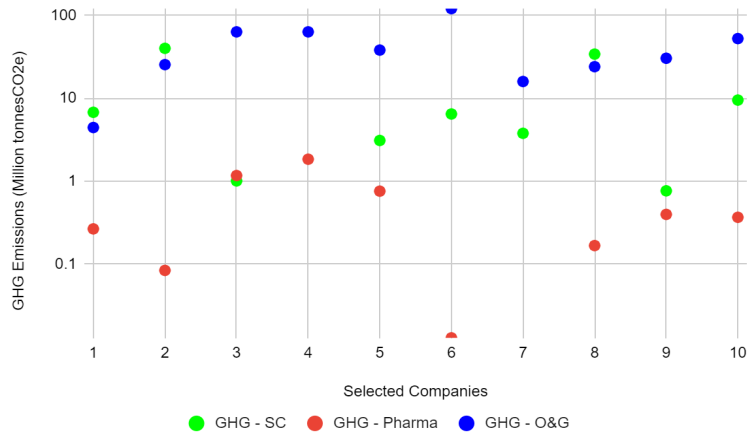


Figure 4: Chart of Greenhouse Gases Reported Emitted by Each Company*²

There is no noticeable decreasing trend that occurs with any of the industries shown here, which indicates a low correlation between a company being safer and also had a reduction in its GHG Emissions. This was continued again when looking at the GHG Intensity. However, with all the units reported for GHG Intensity varied across industries and immense amounts, only the O&G was evaluated, as it was an industry that had over 80% reporting with the same unit. This is shown in Figure 5 below:

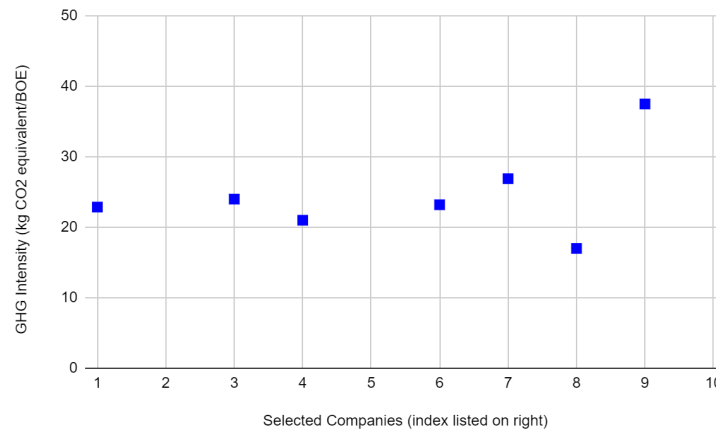


Figure 5: Chart of GHG Intensities of only Oil & Gas Companies*³

² Order of Companies in X-Axis provided in Table 1

³ Order of Companies in X-Axis provided in Table 1

The percentage of women in leadership was also reviewed within each company to see if there was a trend with the TRIR & LTIR. This graph is shown below.

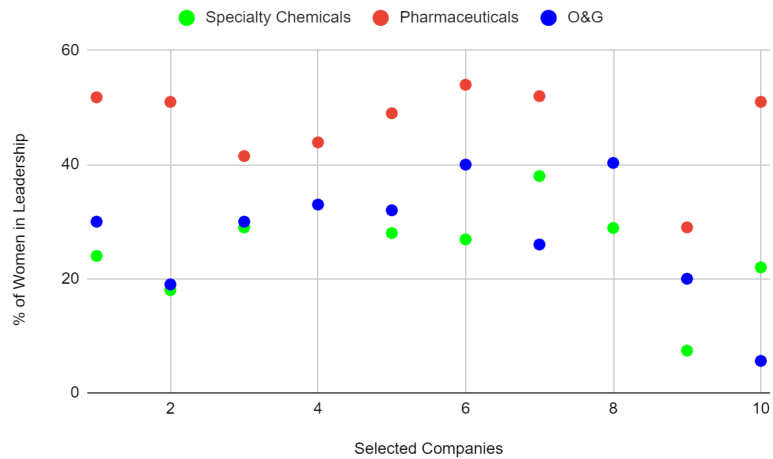


Figure 6: Chart of Percentage of Women in Leadership⁴

As there seems to be no correlation between safety metrics in the industry and the percentage of women in the industry. This same concept is reflected below with minorities in leadership in the Figure 7 below.

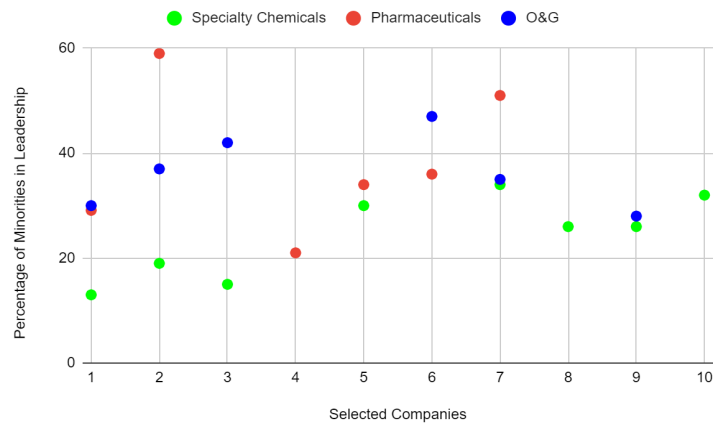


Figure 7: Chart of Percentage of Minorities in Leadership⁵

⁴ Order of Companies in X-Axis provided in Table 1

⁵ Order of Companies in X-Axis provided in Table 1

Safety metrics were also prevalent in the reports, specifically referring to Tier 1 & Tier 2 Incident Rate. As the figures above, this metric was compared with companies at descending TRIR values, leading to Figure 8 below:

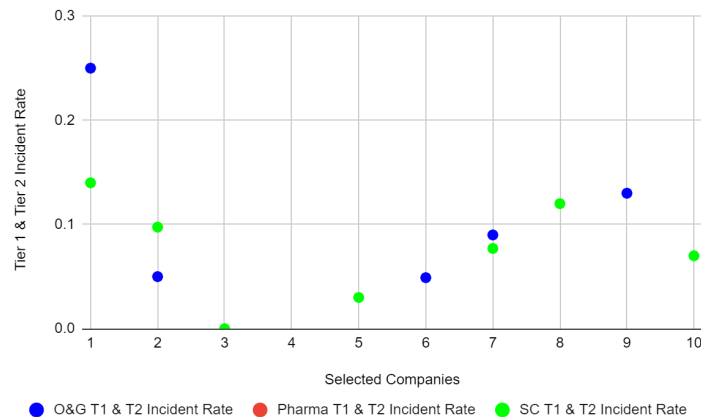


Figure 8: Chart of Tier 1 & Tier 2 Incident Rates⁶

In terms of the different ESG rating agencies that were looked into, two main ones were examined: MSCI and Sustainalytics. MSCI provides multiple tools in terms of assisting investors, yet one that they are most well-known for is ESG³. For the fourth consecutive year, they have been ranked the best firm for governance research by Independent Research in Responsible Investment³. Additionally, the MSCI publicly provides information about what they rate each of the companies that were evaluated in this report about the quality and strength of ESG performance from every company. Sustainalytics is another ESG rating agency, but rather evaluates the company's exposure to different industry-specific ESG risks and how effective its approach to managing those risks is⁴. They additionally provide a quantitative result on how each company is performing and consider whether one should invest within the company based on their recent ESG performance.

⁶ Order of Companies in X-Axis provided in Table 1

The values provided by Sustainalytics and MSCI were averaged and then compared with the TRIR to see if there would be any trend that exists. This is shown in Figure 9 below:

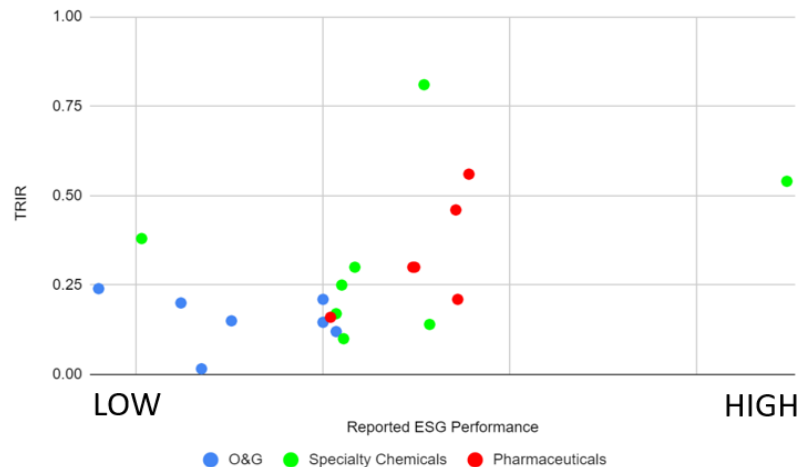


Figure 9: Composite ESG Performance vs Safety Metrics

Analysis

A lot of interesting data was found during this overview analysis. When it comes to finding the metrics, there was a significant lack of quantitative information provided for governance research. Most governance reports discuss either the board in detail as well as the committees they are in, whether a company has complied with finishing their tax audits, or what the plans are to tackle its business-related problems over the next few years. Much of this information is not quantitative, therefore making it difficult to relate different companies with one another, let alone industries.

Even when comparing different industries with one another, there were struggles with trying to compare different quantitative metrics. Looking at greenhouse gas intensity, it would make sense to compare different companies, the unit would be the same. However, it is only unanimous for the oil and gas industry, where they all compare it with the barrels of oil produced. When one looks at other industries, if they *do* report the values, the unit is incredibly varied, as shown in Figure 2. The greenhouse

gas intensity for oil and gas companies is relatively the same; however, there is no way to tell with pharmaceutical companies and specialty chemical companies, as some companies report millions in revenue or a metric ton of product.

Looking at all the metrics that are commonly reported for ESG, when ranking them with companies in descending TRIR order, there is no correlation or descending trend with any of the other metrics. This indicates that the safer a company is may not reflect how well the company is doing in other regards such as social or governance. In addition, another interesting finding was that even comparing different safety metrics with one another, there was no decrease present in Figure 8. This indicates that the 'safer' a company in reducing recordable incidents, this does not mean they are safer in other regards such as Tier 1 & Tier 2 incidents. To determine if one company is safer than another, more metrics need to be reported to be compared.

Table 5 presents how often different parts of ESG and safety were mentioned in the reports. A few key points here that are interesting were that the Oil & Gas and Specialty Chemical Industries reported very similar amounts of results. There was a slight variation in how much both of the industries discussed. However, what was most fascinating was the lack of information provided by the pharmaceutical industry about their process safety. The lack of conversation about Tier 1 Incidents, Incident Prevention Meetings, and even serious injuries in the pharmaceutical industry does not indicate whether the company measures it or not, but this does show the hesitance in reporting information where other industries have been able to do this for years.

Lastly, when examining the Composite ESG Performance vs. Safety Metrics in Figure 9, there is a weak correlation present in looking at the strength of ESG performance and TRIR. This indicates that these agencies, even if they do include safety in their overall score, safety is considered to a small extent compared to other metrics. In addition, when looking at the companies that reported more information

such as Linde, they were able to score much higher in ESG, showcasing that the more transparent companies are to their investors about their metrics, the more they tend to do better in ESG performance.

Recommendations

The biggest recommendation would be a push for pharmaceutical companies to present more of their safety information in their ESG reports. For so many companies, safety is at the forefront of everything they do, but no one can know if the metrics are not spoken outward to investors, who could be concerned about this exact topic. Not only is it process safety metrics, but when it comes to spills as well, those values were not publicly reported, while it was well-documented by oil and gas and specialty chemical companies. Companies that reported more of their information tended to score higher in ESG.

The research that was done in this presentation was only done for the year 2021. It would be interesting to see if any of the values or transparency change over time in future years, as well as look more into how each company is progressing through their goals in ESG, and if that impacts their scores.

In addition, there should be a bigger focus on normalizing information found from different industries in terms of intensities. Energy intensity and greenhouse intensity are values that are always reported, but they are not necessarily comparable with other companies as they are in different units altogether. Just like in the Oil & Gas Industry, if there was a stronger push to make units more consistent, this information would be far easier to analyze for investors to make informed and profitable decisions.

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