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Navigating the Corporate Sustainability Reporting Landscape:  
Evaluating the Impact of ESG Disclosure on Corporate Decision-Making

by

Keegan Schealer

A Thesis

Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Master of Arts

In

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Keegan Schealer

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Navigating the Corporate Sustainability Reporting Landscape:  
Evaluating the Impact of ESG Disclosure on Corporate Decision-Making

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Disclaimer: I am currently employed at ERM CVS, a leading sustainability report assurance provider. Some of the randomly sampled companies have been assured by ERM CVS but I have avoided choosing any companies I have had direct engagements with to avoid any conflicts of interest. No confidential information has been used in this study since all sources are publicly accessible via the selected companies' websites.

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## **Abstract**

This study examines the relationship between corporate greenhouse gas (GHG) emissions and financial performance, the prevalence of various climate reporting frameworks, and the influence of leadership involvement on ESG (Environmental, Social, Governance) reporting scope. Using data from 15 companies, this research investigates whether a correlation exists between GHG emissions and financial performance, identifies the most frequently used reporting frameworks among GRI, SASB, GHG Protocol, and TCFD, and assesses how leadership roles such as Chief Sustainability Officer (CSO) impact the scope of ESG reporting. The findings reveal a significant relationship between GHG emissions and financial performance, indicating that oftentimes reduced emissions are associated with increased revenue. The study also finds that SASB and GHG Protocol are the most widely adopted frameworks, reflecting a trend towards greater transparency and accountability in sustainability reporting. Additionally, the presence of a CSO is linked to reduced GHG emissions. This research underscores the importance of integrating robust reporting frameworks and dedicated sustainability leadership to drive environmental and financial success. This study contributes to the understanding of how sustainability reporting practices influence corporate performance and provides actionable insights for advancing corporate sustainability efforts.

## **I. Introduction**

As the global average temperature rises, the corporate ESG (Environmental, Social, Governance) reporting landscape is also heating up. Because investors' and consumers' values align more closely with environmental protection, decreased greenhouse gas emissions, social justice, and better transparency, industries are turning to ESG reporting to show their commitments to people and the planet. However, the current literature struggles to keep up with the evolving landscape of climate disclosure. Therefore, this thesis aims to bridge this gap by synthesizing current research and incorporating real-world examples of corporate ESG disclosures. By examining these examples and highlighting best practices this study demonstrates how robust ESG reporting can drive financial performance, enhance corporate reputation, and attract sustainable investment. These insights will strengthen the business case for corporate sustainability by showcasing the tangible benefits of transparent and effective climate disclosure practices.

To better understand prominent sustainability reporting frameworks such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Greenhouse Gas Protocol (GHGP), and Task Force on Climate-Related Financial Disclosures (TCFD), a review of these standards was conducted. This involves identifying the specific guidelines and criteria outlined by each reporting framework and consulting the research of other scholars who offer independent analyses and critiques. The study also identifies the economic drivers behind sustainability reporting, to explore how reporting practices are influenced by economic factors and, conversely, how these practices impact a firm's financial performance. Finally, case studies are used to explore the practical implications of various reporting frameworks, offering insights into how different standards impact corporate sustainability practices and performance.

This research is partly motivated by the current and pivotal moment in the corporate landscape, which is marked by a significant surge in corporate sustainability initiatives and greenhouse gas (GHG) accounting. Underscoring the growing acknowledgment of climate change as a critical business concern, 83% of Fortune Global 500 companies are actively setting sustainability targets related to climate change, as revealed in a 2022 McKinsey & Co. report.<sup>1</sup> Additionally, a mere 1% of these companies refrain from public-facing acknowledgment of climate change, indicating a near-universal recognition of its importance within the corporate sphere.<sup>2</sup>

Moreover, consumer sentiment is increasingly shaping corporate decision-making processes. According to Harvard Business Review surveys, U.S. customers are more inclined to support brands that demonstrate a genuine commitment to social and environmental responsibility.<sup>3</sup> When consumers perceive a brand to prioritize its impact on people and the planet, they are more likely to favor its products over competitors.<sup>4</sup> This suggests it is becoming increasingly important for companies to align their practices with these evolving societal expectations.

This study aims to describe the theoretical frameworks and key concepts used in sustainability reporting. It also begins to fill the gap in research on how sustainability reporting is influencing firm sustainability practices and performance. Ultimately this paper seeks to answer three questions. First, is there a relationship between a company's GHG emissions and its financial performance? Second, how do climate reporting frameworks, including GRI, SASB, GHGP, and TCFD, influence decision-making in organizations, and which reporting criteria are

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<sup>1</sup> Claes, et. al. (2022)

<sup>2</sup> Claes, et. al. (2022)

<sup>3</sup> Reichheld, et. al. (2023)

<sup>4</sup> Reichheld, et. al. (2023)

used the most often? Lastly, how does leadership involvement influence the scope of reporting, and is having a higher-level sustainability position, like Chief Sustainability Officer, positively correlated with a larger scope of ESG reporting?

Preliminary readings and real-world observations informed two hypotheses to address those questions. Hypothesis one (H1) is that the Global Reporting Initiative is more commonly cited as the primary reporting criteria and has the largest influence on reporting in companies that have more general and all-encompassing ESG goals, but for companies that focus specifically on GHG emissions and environmental impacts, the use of GHGP and TCFD reporting frameworks will be more prevalent. Hypothesis two (H2) is companies with a “C-suite”<sup>5</sup> position related to sustainability will have more recognition on ESG rating indices and have a larger number of ESG metrics included in their report.

A review of the existing literature on ESG policies, corporate reporting, and theoretical frameworks like stakeholder theory and legitimacy theory provides a solid foundation for understanding the key concepts and theories central to the research question. The methodology section then explains how data on a sample of 15 companies’ sustainability reporting practices is collected and analyzed. This includes an overview of the research design, data sources, and analytical techniques employed to address the research questions. The data and analysis are then presented, followed by a discussion of the implications.

Overall, the paper will summarize the key findings and insights derived from the empirical analysis and offer observations that may help improve the sustainability reporting landscape. These observations will provide actionable insights for corporations and policymakers seeking to enhance corporate sustainability practices. Specifically, the paper will highlight that

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<sup>5</sup> “C-suite” refers to positions in executive-level positions like Chief Executive Officer or Chief Sustainability Officer

companies with Chief Sustainability Officers (CSOs) and Vice Presidents (VPs) of Sustainability tend to have lower emissions and lower sustainability risk scores, suggesting the importance of dedicated sustainability leadership. Additionally, the paper will present data on greenhouse gas (GHG) emissions, noting trends and correlations with various corporate practices. Furthermore, the analysis reveals that the Sustainability Accounting Standards Board (SASB) and the Greenhouse Gas Protocol (GHG Protocol) are the most popular reporting standards among the companies studied. This insight underscores the significance of these frameworks in guiding corporate sustainability reporting and could inform future policy and practice.

By providing these observations, the paper aims to offer valuable perspectives that can help shape more effective sustainability strategies, encourage the adoption of best practices, and support the development of robust reporting frameworks that drive meaningful environmental and social outcomes.

## **II. Real-World Application and Significance**

The significance of ESG and sustainability reporting stems from its ability to show a company's commitment to sustainability practices and principles. Companies earn legitimacy through increased transparency of a firm's non-financial data, such as ESG and sustainability reports. Some researchers find that companies, especially those in sectors with higher GHG emissions like oil and gas and manufacturing, tend to report on more Global Reporting Initiative (GRI) indicators and provide more detailed reporting to appeal to their consumers and stakeholders.<sup>6</sup> The GRI sets out a framework for sustainability reporting that companies can use to report their economic, environmental, and social impacts.

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<sup>6</sup> Luo and Tang (2023); Prado-Lorenzo et. al. (2009)

The standardization within reporting frameworks like GRI helps ensure consistency and comparability across sustainability reports. Companies that follow a reporting framework often gain a competitive advantage over their peers who are less transparent about their ESG performance. Stakeholders, as defined by Freeman, are “any group or individual who is affected by or can affect the achievement of an organization’s objectives”, this can be customers, shareholders, and local officials.<sup>7</sup> Stakeholders, as discussed later, have a measurable impact on corporations and their climate-related disclosures.

Transparency in ESG reporting can improve brand reputation and increase stakeholders’ trust. For instance, companies like Unilever and Patagonia have seen increased consumer loyalty and market share due to their commitment to sustainability and transparent reporting practices.<sup>8</sup> High-performing companies also receive recognition from various sustainability-ranking organizations, like the S&P Global Dow Jones Sustainability Index, which can be a great advertisement for smaller companies that value sustainability. Some firms take it a step further by seeking third-party assurance, which adds extra credibility to their data. An assurance report from a firm like Environmental Resource Management Certification and Verification Services (ERM CVS) that is attached to a company’s sustainability disclosure demonstrates to stakeholders and competitors that the metrics in the report are accurate and that the company is genuinely committed to credibility and transparency.

ESG reporting plays a crucial role in enhancing corporate accountability when it comes to setting and achieving sustainability goals. By disclosing their environmental, social, and governance practices, companies can build trust with stakeholders, including investors, customers, and regulators. This transparency helps reduce information asymmetry and can lead

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<sup>7</sup> Freeman and Mcvea (2001)

<sup>8</sup> White et. al., (2019)

stakeholders to make better, more informed, decisions. Some researchers show that the adoption of robust ESG policies often results in improved financial outcomes, such as increased profitability and reduced cost of capital, especially in the long term.<sup>9</sup>

Companies that publicly disclose their sustainability and ESG progress play a crucial role in advancing positive change and paving the way toward a more sustainable future. However, it's important to recognize that reporting GHG emissions alone does not necessarily reflect a company's overall sustainability or environmental performance. True sustainability involves more than just transparency; it requires meaningful actions and strategies to effectively reduce environmental impact. Their transparency can also help set a precedent and encourage other organizations to follow suit. Most companies are not just reporting their emissions; they are also setting goals and tracking their progress, which can be seen in annual ESG reports. In some instances, a company is mandated to report its GHG emissions and would not have done so voluntarily.

Even though these companies may not value sustainability in the same way as a company like Patagonia or Unilever, they are still held accountable by the EPA. Those companies that are mandated to report are often doing so under EPA's Final Ruling – Mandatory Reporting of Greenhouse Gases, which requires that certain sectors with “sources above certain threshold levels [threshold level is set to 25,000 MTCO<sub>2</sub>e] monitor and report emissions”.<sup>10</sup> In this case, it is the EPA that drives positive change and increases transparency. Firms that engage in voluntary reporting are showing stakeholders that they are allowing public oversight of their firm's non-financial performance on their own accord, which may be more valuable to consumers.

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<sup>9</sup> Whelan et. al., (2021); Galama et. al., (2021)

<sup>10</sup> EPA (2009)

Regardless of which entity is setting the standard, more and more companies are setting climate change mitigation targets and reporting their emissions. According to McKinsey & Co. “83% of Fortune Global 500 companies acknowledge and set targets related to climate change while 15% acknowledge climate change without adding specific goals or targets, which leaves only 1% of Fortune Global 500 companies with no public-facing climate change acknowledgment”.<sup>11</sup>

Before looking at the practices and performance of companies with various approaches to sustainability reporting, the next section of this paper will review the existing literature on ESG reporting practices.

### **III. Literature Review**

The growing recognition of climate change as a critical issue for business operations has led to a significant increase in corporate sustainability initiatives and the adoption of comprehensive ESG reporting practices. This section reviews the literature on research related to ESG policy, corporate reporting standards, and the theoretical frameworks that underpin these practices. The aim is to synthesize key findings from the literature that can inform further exploration of how sustainability reporting frameworks influence corporate decision-making and performance. The review is organized into several thematic sections, each addressing different aspects of the ESG reporting landscape, including the historical evolution of sustainability reporting, the role of regulatory frameworks, and the impact of consumer and investor expectations on corporate transparency and accountability when it comes to sustainability efforts.

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<sup>11</sup> Claes, et. al. (2022)

## **A. Reporting Frameworks**

There are numerous frameworks and reporting tools that firms can utilize to enhance their ESG reporting. The most prevalent sustainability reporting frameworks are the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), the Task Force on Climate-Related Financial Disclosures (TCFD), and the Greenhouse Gas Protocol (GHGP). These four reporting frameworks have been chosen for further analysis due to their prevalence and recognizability by those in the environmental policy or corporate sustainability fields.

Standardization through these frameworks is crucial as they provide consistent guidelines and metrics for ESG reporting. This consistency allows for ease of comparability among firms, enhances transparency, and enables informed decision-making by stakeholders. By adhering to standardized reporting practices, companies can present their sustainability performance in a way that is clear, comparable, and credible, thereby facilitating better assessment and benchmarking within and across industries. Additionally, as companies consistently follow a reporting standard and become more established, they will have comparable and standardized ESG metrics from prior years. This is invaluable for assessing progress, identifying trends, and making more informed strategic decisions.

The Global Reporting Initiative was founded in 1997 by the Coalition for Environmentally Responsible Economics to standardize sustainability reporting in a way that would allow companies to communicate their sustainability-related progress to their stakeholders and to the public.<sup>12</sup> GRI requires firms to report under three categories: economic, social, and product responsibility.<sup>13</sup> According to Gutterman, “The GRI Standards include universal reporting principles, guidance on reporting contextual information about an organization and its

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<sup>12</sup> Gutterman (2021)

<sup>13</sup> Gutterman (2021)

sustainability reporting practices and guidance on reporting how an organization manages a material reporting topic and each topic comes with its own specific requirements, recommendations, and guidance”.<sup>14</sup> The primary reason why a firm would choose to reference the GRI is that it increases the credibility of the firm’s report, while also providing the firm a template for how to design their report.<sup>15</sup>

The Sustainability Accounting Standards Board (SASB) is a US-based independent standards-setting organization for sustainability accounting standards.<sup>16</sup> SASB differs from GRI in focusing on industry-specific standards for disclosing financially material sustainability information to investors, while GRI covers a broad range of topics beyond financial materiality. In short, SASB emphasizes material sustainability factors solely related to financial performance.<sup>17</sup> SASB categorizes topics into five dimensions: Environment, Social Capital, Human Capital, Business Model and Innovation, Leadership & Governance, as well as 77 industry-specific sustainability frameworks.<sup>18</sup>

The Task Force on Climate-related Financial Disclosures (TCFD) was developed by the Financial Stability Board to develop recommendations for “more effective climate-related disclosures to promote better decision making”.<sup>19</sup> TCFD has four voluntary disclosure categories: Governance, Strategy, Risk Management, and Metrics and Targets.<sup>20</sup> TCFD shares features with the GRI that help to align the two standards in ways that reduce inconsistency, as shown in later sections. Thus, when firms use TCFD standards they are also in alignment with

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<sup>14</sup> Gutterman (2021)

<sup>15</sup> Afolabi (2022)

<sup>16</sup> Gutterman (2021)

<sup>17</sup> Goswami, et. al. (2023)

<sup>18</sup> Goswami, et. al. (2023)

<sup>19</sup> Ding, et. al. (2023)

<sup>20</sup> Ding, et. al. (2023)

GRI. Ding finds that US firms who operate in carbon-intensive industries are more likely to report under the Strategy and Metrics and Targets disclosures to be transparent with their environmental and financial performance.<sup>21</sup>

The Greenhouse Gas Protocol (GHGP), as this study will discuss in later sections, is the most commonly used standard for firms measuring and reporting GHG emissions. As Gutterman explains, “The GHG Protocol provides the accounting framework for nearly every GHG standard and program in the world—from the International Standards Organization to The Climate Registry—as well as hundreds of GHG inventories prepared by individual companies”.<sup>22</sup> The GHGP outlines standards specific to certain industries or types of organizations. For example, the GHG Protocol Corporate Accounting and Reporting Standard is meant for companies, NGOs, government agencies, and universities that are conducting a corporate-level GHG emissions inventory.<sup>23</sup> The GHG inventory will be reported as a standalone document or oftentimes included in a company’s annual corporate responsibility report.

In regard to the effectiveness of these standards, Luo and Tang find that there is a positive association between the adoption of GRI and carbon mitigation for “firms in countries with lax carbon institutions”, but there are no significant effects of GRI on carbon mitigation “in countries with stringent carbon regulations”.<sup>24</sup> This finding shows that the GRI has the ability to help firms reduce their carbon emissions regardless of the other climate regulations the firm must follow, but the benefit is much more noticeable when a firm operates out of a country with weaker environmental regulations. In countries with strong regulations, firms are already compelled to adhere to rigorous emission standards and reporting requirements, making the additional impact

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<sup>21</sup> Ding, et.al. (2023)

<sup>22</sup> Gutterman (2021)

<sup>23</sup> Gutterman (2021)

<sup>24</sup> Luo & Tang (2023)

of voluntary standards like GRI less conspicuous or statistically significant. Compliance with mandatory regulations takes precedence in such environments.

Conversely, firms in countries with lax regulations may view GRI adoption as a strategic choice to bolster their environmental credentials and reputation, given the absence of strong regulatory pressures.<sup>25</sup> This voluntary adoption allows such firms to demonstrate proactive efforts towards sustainability, potentially gaining competitive advantages where environmental concerns are increasingly influential. Thus, while GRI can enhance carbon mitigation efforts globally, its effectiveness varies based on regulatory contexts, industry dynamics, and firms' strategic responses to environmental challenges. Although Luo and Tang primarily focus on GRI, their findings could apply to other reporting standards such as TCFD, SASB, and GHGP, since all aim to enhance transparency in environmental performance. The GHG Protocol, SASB, and TCFD, though not examined in Luo and Tang's study, are included in this research to provide a more comprehensive comparison across all four standards and their relationship to various other metrics.

## **B. Trends in Corporate Reporting**

While GRI, TCFD, GHGP, and SASB all aim to enhance transparency and accountability in environmental performance, understanding global trends in Corporate Social Responsibility (CSR) and greenhouse gas (GHG) reporting provides crucial context for evaluating the evolution and current state of ESG disclosures worldwide. Tai and Chung argue that firms should not just be a tool for profitability: they should also carry responsibility for protecting and promoting the benefits of other actors and society more broadly.<sup>26</sup> While not all firms share the same views about corporate responsibility as Tai and Chung, firms still have their own reasons for reporting

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<sup>25</sup> Luo & Tang (2023)

<sup>26</sup> Tai & Chung (2014); Halkos & Nomikos (2021)

their ESG progress for a variety of reasons and to varying degrees. Specifically, the most senior level “C-suite”, or “Chief”, executives, may have bonuses tied to ESG performance, there may be stakeholder pressure to report environmental performance, or firms may be mandated to report under EPA’s MRR as previously discussed. No matter the motivator, Halkos and Nomikos find that the number of large, multinational, and small medium enterprises that release corporate responsibility reports has been increasing.<sup>27</sup>

In highly developed regions like Europe and North America, firms are subject to stronger environmental regulations while also facing more internal and external pressures from stakeholders to increase the number of environmental metrics included in their ESG reports. Halkos and Nomikos find that firms operating in countries with higher ownership dispersion and market orientation are more likely to voluntarily disclose environmental performance metrics.<sup>28</sup> As firms increase their experience in ESG reporting, and as an increasing number of firms begin their ESG reporting journey, the reporting standards mentioned above will have increasing influence over firms in North America and across the world. More experienced sustainability reporting firms also provide an increased volume of disclosure, especially around sustainability risk.<sup>29</sup> Sustainalytics defines sustainability risk as “the potential exposure of a company to various environmental, social, and governance (ESG) issues that could negatively impact its financial performance or reputation”.<sup>30</sup> The influence largely resides with the organizations that develop the four major reporting standards, since they potentially encourage other institutions or governments to establish their own standards to exert influence.

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<sup>27</sup> Halkos & Nomikos (2021)

<sup>28</sup> Halkos & Nomikos (2021)

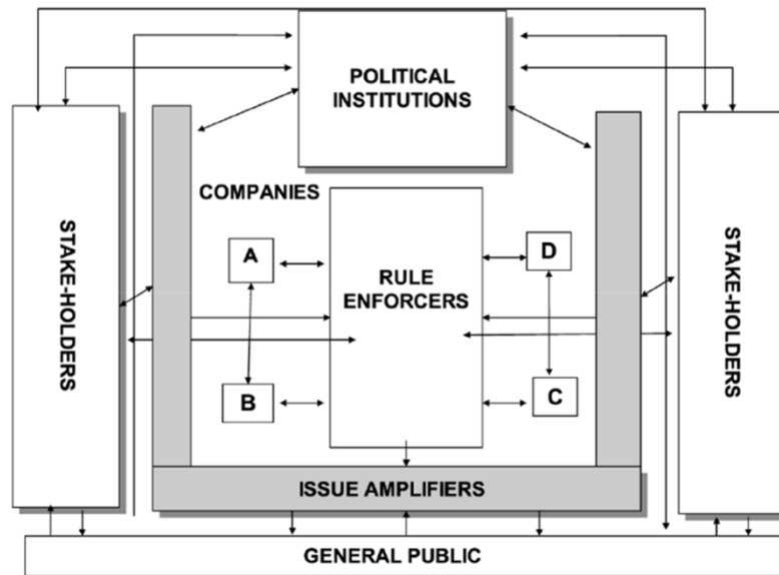
<sup>29</sup> Truant, et. al. (2017)

<sup>30</sup> <https://www.sustainalytics.com/esg-ratings>

### C. The ESG “Arena”

Several different actors interact, compete, and coexist within the sustainability reporting arena, as highlighted by Georgakopoulos and Thomson, who argue that the sustainability reporting field is a contested arena with various actors, such as the reporting standards discussed above.<sup>31</sup> The contestation arises from differing methodologies, metrics, and definitions of materiality (for instance, GRI's broad stakeholder approach versus SASB's investor focus) leading to inconsistencies and challenges in comparability and transparency across reports.

The findings of Georgakopoulos and Thomson indicate that the actions and behaviors of various actors in the sustainability reporting field are deliberately designed to maintain their influence and preserve their technical authority. These strategic maneuvers complicate efforts to harmonize sustainability reporting regulations. Georgakopoulos and Thomson use **Figure 1** to illustrate the complex interactions among key stakeholders and how these relationships shape the development of sustainability reporting standards.



**Figure 1** *Corporate Sustainability Reporting Arena*<sup>32</sup>

<sup>31</sup> Georgakopoulos and Thomson (2008)

<sup>32</sup> Georgakopoulos and Thomson (2008)

As seen in Figure 1, all players in the arena have influence over one another, with the rule enforcers being at the center, but separate from political institutions. Stakeholders surround the arena where companies interact with each other and rule enforcers, like an audience in the stands who actively participates in the show. The stakeholders, in this context, are represented by the general public who own stock in a company or have a general interest in the success of the firm.<sup>33</sup> Rule enforcers have historically been regulatory agencies like the EPA whose power is delegated to them by political institutions; however, the recent overturning of the Chevron Deference by the Supreme Court may diminish agencies' regulatory role, putting more of that responsibility back in the hands of political institutions (i.e. Congress, Federal Judiciary) who will have to act through new or amended legislation to ensure enforcement. Issue amplifiers are described by Afolabi as "theatre critics" who observe what is taking place, communicate with the participants, and report to the audience.<sup>34</sup> NGOs often take on the role of issue amplifiers. Georgakopoulos and Thomson underscore the urgent need for policymakers to reassess and clarify rules that will ensure the integrity of the sustainability reporting landscape. This highlights the ongoing competition and diverse objectives that continue to challenge the alignment of global sustainability reporting practices.

This visual representation of the sustainability reporting arena is meant to show that the interactions among the various actors within this space can play a pivotal role in shaping the future of ESG reporting. In the next section of this paper, this study will explain how interactions among the various stakeholders, rule enforcers, and issue amplifiers determine the development and enforcement of sustainability reporting regulations and standards. Understanding these

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<sup>33</sup> Afolabi, et. al. (2022)

<sup>34</sup> Afolabi, et. al. (2022)

dynamics is critical for advancing transparency, accountability, and consistency in ESG reporting, and ultimately, for contributing to more sustainable business practices worldwide.

#### **D. Theoretical Framework**

Numerous theories provide insights into the factors influencing corporate sustainability reporting. Among these, stakeholder theory, legitimacy theory, and institutional governance theory stand out as particularly compelling. Each theory offers a distinct perspective on how organizations navigate the ‘complex world’ of ESG reporting.

Stakeholder theory posits that organizations are influenced by various stakeholders such as investors, customers, employees, and communities, who have expectations regarding corporate behavior and transparency in sustainability practices.<sup>35</sup> The ESG Arena above provides a visual representation of this concept. Due in part to the strength of the contemporary environmental movement, firms are being held responsible for the environmental damages that result from their operations. Numerous studies empirically validate stakeholder theory by showing that investors, customers, and communities are responsible for the increasing number of corporate reports and the increasing number of metrics in the report.<sup>36</sup>

Legitimacy theory suggests that organizations engage in sustainability reporting to maintain their legitimacy and societal acceptance, aligning their actions with prevailing norms and expectations.<sup>37</sup> Legitimacy theory and stakeholder theory are similar but have distinct differences in explanations of what motivates ESG reporting. Legitimacy theory claims that companies are committed to responsible practices to enhance their legitimacy in the industry and to also increase consumers’ trust in their operational legitimacy.<sup>38</sup>

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<sup>35</sup> Liesen, et. al. (2015); Depoers et. al. (2016); Roberts (1992)

<sup>36</sup> Liesen, et. al. (2015); Depoers et. al. (2016); Roberts (1992); Bolton (2020); Ritthaler (2023); White, et. al. (2019)

<sup>37</sup> Liesen, et. al. (2015)

<sup>38</sup> Liesen, et. al. (2015)

Some scholars claim that “legitimacy theory has the role of explaining the behavior of organizations in implementing and developing voluntary social and environmental disclosure of information in order to fulfill their social contract that enables the recognition of their objectives and the survival in a jumpy and turbulent environment”.<sup>39</sup> In contrast, stakeholder theory posits that firms are motivated by the specific interests and pressures of stakeholders, such as shareholders, employees, and the public, who have a direct interest in the company's sustainability practices. While legitimacy theory focuses on the firm's pursuit of general societal approval, stakeholder theory emphasizes the influence of specific stakeholders and their demands.

Corporate ESG reports are one way firms can show off their success and promote their achievements to the public. Some firms may be so motivated to look good for the consumer that they may underreport bad things, like their amount of GHG emissions, and overreport the good things, like the quantity of waste diverted from the landfill. Depoers and colleagues find that sustainability managers adapt their ESG or sustainability disclosures to address the needs of different stakeholder groups, supporting stakeholder theory, but will also exaggerate the success of their firm’s sustainability strategy in public reports, supporting legitimacy theory, as opposed to their Carbon Disclosure Project (CDP) reports which have higher standards. This finding was the reason why the sample environmental performance data from companies utilized later in this study have all undergone third-party testing and have external assurance reports.

Institutional governance theory emphasizes the role of external institutions, including regulatory bodies like the SEC and industry standards like SASB or GRI, in shaping corporate behavior and reporting practices, thereby influencing how organizations respond to

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<sup>39</sup> Schiopoiu Burlea, et. al. (2013)

environmental and social pressures.<sup>40</sup> Typically, firms that align with institutional governance theory and adhere to industry standards are larger and exhibit higher governance quality, characterized by a stronger board structure, greater accountability, and a better position to achieve long-term success.<sup>41</sup> These firms may be more likely to be in industries like oil and gas that often have larger Scope 1 (direct emissions from sources owned and controlled by the company, e.g. natural gas boiler) and Scope 2 (indirect emissions from purchased energy) emissions, which is why they may not be as willing to report their environmental impact to consumers. It may not be that firms are unwilling, but rather that they perceive less benefit in reporting their impact when they know it will be larger than that of other firms or industries.

Together, these theories provide a robust framework for understanding the complex motivations and external influences that drive corporate sustainability reporting across different industries and geographic regions. The following section of this study will delve into the methodology for collecting and analyzing various ESG reports from 15 companies spanning the period from 2021 to 2023.

#### **IV. Methods**

This study aims to test the following hypotheses:

- H1: The Global Reporting Initiative is more commonly cited as the primary reporting criteria, giving it the largest influence on reporting in companies with more general and all-encompassing ESG goals, but for companies that focus specifically on GHG emissions and environmental impacts GHGP and TCFD will be more prevalent.
- H2: Companies with C-suite involvement in sustainability reporting will have more recognition on ESG rating indices and have more ESG metrics in scope.

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<sup>40</sup> Rankin, et. al. (2011)

<sup>41</sup> Rankin, et. al. (2011)

Drawing on corporate sustainability reports from 15 companies in various industries, all of which have externally assured environmental data, a dataset was created to encompass diverse perspectives and industry contexts. Excel was utilized to create the datasheet due to the ease of organizing data within the grid-based interface as well as the ability to create numerous Pivot Tables out of one Masterfile tab. This Masterfile includes a comprehensive set of variables for each of the 15 companies analyzed in the study, spanning the period from 2021 to 2023. The variables captured in the Excel file include:

1. Greenhouse Gas (GHG) Emissions Data (2021-2023):
  - a. Scope 1 Emissions: Direct GHG emissions from owned sources.
  - b. Scope 2 Emissions: Indirect GHG emissions from the generation of purchased energy (electricity, steam, heating, and cooling).
2. Reporting History
  - a. First Reporting Year: The initial year the company began reporting sustainability data.
3. Governance Structure (2021-2023)
  - a. Highest Sustainability Position: The highest position directly related to sustainability or ESG (e.g., Chief Sustainability Officer, VP of Sustainability, Executive Director of Environmental Health, Safety, and Sustainability).
4. Reporting Standards (2021-2023)
  - a. Reporting Standard Used: The ESG reporting framework used each year (e.g., GRI, SASB, TCFD, GHGP)
5. ESG Metrics and Ratings (2021-2023)

- a. DJSI ESG Rating: The company's rating in the Dow Jones Sustainability Index. DJSI is a measure of a company's sustainability performance based on its economic, environmental, and social performance.
- b. Sustainalytics Risk Score: The company's risk score as assessed by Sustainalytics. The score is based on the degree to which a company's value is at risk due to ESG factors.
- c. Number of ESG Metrics in Scope: The total number of distinct ESG metrics reported by the company each year (e.g., GHG emissions, water usage, diversity and inclusion, etc.)

6. Financial Data (2021-2023)

- a. Revenue: The total revenue generated by the company each year.

The various industries tend to have differences in their emissions sources and average overall emissions, which is why it is important to select a sample that covers multiple industries. For example, the airline industry will have higher Scope 1 GHG emissions due to the large quantity of direct emissions from fuel used to operate planes. A technology company may have more Scope 2 GHG emissions due to high volumes of purchased electricity needed to power their building and computers.

The data collection process involved identifying and recording Scope 1 & 2 GHG emissions data from each company's sustainability reports from 2021-2023 and recording the number of metrics in each report over the years. A company's sustainability report typically includes information on its environmental, social, and governance (ESG) performance. This often covers aspects such as greenhouse gas emissions, energy consumption, waste management, and water

use, as well as social factors like employee well-being, community engagement, and diversity. Governance sections usually detail the company's sustainability strategies, policies, and compliance with relevant regulations and standards. The report aims to provide transparency on how the company manages its sustainability impacts and aligns with broader societal and environmental goals.

To measure financial performance, earnings data from 2021-2023 was extracted from MacroTrends.com, which is a website that lists publicly available financial data. The data collection process also involved documenting the reporting criteria used by each company over the period from 2021-2023 to find which criteria have the most influence on the metrics each company chooses to report and to find any trends in the preferred reporting criteria. Typically, the reporting criteria are included in the appendix of the report. Each reporting framework used in this study requires (GRI) or recommends (SASB, TCFD, GHGP) the inclusion of an index at the end of the report. This index lists the standards and metrics reported according to each respective framework, facilitating easier navigation and verification of the reported information. The number of ESG metrics in scope was gathered by counting each metric used, to assess how the reporting criteria and leadership positions influence the scope of reporting.

Most ESG reports contain a statement from the CEO or other prominent person with the company, but there is often no acknowledgment of the sustainability team responsible for creating the report. Due to the lack of information in the reports related to the highest level of corporate governance involved in sustainability reporting, this study utilized LinkedIn and Google searches to find the highest sustainability-related position at each company over the years. At public companies with a Chief Sustainability Officer (CSO/C-suite position) or a VP of Sustainability-related position, there is oftentimes a press release when someone is hired

announcing the position has been filled. These press releases seemingly are not as popular with manager or analyst-level positions, so LinkedIn posts were particularly helpful in accounting for those positions. the number of relevant metrics in scope to assess how leadership involvement influences the scope of reporting and whether or not high levels of involvement (e.g., C-suite level) correlate with better financial performance.

Due to resource constraints, this study is limited to publicly available sustainability data in various companies' sustainability reports. The 15 companies involved in this study were chosen from *ResponsibilityReports.com*, which lists publicly accessible sustainability/ESG reports from global companies.<sup>42</sup> Together, the selected companies represent the major industries: consumer goods, healthcare, freight and transportation, technology, energy, and industrial goods. There are three consumer goods companies, one healthcare company, one freight and transportation company, three technology companies, two energy companies, and five manufacturing companies. Besides ensuring each sector was represented in the study, companies were filtered to only include those with reports that contained external report assurance.

If a company's report did not contain the information needed to address the hypotheses, another company from the same industry was selected. Reports often include Scope 1 and Scope 2 emissions and a description of the company's Board of Directors structure. There were no instances in which a company did not report their GHG emissions in their report; if the report were to have not included GHG emissions the report would have been removed from this study. All of the other metrics This approach was designed to find companies that represent various organizational structures, scopes of reporting, carbon footprints, and reporting criteria. On top of

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<sup>42</sup> [www.responsibilityreports.com](http://www.responsibilityreports.com)

assessing 2023 performance year ESG data, this study also gathered data from 2021 and 2022 to evaluate trends in reporting.

The annual Scope 1 and 2 GHG emissions data were added to an Excel Masterfile along with the company name, the highest sustainability-related position (Chief Sustainability Officer, VP Sustainability/Executive Director, Manager), reporting standards used in the report (GRI, SASB, TCFD, GHGP), Dow Jones Sustainability Index rating, Eco Vadis rating, Sustainalytics risk score, the number of ESG metrics in the report, and company revenue. The first reporting year was also included to get a sense of how long a company has been reporting.

## **VII. Results**

This study investigates the impact of sustainability reporting practices on corporate performance across 15 companies from diverse industries. The analysis focuses on testing several hypotheses related to the influence of reporting criteria, C-suite involvement, and corporate governance on ESG metrics and financial performance indicators. By examining sustainability reports from 2021 to 2023, this section presents key findings that shed light on how companies integrate environmental, social, and governance (ESG) considerations into their operational strategies.

### **A. Adoption of Reporting Standards**

All 15 companies used in this study adopted an established sustainability reporting framework, most likely due to this study's selection criteria which required third-party assurance. By 2023, a majority of companies had implemented the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB) guidelines, and the Greenhouse Gas (GHG) Protocol (see **Figure 2**). Although there were high levels of adoption in 2021, as discussed below there has been growth in the use of standardized reporting practices. Coinciding with the work of

Gutterman, this study finds that GHGP and GRI are two of the most prevalent reporting frameworks, while SASB is used in all but one report. In 2022 and 2023 SASB was utilized in 14 out of 15 companies, which enforces the importance of relating environmental performance to financial risk. In 2021, Boeing did not reference SASB, but began referencing SASB in 2022 and continued in 2023. The other 13 companies began referencing SASB before 2021. Boeing had just released their first ESG report in 2021 and only referenced TCFD and GHGP in that report.

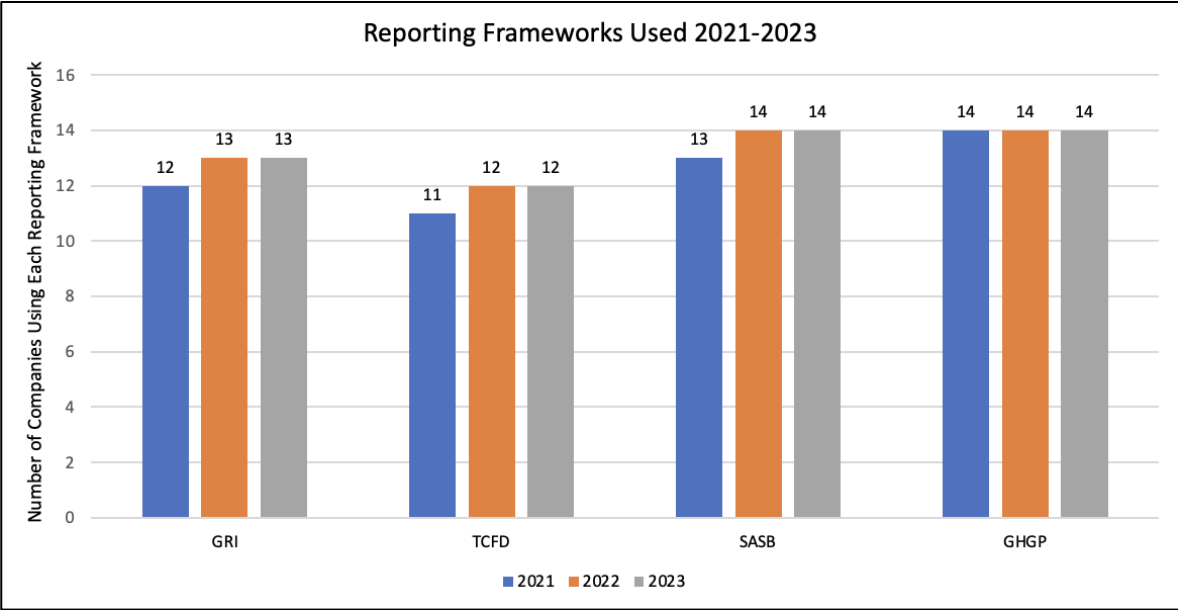
Reporting Standard	Number of Companies
GRI	13
SASB	14
TCFD	12
GHGP	14

**Figure 2:** *Number of Each Reporting Standard Used in 2023 Sample of 15 Companies.*

Over the period from 2021 to 2023, there was a noticeable increase in the number of companies adopting the GRI, SASB, and Task Force on Climate-Related Financial Disclosures (TCFD) frameworks, while the use of the GHG Protocol remained consistently high (**Figure 3**). From 2021-2023 there were very few changes in reporting frameworks, most likely because GRI, SASB, TCFD, and GHGP have been around for years and are already established as the go-to frameworks in the years before the sample. However, there were changes at two companies, Boeing added GRI and SASB in 2022 and DuPont added TCFD in 2022; these were the only changes noted from 2021-2023 in this study. Because these frameworks are the most comprehensive and require the most transparency, the high number of companies adopting reporting standards suggests a growing commitment to comprehensive and transparent reporting.

Revisiting Hypothesis One (H1): The Global Reporting Initiative (GRI) is more commonly cited as the primary reporting criteria and has the largest influence on reporting in companies with more general and all-encompassing ESG goals, but for companies that focus specifically on GHG emissions and environmental impacts, the GHG Protocol and TCFD will be more prevalent. Contrary to H1, this study finds that GRI is cited less frequently than SASB and the GHG Protocol.

When forming the hypotheses, before collecting data, it was thought that some of the sampled companies may not include additional metrics outside of GHG emissions, like water usage and waste generation, and these companies would not need to reference reporting standards that go above and beyond just Scope 1 and Scope 2 GHG emissions. The data shows that all 15 companies have reported numerous metrics outside of just GHG emissions.



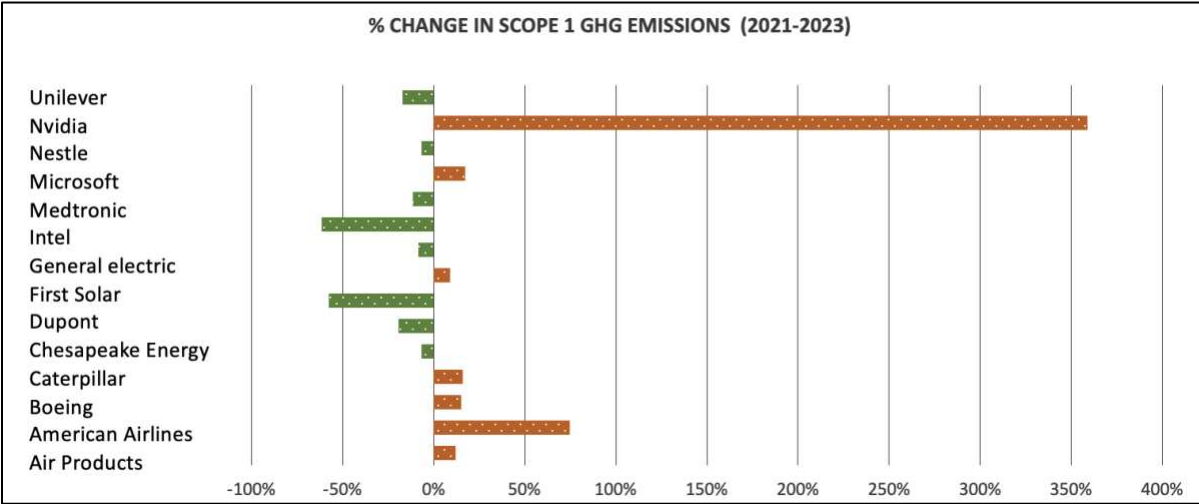
**Figure 3** Trends in chosen reporting framework 2021-2023.

Among the companies studied SASB and GHG Protocol standards (GHGP) were more common than GRI. SASB standards offer industry-specific guidelines, and the GHGP focuses on detailed greenhouse gas accounting. All companies in the study reported GHG emissions all

three years, which explains why most of them would refer to the GHGP standards. What distinguishes the one company that did not utilize the GHGP, is the company did not include Scope 1 and Scope 2 emissions separately in its ESG report and instead reported Scope 1 and 2 as a combined total.<sup>43</sup>

**B. Changes in Greenhouse Gas Emissions**

Another important comparison involves looking at trends in GHG emissions. To do this, the Scope 1 (direct emissions owned by the company, e.g., on-site combustion) and Scope 2 (indirect emissions resulting from company operations, e.g., purchased electricity) emissions were compared from 2021-2023 in Figure 4 and Figure 5. Figures 4 and 5 take a granular look at the emissions from each individual company.



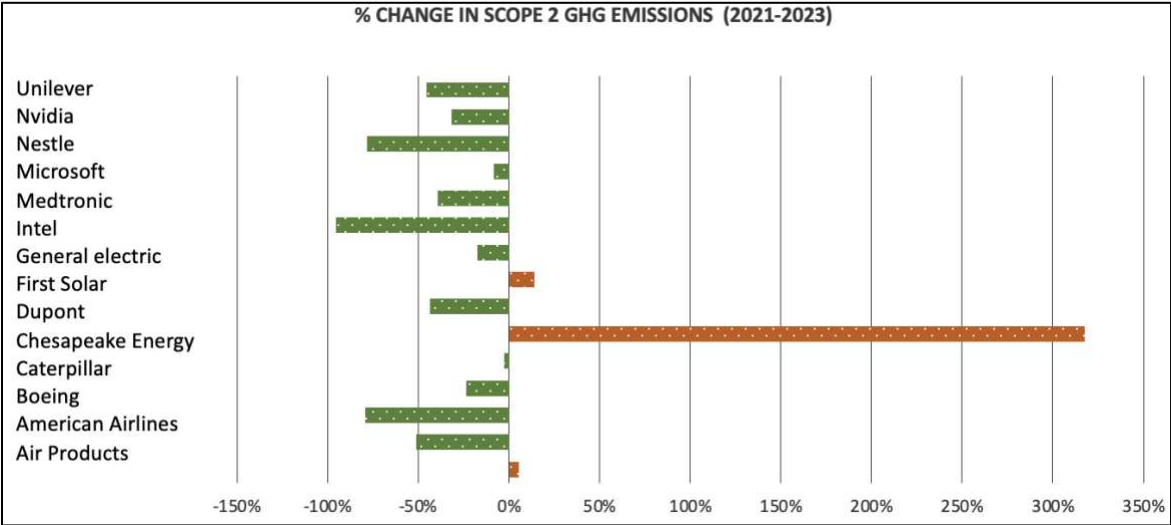
**Figure 4** Percent change in Scope 1 GHG emissions.

This study found noticeable trends in both Scope 1 and Scope 2 GHG emissions among the sampled companies. Eight out of the 15 companies managed to reduce their Scope 1 emissions from 2021 to 2023, while five companies experienced a marginal increase, and one company,

<sup>43</sup> For the sake of this study, the GHG data was pulled from the auditor’s external assurance report.

Nvidia, saw a 359% increase in Scope 1 emissions (refer to **Figure 4**). Nvidia is the outlier in this analysis since no other companies saw as large of an increase in their Scope 1 emissions, in fact, if Nvidia is filtered out of the equation the average Scope 1 GHG emissions across the remaining 14 companies is -3%. This demonstrates that most companies are taking the necessary steps to reduce their direct GHG emissions.

Similarly, reductions in Scope 2 emissions were achieved by twelve companies, while two companies saw minor increases (refer to **Figure 5**). Similar to the Scope 1 GHG emissions trends this study found an outlier in Chesapeake Energy, the company saw a 318% increase in Scope 2 Market-Based GHG emissions, indicating that they have either expanded their operations or have not purchased as many RECs or VPPAs to offset their emissions as they have in prior years. When filtering Chesapeake Energy out of the equation the percent change in Scope 2 GHG emissions amongst the 14 remaining companies is -36%, which is a significant decrease.



**Figure 5** Percent change in Scope 2 GHG emissions (market-based).

The exact reasonings for changes in GHG emissions at the sampled companies are unknown and only inferences can be made based on available public data. However, it is common practice for companies to purchase Renewable Energy Credits (RECs) or Virtual Power Purchase

Agreements (VPPAs) to offset their Scope 2 GHG emissions since many companies have emissions reduction goals. Direct Scope 1 GHG emissions are thought to be closely correlated with production and company operations so as companies create energy efficiency programs and streamline their operations, they may see reductions in overall Scope 1 emissions. The period from 2021-2023 was also a period of growth following the COVID-19 pandemic. Many consumer goods and transportation companies, not just those included in this study, have been ramping up production following the easing of state and federal COVID-19 regulations, which increases Scope 1 GHG emissions.

### **C. GHG Emissions and Financial Performance**

The statistical analysis reveals both strong positive and strong negative correlations between company revenue and GHG emissions among the 15 companies studied. Notably, **Figure 6** shows two companies exhibit an extremely strong positive correlation (0.971-0.995), indicating that revenue is linked with GHG emissions. When GHG emissions go up, so does revenue, and vice-versa. This pattern suggests that for these companies, revenue growth is likely tied to increased operational activities that lead to higher emissions.

On the other hand, most companies show a very strong to extremely strong negative correlation, between -0.745 and -0.994, indicating an inverse relationship between GHG emissions and revenue. For these companies, as GHG emissions fall, revenue increases. This suggests that these companies are successfully separating their financial growth from environmental harm, possibly by enhancing efficiencies, embracing sustainable practices, or investing in cleaner technologies.

Company	Sum of 2021 GHG Emissions	Sum of 2022 GHG Emissions	Sum of 2023 GHG Emissions	Sum of 2021 Revenue (Million USD)	Sum of 2022 Revenue (Million USD)	Sum of 2023 Revenue (Million USD)	Correlation
Intel	3,290,000	1,538,443	893,000	\$ 79,024	\$ 63,054	\$ 54,228	0.995
American Airlines	20,089,000	29,008,000	34,754,600	\$ 29,882	\$ 48,971	\$ 52,788	0.971
Air Products and Chemicals	24,200,000	24,200,000	26,500,000	\$ 10,323	\$ 12,699	\$ 12,600	0.468
First Solar	502,271	560,210	571,342	\$ 2,923	\$ 2,619	\$ 3,319	0.224
General Electric	1,890,000	1,480,000	1,630,000	\$ 74,200	\$ 76,560	\$ 68,000	-0.116
Microsoft	553,109	427,442	538,094	\$ 168,088	\$ 198,270	\$ 211,915	-0.318
DuPont	2,739,000	2,134,000	1,303,000	\$ 12,068.00	\$ 13,017.00	\$ 12,566.00	-0.445
Amgen	191,000	165,000	165,000	\$ 25,979	\$ 26,323	\$ 28,190	-0.620
Medtronic	355,700	299,200	256,800	\$ 30,117	\$ 31,686	\$ 31,227	-0.745
Chesapeake Energy	271,219	237,525	234,182	\$ 5,809	\$ 11,743	\$ 8,721	-0.816
Nvidia	91,740	82,822	73,017	\$ 16,675	\$ 26,914	\$ 26,974	-0.855
Unilever	823,511	710,740	621,682	\$ 62,047	\$ 63,293	\$ 74,141	-0.879
Boeing	1,080,000	1,058,000	1,043,000	\$ 62,286	\$ 66,608	\$ 77,794	-0.936
Nestle	4,820,000	4,010,000	3,470,000	\$ 95,701	\$ 99,320	\$ 103,984	-0.982
Caterpillar	1,510,000	1,480,000	1,440,000	\$ 50,971	\$ 59,427	\$ 67,060	-0.994

Key	
0.00 to 0.10	Negligible negative correlation
0.10 to 0.30	Weak negative correlation
0.30 to 0.50	Moderate negative correlation
0.50 to 0.70	Strong negative correlation
0.70 to 0.90	Very strong negative correlation
0.90 to 1.00	Extremely strong negative correlation
0.00 to 0.10	Negligible positive correlation
0.10 to 0.30	Weak positive correlation
0.30 to 0.50	Moderate positive correlation
0.50 to 0.70	Strong positive correlation
0.70 to 0.90	Very strong positive correlation
0.90 to 1.00	Extremely strong positive correlation

**Figure 6:** Correlation between GHG emissions (MTCO<sub>2</sub>e) and revenue.

As shown in **Figure 7**, all the companies seen in Figure 6 with a strong negative correlation (dark red highlight) experienced decreased emissions and increased revenue throughout 2021-2023. This visualization supports the statement above that these companies are managing to separate their financial performance from GHG emissions. When looking at the two companies, Intel and American Airlines, that experienced the strongest positive correlation between GHG

emissions and revenue (dark green highlight), Figure 7 shows that Intel experienced decreases in revenue and GHG emissions, while American Airlines saw an increase in both.

Company	% Change in Revenue	% Change in GHG Emissions
Intel	-31%	-73%
American Airlines	77%	73%
Air Products and Chemicals	22%	10%
First Solar	14%	14%
General Electric	-8%	-14%
Microsoft	26%	-3%
DuPont	-4%	-52%
Amgen	9%	-14%
Medtronic	4%	-28%
Chesapeake Energy	50%	-14%
Nvidia	62%	-20%
Unilever	19%	-25%
Boeing	25%	-3%
Nestle	9%	-28%
Caterpillar	32%	-5%

Key	
	Positive % Change
	Negative % Change

**Figure 7:** Percent changes in GHG emissions and revenue from 2021-2023.

Additional analysis reveals that companies with a more recent history of reporting their GHG emissions, typically within the past 7 years, often exhibit a positive correlation between revenue and GHG emissions. This is not always the case, given that Intel started reporting in 2000 and has the strongest positive correlation, and Boeing started reporting in 2021 and is among the companies with the strongest negative correlation. This trend might be due to these companies still establishing their reporting frameworks and environmental management systems. Newer reporters may lack mature sustainability practices or technologies that can decouple revenue growth from increased emissions. As they grow and develop more sophisticated sustainability strategies, their emissions performance might improve, potentially altering these correlations in the future.

Concerning Hypothesis One (H1) and Hypothesis Two (H2) the correlation between financial performance and GHG emissions seems to be unrelated to reporting standards and sustainability-related positions at the company. It seems that the company's first reporting year could be influencing these correlations. However, there may be additional variables not included in this study, such as company culture or operational differences, that could be contributing to these trends.

**D. Impact of Sustainability Leadership on Performance**

When assessing the highest sustainability-related position at each of the 15 companies included in this study, 9 companies have a Chief Sustainability Officer (CSO), 4 companies have a VP or Executive Director, and 2 have a manager at the highest position. The presence of dedicated sustainability leadership positions, such as a Chief Sustainability Officer (CSO), was found to be associated with both lower GHG emissions and higher financial performance. Companies with a CSO reported lower average GHG emissions and higher revenues compared to companies whose highest sustainability-related position was VP/Executive Director or Manager (see **Figure 8**). This suggests that high-level sustainability leadership can drive both environmental and financial benefits.



**Figure 8:** (Left) Average 2021-2023 GHG emissions at each of the highest sustainability-related positions (Thousand MTCO2e of both Scope 1 & 2). (Right) Average 2021-2023 company revenue at each of the highest sustainability-related positions (Million USD)

Further, companies with a CSO had better 2023 Dow Jones Sustainability Index (DJSI) ratings yet displayed higher average sustainability risk scores compared to those with lower-level sustainability positions (**Figure 9**). The average number of ESG metrics reported by the case study companies was 31 for those with a CSO and 35 for those with a VP or Executive Director position, significantly higher than the 25 metrics reported by firms with only a sustainability manager. This indicates that while CSOs contribute to improved sustainability rankings, they are working at companies with higher perceived sustainability risks (i.e., potential exposure of a company to various ESG issues that could negatively impact its financial performance or reputation), which pose extra challenges to setting ambitious sustainability targets. The data also shows that companies with VP/Executive Director level positions include marginally more ESG metrics in their sustainability report compared to companies with CSOs, while companies with Sustainability Managers tend to include less.

Highest Sustainability Related Position	Average # of ESG Metrics in Scope
CSO	31.1
VP/Executive Director	35
Manager	25

Highest Sustainability Related Position	Count of 2023 DJSI ESG Ratings
CSO	5
VP/Executive Director	2
Manager	1

Highest Sustainability Related Position	Average Sustainalytics.com Risk Score
CSO	26.7
VP/Executive Director	20.6
Manager	18.0

Negligible	Low	Medium	High	Severe
0 - 10	10 - 20	20 - 30	30 - 40	40+

**Figure 9:** Highest sustainability-related position in comparison to various metrics. (Top left) The average number of ESG metrics in scope at each of the highest sustainability-related positions. (Bottom left) Count of companies with 2023 Dow Jones Sustainability Index (DJSI) ratings at each of the highest sustainability-related positions. (Right) Average Sustainalytics.com sustainability risk score at each of the highest sustainability-related positions.

Revisiting Hypothesis Two (H2): Companies with C-suite involvement in sustainability reporting will perform better on ESG rating indices and have more ESG metrics in the report. The analysis supports Hypothesis Two (H2): companies with active C-suite involvement in sustainability reporting tend to perform better on ESG rating indices and have a broader range of ESG metrics in the report compared to companies without such involvement. Specifically, companies with a Chief Sustainability Officer (CSO) or equivalent C-suite position have higher average scores on ESG rating indices, such as the Dow Jones Sustainability Index (DJSI), and reported a greater number of ESG metrics than companies whose highest sustainability-related position is only a Sustainability Manager. Firms with a VP of Sustainability or an Executive Director of Sustainability tended to report slightly more metrics in their ESG Reports. The data indicate that firms with a CSO not only score higher on ESG ratings but also have more comprehensive sustainability reporting.

This study found that for the majority of companies, the highest sustainability-related position did not change from 2021-2023, but Air Products and Chemicals and Medtronic did see changes. In 2021 and 2022 the highest sustainability-related position at Air Products and Chemicals was a manager position, but in 2023 the company hired a VP of Sustainability. Medtronic is the other company that saw changes in its sustainability position. In 2021 Medtronic had only an ESG specialist, in 2022 the role was changed to an ESG director, and in 2023 the company hired a Chief Sustainability Officer. While it is too soon to correlate any measurable differences in the study's variables to these changes, this finding, along with the fact that 9 out of 15 companies have a CSO, indicates that companies are increasingly valuing sustainability by investing in higher-level sustainability positions.

The research indicates that companies are increasingly adopting standardized sustainability reporting frameworks, reflecting a commitment to transparency and accountability. Significant reductions in GHG emissions were observed, highlighting progress in environmental management, although some companies still face challenges. The positive association between GHG emissions and revenue suggests that larger companies can adopt more robust emission reduction strategies without negatively impacting their profits. Finally, the presence of a dedicated sustainability officer, particularly at the CSO level, is associated with better environmental performance, underscoring the value of strategic sustainability leadership. The following section will further explore the implications of these findings, considering the broader context of sustainability reporting practices and their impact on corporate performance.

## **VII. Discussion**

This study sought to answer three questions. First, is there a correlation between a company's GHG emissions and financial performance? Second, which climate reporting frameworks, including the GRI, SASB, CDP, and TCFD, are used the most often? Lastly, how does leadership involvement influence the scope of reporting, and is a higher-level sustainability position (e.g., C-suite level) associated with a larger ESG reporting scope?

The results indicate a significant association between a company's GHG emissions and its financial performance. Specifically, most companies exhibited a very strong to extremely strong negative correlation between revenue and greenhouse gas emissions meaning that as revenue increased greenhouse gas emissions decreased. This finding aligns with prior research by Delmas, Nairn-Birch, and Lim, who observed that companies improving their environmental performance by reducing GHG emissions tend to see long-term financial benefits, despite

potential short-term costs.<sup>44</sup> These benefits may stem from increased operational efficiency, enhanced brand reputation, and compliance with evolving regulatory standards before compliance becomes too costly.

However, a select few companies demonstrate a very strong to extremely strong positive correlation between revenue and GHG emissions, suggesting that in certain contexts, higher emissions may be associated with higher financial performance or lower emissions may be associated with lower financial performance. This study found both scenarios are possible, as seen in Figure 6. This variation shows the complexity of the relationship between environmental performance and financial outcomes and suggests that regulatory environments and market conditions play crucial roles. For instance, it may be common thought that sectors like heavy manufacturing and energy production, where emissions are intrinsically linked to core operations, may show positive associations if increased production, and in turn emissions, correlates with higher revenue. In this study, a heavy manufacturing company like Caterpillar showed the strongest *negative* correlation between GHG emissions and revenue, while Intel, another manufacturing company showed the strongest *positive* correlation between GHG emissions and revenue. As seen in this study, there are other variables outside of a company's operating industry that impact GHG emissions and revenue.

A limitation of this study is that it did not account for numerous other variables that could impact the relationship between GHG emissions and revenues, such as differences in company structure, geographic locations, and regulatory pressures. Consequently, this study cannot assert that correlation equals causation. For instance, companies with global operations may face different regulations compared to those operating solely in the United States. By incorporating a

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<sup>44</sup> Delmas, et. al. (2015)

diverse set of industries, the study aimed to mitigate potential biases and variability from sector-specific standards and practices related to environmental reporting and sustainability performance. While this study adopted a granular approach with individual case studies, future research might benefit from obtaining large samples from specific industries to better understand sector-specific dynamics. Comparing and contrasting these results across different sectors could provide deeper insights into how GHG emissions impact financial performance in diverse contexts.

This study also investigated how various climate reporting frameworks influence organizational decision-making and which criteria are most frequently utilized. The findings show that SASB and GHGP are the most used frameworks followed by GRI and TCFD. This demonstrates that firms value the sector-specific guidelines provided by SASB as well as the intention to focus on financially material aspects of reporting. The widespread adoption of GHGP and SASB standards highlights a significant shift towards greater transparency and accountability in corporate sustainability reporting since these standards are designed to provide clear, consistent, and comparable metrics for evaluating environmental and sustainability performance. This shift allows stakeholders to better assess and compare the sustainability efforts of different organizations, thereby driving improvements in corporate practices and fostering a more accountable business environment.

This trend supports the explanations proposed by the stakeholder and legitimacy theories of corporate behavior. Companies will become more sustainable as they strive to meet stakeholder expectations, maintain their competitive edge, and enhance their legitimacy. By adopting corporate sustainability standards, firms are not only aligning with industry best practices but also contributing to a broader movement towards sustainable and responsible

business practices. This collective action is essential for driving positive change and ensuring that companies are well-prepared to meet the challenges and opportunities of a rapidly evolving business environment. However, the adoption of these frameworks also introduces challenges.

Concerns raised by Kauffmann, Less, and Teichmann note that the complexity and cost of compliance can be significant barriers to effective GHG emissions reporting.<sup>45</sup> The costs associated with collecting and reporting ESG data may price out some firms or cause them to limit their reporting scope. Future research could explore how companies can streamline the integration of these reporting frameworks into their operational processes to minimize such challenges. For instance, leveraging advancements in technology and data analytics could reduce the cost and complexity of ESG reporting, making it more accessible for a broader range of companies. Additionally, particular regulatory incentives or support mechanisms may facilitate the broader adoption of standardized reporting frameworks.

A significant finding is that a reduction in GHG emissions is associated with a firm hiring a CSO rather than a VP or Manager. This aligns with research by Peters and Romi, who find that the presence of an environmental committee and a Chief Sustainability Officer (CSO) is positively associated with the likelihood of GHG disclosure and that CSOs are associated with increased disclosure transparency.<sup>46</sup> Moreover, the findings highlight the potential for high-level sustainability roles to drive organizational change and foster a culture that prioritizes long-term environmental and social goals. The presence of a CSO or similar high-level position can also serve as a catalyst for integrating sustainability into the core strategic objectives of the organization, thereby enhancing its overall sustainability performance and stakeholder engagement.

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<sup>45</sup> Kauffmann et. al. (2012)

<sup>46</sup> Peters and Romi (2014)

This study examined how varying levels of sustainability leadership might influence the scope of ESG reporting, specifically whether having a high-level sustainability position, such as a Chief Sustainability Officer (CSO), is associated with a higher number of ESG metrics in the report and more recognition from ranking organizations. The results indicate that the number of metrics adopted is not associated with having a CSO versus a VP or Executive Director, but the biggest difference is between companies with those positions and companies that just have a sustainability manager. Firms with a sustainability manager included fewer metrics in their reports than firms with higher-level positions, which is demonstrated in the results section above. Firms with a CSO reported slightly fewer metrics. Ultimately differences in the number of metrics that firms report on can be attributed to the type of report, number of sustainability or EHS-related positions, and reporting criteria rather than the status of the sustainability position within the firm.

While the GRI, TCFD, SASB, and GHGP frameworks do not explicitly mandate the appointment of a Chief Sustainability Officer (CSO) or Vice President (VP) of Sustainability, because of the increasing complexity and scrutiny of ESG reporting, if firms want to keep up with the evolving ESG landscape and be key players in the arena, then it may make sense for a firm to appoint a CSO or VP. Company executives and policymakers should consider both the reporting requirements and the staffing needs essential for achieving tangible reductions in GHG emissions. It is crucial for policymakers in particular, who may be distanced from the day-to-day operations of companies, to understand how strategic staffing decisions impact sustainability efforts and the overall effectiveness of the reporting standards and emissions reduction policies they create.

## **X. Conclusion**

This study answered three main questions regarding the relationship between GHG emissions, financial performance, the influence of climate reporting frameworks on decision-making, and the impact of leadership involvement on ESG reporting scope. First, is there a correlation between a company's GHG emissions and financial performance? Second, which climate reporting frameworks, including the GRI, SASB, CDP, and TCFD, are used the most often? Lastly, how does leadership involvement influence the scope of reporting, and is a higher-level sustainability position (e.g., C-suite level) associated with a larger ESG reporting scope? The goal was to contribute insight into the field of corporate sustainability and environmental governance.

The investigation into climate reporting frameworks highlighted the widespread adoption of SASB and GHGP standards, underscoring a shift towards greater transparency and accountability in corporate sustainability reporting. Although GRI and TCFD were utilized less frequently, they were still used by a majority of the companies. Nonetheless, the complexity and cost of compliance still pose important challenges, suggesting a need for further research on how streamlining reporting processes and leveraging technological advancements can reduce these costs.

The study also explored the impact of leadership involvement on ESG reporting scope and ESG ranking, finding that the presence of a CSO is associated with reduced GHG emissions and firms with VPs/Executive Directors of Sustainability or CSOs tend to include more ESG-related metrics in their reports. Sustainability leadership is important in firms that wish to be recognized as sustainability leaders. However, potentially detracting from this is the fact that many firms may hire a CSO or VP of sustainability with a background in business management

or another area unrelated to corporate sustainability, who may not necessarily have the environmental policy or GHG knowledge needed to produce the most positive impacts of having those positions. This scenario could potentially limit the positive impacts associated with these roles, as environmental policy expertise is critical for realizing their full potential. Future research should explore how variations in the expertise and qualifications of individuals in sustainability-related positions affect sustainability performance.

The growing recognition of climate change as a critical business issue has spurred significant advancements in corporate sustainability practices and the adoption of comprehensive ESG reporting frameworks. Sustainability reporting standards such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD), and the Greenhouse Gas Protocol (GHGP), enhance transparency and comparability and also reflect broader shifts towards corporate accountability and responsiveness to stakeholder expectations.

By examining stakeholder influences and theoretical underpinnings, this study provides a robust foundation for understanding how sustainability reporting frameworks shape corporate decision-making and performance. Through this approach, this study contributes insight into the evolving landscape of corporate sustainability reporting and its implications for sustainable business practices. The findings underscore the complex interplay between governance structures, reporting standards, and corporate performance, offering a perspective for future research and practical applications in the field of sustainability.

This study underscores the critical role that comprehensive sustainability reporting and dedicated leadership play in driving environmental and financial performance. Companies that integrate robust ESG reporting frameworks and appoint C-suite sustainability champions

enhance their transparency and accountability and can position themselves for greater revenue growth. These results highlight the powerful synergy between sustainable practices and economic success. Therefore, businesses must adopt standardized reporting practices and prioritize sustainability within their executive teams. By doing so, they can meet stakeholder expectations, reduce environmental impact, and achieve long-term profitability. The evidence is clear: sustainability is not just a moral imperative but a strategic advantage. Now is the time for companies to take decisive action toward a sustainable future, leveraging the power of transparent reporting and committed leadership to drive meaningful change.

## XI. References

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## Vitae

Keegan Schealer was born in Pottstown, Pennsylvania on 15 January 2000. He grew up in Gilbertsville Pennsylvania with his father Doug, his mother Clarissa, and his sister McKenzie. He attended Boyertown High School where he played Lacrosse and Basketball and met his Fiancé Hannah Pellicciotti. He graduated cum laude from Moravian University, receiving his Bachelor of Arts with a major in Environmental Policy and Economics. Keegan was awarded the Environmental Policy and Economics Prize in recognition of his academic achievements while attending Moravian University.

During the Summer of 2021 while attending Moravian University Keegan interned on the Renewables and Energy Solutions team at PSE&G, an energy company in New Jersey. In his senior year at Moravian Keegan interned with the Lehigh Valley Planning Commission, in collaboration with the Pennsylvania Department of Environmental Protection and ICLEI – Local Governments for Sustainability, to create the Lehigh Valley’s first comprehensive Greenhouse Gas Assessment. While interning with the Lehigh Valley Planning Commission and putting together the Greenhouse Gas Assessment Keegan was selected by Dr. Diane Husic to represent Moravian University as a Fellow with the Youth Environmental Alliance in Higher Education (YEAH) Network. In this role, Keegan worked with university students across the country to help educate them on the UN SDGs and (virtually) attended and presented at COP26 in Glasgow, Scotland.

After graduating from Moravian in 2022, Keegan began working full-time as a Sustainability Analyst in Lehigh University’s Office of Sustainability while pursuing his M.A. in Environmental Policy. He worked at Lehigh for just over a year before transitioning to a new role as an Assurance Senior Associate with ERM CVS in October 2023. ERM CVS, a part of the

ERM Group, is a global leader in sustainability services, providing independent assurance and certification for leading organizations worldwide. In this role, Keegan has had the opportunity to collaborate with numerous clients and gain in-depth knowledge of corporate sustainability from industry experts. This experience is what led Keegan to write his thesis on corporate sustainability reporting.