

# Measuring corporate social responsibility: an evaluation of a new sustainable development goals index for Fortune 500 companies

New sustainable development goals index

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## Abstract

**Purpose** – The purpose of this study is to explore, develop, and evaluate a new sustainable development goals (SDG) index that quantifies corporate social responsibility (CSR). By providing a granular perspective with clear justification for methods, this index is more applicable to academic research in comparison with the CSR indices published by private companies.

**Design/methodology/approach** – Focusing on the Fortune 500 companies in 2017, this study uses data from Bloomberg, ASSET4, and the Carbon Disclosure Project. A z-score was calculated for each variable, which was then aggregated according to the SDG indicator list to calculate each SDG score. Various robust analyses were conducted.

**Findings** – The SDG index shows that companies tend to score worse on environment-related goals compared with social goals. Furthermore, for each SDG, there are differences across industrial sectors, a finding that is enabled by the more granular approach of this index. Additionally, the leaders and laggards are identified for each of the SDGs.

**Originality/value** – This study identifies the methodological weaknesses of the existing CSR indices and introduces and evaluates an alternative index based on the SDGs. This alternative index provides methodological clarity and granularity of data, which were lacking in previously established indices.

**Keywords** Corporate social responsibility (CSR), Sustainable development goals (SDGs), Environmental, social, and governance (ESG)

**Paper type** Research paper

## 1. Introduction

Corporations often operate in an under-regulated economic environment, yet their practices have deep impacts on our daily lives, from environmental to social sustainability. Both private companies and academic researchers have attempted to quantify corporate social



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responsibility (CSR) by assigning environmental, social, and governance (ESG) scores to companies (Pérez and Del Bosque, 2013; Singh and Mittal, 2019). ESG scores can be described as a CSR performance measure of a company's contributions to society, sustainability, policy priorities, and other socially and politically significant values or goals. These scores are of particular interest to the financial industry because they can indicate or even predict corporate performance (Alawamleh and Giacaman, 2020; Yadav and Mankavil Kovil Veettil, 2021). Consequently, there has been a sharp increase in the demand for reliable and valid ESG scores. However, because the existing ESG measures are often proprietary, not well defined and subject to change, they do not provide the methodological clarity and theoretical justification that are required for scholarly analysis.

This study explores and develops an alternative approach to existing ESG scores based on the sustainable development goals (SDGs) of the United Nations (UN), which introduced the goals in 2015 as a part of the 2030 Agenda for Sustainable Development. This study contributes to the literature by providing a new CSR index that uses the SDGs as the foundation of its measurement and that distinguishes performance across individual companies and industrial sectors. This approach allows for a more granular understanding of CSR, which will provide new opportunities for research and will also help to identify targeted improvement for government and private actors.

## 2. Literature review

### *2.1 The shortcomings of existing measures of corporate social responsibility*

Bloomberg ESG (Bloomberg), Morgan Stanley Capital International (MSCI) and Thomson Reuters ASSET4 (ASSET4) are among the leading private companies that have been collecting ESG data. These companies compile data on various metrics related to ESG and provide raw data as well as the calculated final score. However, despite the importance of these metrics and indices, there is a significant lack of methodological clarity, which can cause problems with scholarly research. Table 1 describes the existing indices, their methods of calculation, their strengths and methodological limitations.

The existing indices were mostly developed by private companies for investment risk assessment, and although they have an important role in the evaluation of CSR performance, they lack theoretical rigour and methodological clarity. Several scholars (Gjølberg, 2009; Pérez and Del Bosque, 2013) have attempted to build their own indices, but it is a time-consuming process. Consequently, indices developed by private researchers tend to be limiting in terms of scope and capacity.

A need for CSR indices to be grounded in theoretical justification and to provide methodological clarity has been voiced in the literature. Several studies argued that the limited scope and theories involved in CSR indices have led to its shortcomings. Schneider and Meins (2012) argued that the indices ignore economic sustainability and fail to distinguish between governance and CSR transparency and performance. Similarly, Seele and Chesney (2017) claimed that financial toxicity is a dimension that is not discussed in the existing indices at all.

### *2.2 Triple bottom line and the sustainable development goals*

The triple bottom line (TBL), also known as the three pillars theory or 3Ps, is a theory that discusses the three most important fundamental ideas of CSR. It states that companies, in performing CSR, should address three main issues, which are profit, people, and planet (Svensson *et al.*, 2018). Here, the profit refers to the economic well-being of the companies that adhere to the interests of its shareholders, and the people refer to the social responsibility, which is expressed through advocating justice, equity, accessibility, and

Company	Description	Method of calculation	Strengths	Limitations
Bloomberg	Provides transparency scores	Measures how much corporate specific data a company discloses. They do not exactly measure CSR performance	ESG data is available on the terminal, which makes accessing ESG data easier for investors and financial experts	Does not quantify CSR performance, just the transparency score
MSCI (KLD)	Provides CSR performance scores of companies	Uses different weights based on Global Industry Classification Standard sub-industry level based on each industry's relative impact and the time horizon associated with each risk. Industry and time specific	Industrial differences and controversies are taken into account in measuring CSR performance	Methods are unclear, no theoretical justification for choosing weight and key performance indicators
ASSET 4 (Thomson Reuters)	Provides CSR performance scores of companies	Four hundred measures are collected from companies' public disclosures, which aggregated to 178 critical ESG measures	Publishes 23 controversy measures and ESG combined data, which focuses on both ESG performance and controversies	No theoretical or methodological justification
Newsweek Green Ranking	Publishes the rankings of companies based on environmental sustainability	Eight key performance indicators that have different weights. Data are obtained from Bloomberg, FactSet, Thomson Reuters, and GDP	High media coverage and an increase in public awareness on CSR related issues. Clear explanations on methods	Does not take social aspects into account. Weights are not justified
Carbon disclosure project (CDP)	Provides different environmental scores such as climate score, water score and timber score	Different scores have different calculation methods. Governance, communications, risks and opportunities are taken into account	More sustainability related data compared to other sources	Only considers environmental aspects of CSR

**Table 1.**  
CSR measures by private companies

security. Furthermore, the planet refers to the environmental responsibility that companies should acknowledge and address (Ferro *et al.*, 2019; Sala, 2020; Westerman *et al.*, 2020).

The TBL approach is particularly important for understanding CSR because it provides holistic objectives that include social, economic, and environmental elements (Shayan *et al.*, 2022). It accounts for the economic development and growth that many companies strive for, yet also addresses sustainability challenges that many companies are required to attend to. Using TBL as its main theoretical framework, this paper builds a new CSR index that engages in the most important societal and environmental challenges faced by corporations, which are identified by the UN SDGs.

In selecting the variables for the index, we explore whether the SDGs can be used as the theoretical foundation to measure CSR. The SDGs comprise 17 goals and are intended to serve as “a holistic approach to achieving sustainable development for all” (United Nations, 2021). In enacting these goals, the UN suggests that private companies are important actors in the implementation of the SDGs. The relationship between the SDGs and corporate performance has already been a topic of social scientific study (Hu *et al.*, 2016; Martinuzzi *et al.*, 2017; Stafford-Smith *et al.*, 2017; Macellari *et al.*, 2018). However, the SDGs have not yet been used to retheorize indices that measure CSR performance.

The goals address issues of poverty, water sanitation, employment, gender, climate change, and other widely discussed political issues (United Nations 2016). They can be used by local authorities, government agencies, and civil society organizations, and among high, medium, and low-income countries. The SDGs can also guide corporate behaviour, and the relationship between the SDGs and CSR has already been a topic in many studies (Martinuzzi *et al.*, 2017; Macellari *et al.*, 2018; Bag and Pretorius, 2020; Lathabhavan, 2021). Furthermore, Van Zanten and Van Tulder stated that the SDGs provide the foundational platform and “central and lasting framework” for companies to target global sustainability goals (van Zanten and van Tulder, 2018, p. 227).

### *2.3 An alternative index based on the sustainable development goals*

To address the limitations of the existing indices, this study constructs a new SDG index, which differs from the previous studies in two ways. First, this study adopts the perspective that the variables used in constructing the index should not be randomly chosen. The most critical weakness of the existing indices is not the quality of the collected raw data but how the data are grouped and analysed. To address this problem, this study uses the raw data published by these companies but groups the variables using the SDGs, which provide a more robust theoretical justification for the construction of a CSR index and for its constituent elements. Because the SDGs relate to widespread international values that have been articulated through a UN process, they provide a solid foundation for understanding CSR. Second, this new index differs from the existing indices because it provides granular data on CSR performance based on solid methodological justifications (i.e. the SDGs). Because existing indices categorize CSR disclosure or performance scores into larger groups, such as ESG, they do not allow for any variation within each group. However, the SDG index provides scores for each SDG, which allows more exact and specific research questions for future research.

Following from this line of thought, this paper’s research questions are twofold. First, we ask, “how can the SDGs be used to quantify and measure CSR?” Second, we ask, “how does this new measurement contribute to our understanding of CSR?” These research questions focus on the methodological contributions of this paper and the potential application of the SDG index to the existing literature.

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### 3. Data and methods

#### 3.1 Data sources

This study focuses on the 2017 Fortune 500 companies. Data for 2017 were available at the time of data collection, and the 2018 data were not complete. Among highly developed or wealthy countries, the USA has the largest economy and ecological footprint at 8.1 gha (Global Footprint Network, 2019). As a country that is leading in both the size of the economy and ecological footprint, it is important to focus on some of the biggest corporations in that country. This study uses the 500 largest US companies, of which 32 companies were removed because they did not publish any ESG data. The reasons for not publishing data include being a privately held company and bankruptcy after 2017. After these exclusions, the final sample size of this data set was 468, with the unit of analysis being corporations.

There were three main sources of data: Bloomberg ESG, ASSET4, and the CDP. These are three of the four main data sets published by public corporations. MSCI data, another major data set on CSR, could not be added due to accessibility. The only limitation that the lack of MSCI data poses is that the index does not account for the intensity of the controversies that are published by MSCI. Instead, the study uses the count of the controversies from ASSET4. The intensity of controversies was not added to the index because there is a lack of reliable data that address the intensity due to its subjective nature.

#### 3.2 Construction of the sustainable development goal scores

In this study, the term “variable” refers to a measure of a component of SDGs, such as total greenhouse gas (GHG) emissions, worker and wage controversies, or biodiversity policies. Variables were matched to SDGs based on the SDG indicators published by the United Nations (2016). After a complete list of variables was constructed, the variables with no variation or observation were deleted. From the data, a total of 105 variables that were relevant to the SDGs was identified. Of these 105 variables, 18 variables with more than 350 missing observations were also removed. After these removals, a total of 87 variables were left, and they were used to calculate the SDG scores. The correlation between a measure that included these high missing variables and a measure that did not include these high missing variables was high at 0.99 ( $p < 0.01$ ). The mapping of the variables into each SDGs is explained in Appendix.

Variables that can be attributed to more than one goal were included in the measure for all relevant SDGs. Therefore, some variables were weighed more heavily. However, even when a measure was constructed with equal weights for all variables (only adding variables once throughout the analysis), the correlation with the weighted index was 0.99 ( $p < 0.01$ ), which indicates that weighing them makes little difference to the overall scores.

The SDGs report published by the UN provides 230 indicators for their 17 goals (United Nations, 2016). It was not possible to address all 230 indicators for corporations because the SDGs were originally developed for governments and international organizations. For example, goals such as “1.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people” is more relevant for governments than corporations. Likewise, Goal 10, which states, “Reduce inequality within and among countries”, was excluded from the analysis because it applies more to governments and international organizations than to corporations.

Some variables appeared in two data sets (Bloomberg and ASSET4). These variables were total energy use, total waste, total recycled waste and hazardous waste. For these four variables, the two data sets were merged using the average between the two observations. Observations were similar enough that merging did not yield any significant difference.

Once relevant variables for each SDG were identified and grouped to each SDG, a *z*-score was calculated across each variable. Using a standardized measure such as the *z*-score was necessary because the units of measurement were different across all variables. Variables that would have negative environmental and social impact were reverse coded so that the highest number would lead to the lowest *z*-scores. The *z*-scores were then averaged to calculate a score for each SDG. For example, for Goal 2 (hunger), four variables were used: biodiversity controversies, product access low price, product quality controversies and biodiversity policies. Each of the four variables had a *z*-score for each company. The *z*-scores were averaged for each company to create one *z*-score distribution for each goal (e.g. Goal 2 or hunger). The same calculation was done for all goals (except Goal 10). In calculating the SDG score using the variables, all variables were weighed the same within a goal. However, the number of variables per SDG is different. Goal 2 (hunger) only includes four variables, but Goal 12 (sustainable consumption) has 19 variables. Therefore, although biodiversity policy is a variable that happens to be included in both SDGs, it weighs significantly more in Goal 2 (hunger) than in Goal 12 (sustainable consumption) because of the differences in the number of variables included in each SDG. Once scores for all SDGs were obtained for each company, they were averaged to have a *z*-score that would represent the overall SDG performance score for each company. In calculating the aggregate SDG score, all SDGs were weighed the same.

Initially, factor analysis was considered for the construction of the index. However, because SDGs tend to embody more than one social and environmental issue instead of focusing on a single latent variable, the model fits were poor. Therefore, using the *z*-scores was considered to be the most appropriate method.

### 3.3 Missing data and robustness checks

Missing metrics mean the company is not publishing data because either it has a poor performance on the metric or because it does not wish to be transparent. Because missing data have behavioural implications, they are considered as missing not at random rather than missing completely at random or missing at random.

Many previous studies in the past have accounted for transparency as a part of CSR (Graafland and Eijffinger, 2004; Guenther *et al.*, 2006; Kim and Lee, 2018). Following from this logic, the assumption is that less transparent companies tend to perform worse in CSR than transparent companies. For example, Nazari *et al.* (2017) found that clearly written reports and disclosure led to better CSR performance, and the reverse was the case for vague and unclear written CSR reports. Consequently, companies with missing data were penalized and given the lowest *z*-score within the same variable. For example, Berkshire Hathaway did not publish data on total GHG emissions. Therefore, for this variable, the company were given the lowest *z*-score of the variable (−7.27).

Because this method assigns missing data the lowest value for a variable, missing data may affect the overall SDG *z*-score for a company. Most studies in CSR tend to use the listwise deletion method, which deletes observations that carry any missing data (Giannarakis, 2014; Friede *et al.*, 2015; Sethi *et al.*, 2017). However, for the construction of this index, listwise deletion was not a feasible method because this study uses 87 variables from three different data sets. All companies had at least one missing observation, and the mean number of missing observations per company was 17.2. Therefore, the most appropriate way to deal with missing data was to assign the lowest score for a variable to companies that did not provide data.

In addition to the two alternative indices that we have created as robustness checks for decisions regarding weighting and high missing variables, we have created a third

alternative index to check whether controlling for the sector was important. This step was taken to measure whether controlling for sector was yielding a significantly different result compared to not controlling for the sector. In this alternative index, a  $z$ -score was obtained within the sector to which a company was assigned. For missing data, the company was given the lowest  $z$ -score within the sector to which the company belongs. For example, because Berkshire Hathaway did not publish GHG emissions data, it was given the lowest  $z$ -score of the variable within the finance, insurance, and real estate (FIRE) sector (i.e.  $-3.84$ , which was the lowest  $z$ -score for total GHG emission for the FIRE sector). An indication of the soundness of this analytic strategy for missing data is that the correlation between the SDG index and this alternative index was high ( $r = 0.94, p < 0.01$ ).

### 3.4 Analysis

To quantitatively describe the SDG scores, this paper uses analysis of variance (ANOVA) and graphical exploratory data analysis. Because of the originality of the data, graphics are used as tools to better visualize and understand SDG scores. This study identifies the leaders and laggards of each SDG, and it uses total assets as the anchoring variable. Corporate size can substantially change the available resources for CSR, which can be reflected in CSR performance scores (Riantani and Nurzamzam, 2015). Therefore, in identifying leaders and laggards, total assets must be taken into account. We log the total assets data to account for the wide distribution and the large standard deviation values of the variable. Total assets data are collected from Bloomberg.

### 3.5 Limitations

Although the use of SDGs as the theoretical rationale for measuring CSR performance is an improvement on existing measures, we do not claim that it is the only approach possible to measure CSR. Even for approaches that build on our strategy of measuring CSR based on SDGs, there are multiple decision points that could be explored in future versions of a similar index. For example, as more information becomes available, it may be possible to change the configuration of variables for each SDG and to complete missing data. Additional data from MSCI could also improve the measure, such as by providing a measure of intensity could be compared with our count measure. It would also be possible to experiment with other weighting decisions than the one adopted here. Although we recognize the limitations and opportunities for future research, we also note that this study created several alternative indices as robustness checks, and they had a high correlation with the index adopted here.

## 4. Results

### 4.1 Evaluation of the sustainable development goal index

Table 2 shows the average SDG scores by goals. Overall, environmental goals have a lower score than social goals, with many environmental goals having a  $z$ -score below  $-1$ . The best performing sector on all SDGs is materials, whereas the worst performing sector of total SDG scores is communications. Table 3 shows the average SDG scores by sector in  $z$ -scores. Here, materials sector is the highest-scoring sector and communication is the lowest scoring sector. Table 4 shows the ANOVA analysis of SDG scores by sector. Except for Goal 5 (gender), Goal 7 (energy) and Goal 16 (justice), all other goals are dissimilar across sectors. In other words, companies in different sectors tend to behave differently regarding most SDGs, and granular SDG data are valuable for future research.

Figure 1 identifies the leaders and laggards of total SDG scores. As discussed above, the logged values of total assets are included as the variable that allows comparable analysis

between corporations because it accounts for each company's available resources for CSR. The companies that are placed in the top left would be considered as leaders because even though their total assets are relatively small, their SDG score is high. The companies placed at the bottom right would be considered laggards because of their high total assets and low SDG scores. Figure 1 shows that Johnson & Johnson is the main leader for total SDG score, whereas Freddie Mac and Fannie Mae can be considered laggards. Citigroup and Bank of America have higher SDG scores compared to other companies, but their total assets are

**Table 2.**  
Average SDG scores  
by goals in z-scores

Environmental goals	Average score	Social goals	Average score
Goal 6: Water	-1.365	Goal 1: Poverty	-0.134
Goal 7: Energy	-1.577	Goal 2: Hunger	-0.014
Goal 9: Infra. Innov.	-1.669	Goal 3: Health	-0.039
Goal 11: Cities	-0.020	Goal 4: Education	-0.083
Goal 12: Sust. Consump.	-1.159	Goal 5: Gender	-0.266
Goal 13: Climate	-1.015	Goal 8: Employment	-0.469
Goal 14: Oceans	-0.022	Goal 16: Justice	-0.075
Goal 15: Forests	-0.006	Goal 17: Partnership	-0.076
Total	-0.854	Total	-0.144

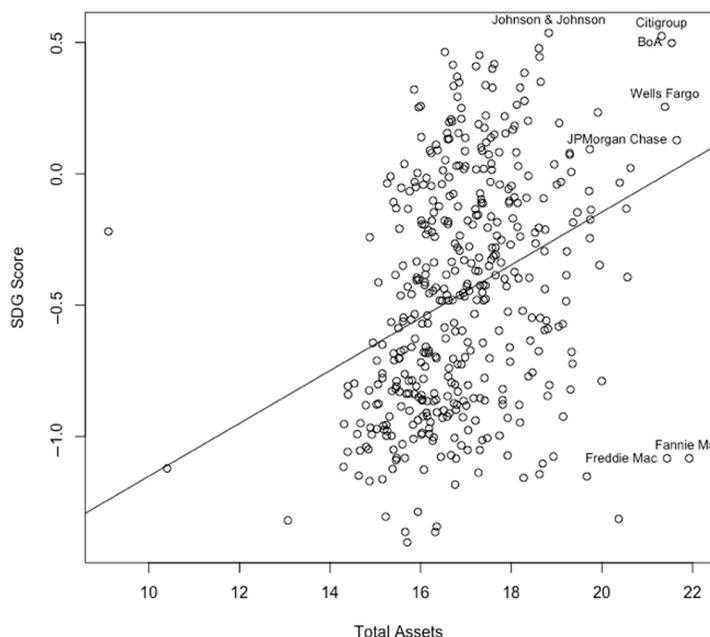
**Table 3.**  
Average SDG scores  
by sector

Sector	Average score
Communication	-0.659
Discretionary	-0.623
Energy	-0.577
Financial, Insurance, Real Estate (FIRE)	-0.569
Health	-0.423
Industrial	-0.434
IT	-0.383
Material	-0.298
Staples	-0.384
Utilities	-0.311
Total	-0.482

**Table 4.**  
ANOVA analysis of  
SDG scores by sector

Environmental Goals	F-value		Social goals	F-value	
Goal 6: Water	2.416	*	Goal 1: Poverty	4.466	***
Goal 7: Energy	0.804		Goal 2: Hunger	5.561	***
Goal 9: Infra. Innov.	2.470	**	Goal 3: Health	5.299	***
Goal 11: Cities	2.155	*	Goal 4: Education	2.878	**
Goal 12: Sust. Consump.	4.503	***	Goal 5: Gender	1.531	
Goal 13: Climate	3.084	**	Goal 8: Employment	5.624	***
Goal 14: Oceans	8.405	***	Goal 16: Justice	0.533	
Goal 15: Forests	4.410	***	Goal 17: Partner	2.435	*

Notes: \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$



**Figure 1.**  
Relationship between total SDG score and total assets

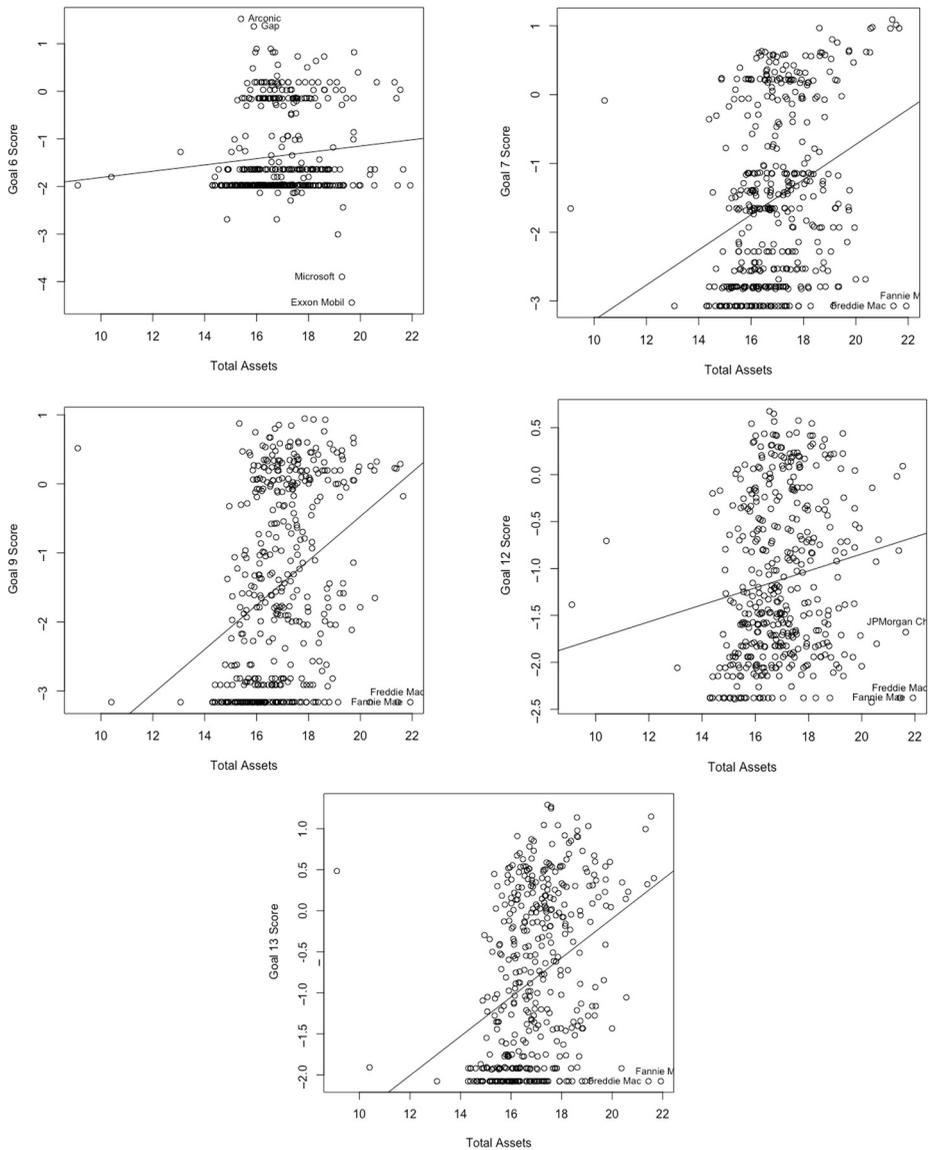
also considerably higher, which implies that they have more resources to be environmentally and socially sustainable.

#### 4.2 Identifying environmental and social leaders and laggards

The strength of the SDG index lies with its granularity. The SDG index developed provides scores for each SDG, which can be used to identify the leaders and laggards for each goal. This analytical development is theoretically important because it allows more specific targeting of industries, sectors, and corporations on very specific issues.

Figure 2 shows the relationship for environment-related SDGs and total assets, and it identifies the leaders and laggards. Only Goals 6 (water), 7 (energy), 9 (infrastructure and innovation), 12 (sustainable consumption), and 13 (climate) are shown here because the other environmental SDGs do not have clear leaders or laggards. There are two notable leaders: Arconic and Gap for Goal 6. Freddie Mac and Fannie Mae are the laggards in all noted environmental SDGs.

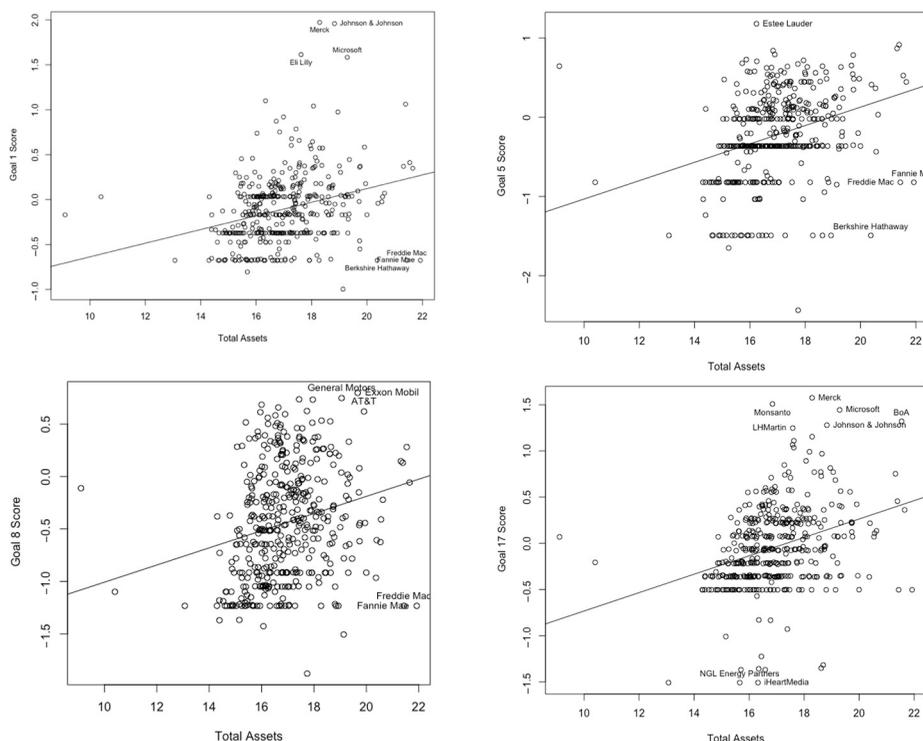
With respect to social SDGs, Figure 3 identifies the leaders and laggards for the SDGs that strive for social sustainability, such as justice and equality. Again, only the SDGs that have clear leaders and laggards are included. For Goal 1 (poverty), there are several leaders, including Johnson & Johnson, Merck, Microsoft, and Eli Lilly. Similar companies along with Lockheed also lead Goal 17 (partnership). Goal 8 (sustainable development) also have some notable leaders, such as General Motors, Exxon Mobil, and AT&T. Estee Lauder is the clear leader for Goal 5 (gender). For three of the goals, Goal 1 (poverty), Goal 5 (gender), and Goal 8 (sustainable development), Fannie Mae and Freddie Mac continue to be laggards as their total assets are high, but their SDG scores are low in comparison. Furthermore, for Goals 1 (poverty) and 5 (gender), Berkshire Hathaway is also considered a laggard.



**Figure 2.**  
Relationship between  
environment-related  
SDG scores and total  
assets

### 5. Discussion

This study finds that sectors tend to perform differently based on the SDGs and that there are different leaders and laggards for each SDG. The importance of environmental and social SDGs, which also is shown in association with total assets, shows the relevance of the TBL in understanding CSR. The findings indicate that to understand CSR, a granular understanding of social and environmental SDGs is essential because



**Figure 3.**  
Relationship between social SDG scores and total assets

companies and sectors tend to have different priorities and values regarding CSR. In other words, their CSR performance cannot be fully understood by using larger CSR groups such as ESG. In this sense, the SDGs provide a theoretical foundation for measuring CSR for scholarly research because it provides 17 different goals with hundreds of indicators. Furthermore, understanding CSR as a granular but harmonious concept that encompasses environmental, social and economic is important as indicated by TBL and the findings (Shayan *et al.*, 2022).

Prior to conducting the analysis, the expectation was that there would be a greater number of laggards. However, the number of laggards was generally limited to two companies for each SDG. One explanation of the fewer number of laggards is that the method for handling missing data leads to the clumping together of laggards. Another explanation is that companies try to compensate for their bad behaviour by doing better on similar variables that are also included in the measure for the same SDG. For example, many energy companies score badly on their GHG emissions because they emit significantly more than other sectors or because they refuse to disclose their data. However, in compensation, energy companies have tended to sign UN Global Compact signatories, have climate-change policies, and score relatively well in emission reductions. Therefore, firms that score particularly low for one variable can do well overall for an SDG because it comprises multiple variables.

## 6. Conclusion

Despite numerous efforts to make corporations more responsible for their environmental and social impact, there is still room for further improvement for corporations. In contrast with existing indices, this study develops a new approach to measuring CSR that is based on the UN SDGs. By having a measure of CSR that can be broken down into multiple metrics based on the SDGs, it becomes possible to investigate in a more granular way the differences of SDG adoption across companies and sectors. Doing so can enable companies, advocacy organizations or governments to identify areas of poor performance at both a sector level and a firm level. It can also help to identify companies that have developed leading practices and assess the possibility of motivating the diffusion of those practices across companies and industries.

The approach to measuring ESG also has implications for future research. An important topic for future research is the question of why some corporations perform better for some SDGs but do not stand out as leaders in others. One hypothesis is that some SDGs have a lower impact on profitability or that they have delayed effects of expenditures. Another hypothesis is that different aspects of corporate governance may predict performance on the different SDGs and overall performance. For example, with CSR broken down into the different SDGs and with its quantitative threshold, it would be possible to test if the gender composition of the board can make a significant difference in CSR performance on Goal 5 (gender). Furthermore, future studies may use more recent and longitudinal data that would provide a more holistic and complementary perspective towards CSR.

In summary, this study indicates that there are some leaders in the business communities that should be praised for their actions. Attention could be given to what motivates or causes their high performance and how their practices can be encouraged for other companies. In other words, this study creates room for a new perspective on corporate sustainability practice and research.

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Appendix

Sustainable Development Goal	Variables of measure
Goal 1: End poverty in all its forms everywhere	A4_wagesandWorkingConditionControversies A4_Product Access Low Price A4_Technology Know-How Sharing A4_Donations Total A4_Employee Engagement Voluntary Work A4_Human Rights Processes/Human Rights B_pctemployeeUnionized B_communitySpending B_humanRightsPol B_fairRenumerationPol
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	A4_biodiversityControversies A4_productAccessLowPrice A4_productQualitycontroversies B_biodiversityPol
Goal 3: Ensure healthy lives and promote well-being for all at all ages	A4_consumerHealthControversies A4_publicHealthControversies A4_Employee Health&SafetyILOGuidelines A4_Employee Health&SafetyOHSAS18001 B_healthSafetyPol
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	A4_diversityandOpportunityControversies A4_diversityandOpportunityPolicyElements/ DiversityandOpportunity A4_humanRightsProcesses/ChildLabour A4_humanRightsProcesses/ForcedLabour A4_humanRightsProcessesHumanRights A4_managementTraining A4_supplierESGtraining B_employeeCSRtraining B_trainingPol B_policyAgainstChildLabor
Goal 5: Achieve gender equality and empower all women and girls	A4_diversityandOpportunityControversies A4_diversityandOpportunityPolicyElements/ DiversityandOpportunity A4_positiveDiscrimination B_pctWomenEmpl B_genderPayGap B_equalOppPol
Goal 6: Ensure availability and sustainable management of water and sanitation for all	A4_publicHealthControversies A4_spillsandPollutionControversies A4_waterRecycleInitiative A4_waterTechnologies A4_spillImpactReduction B_totalWaterUse

(continued)

**Table A1.**  
Variables of measure for sustainable development goals

Sustainable Development Goal	Variables of measure
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	A4_electricityPurchased A4_renewableEnergyUse (yes or no) A4_energyEfficiencyInitiatives A4_renewableCleanEnergyProducts2017 energyUseTotal (merged) B_renewEnergyUse(refers to the amount) B_renewElectricityTargetPol B_energyEfficiencyPol
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	A4_diversityandOpportunityControversies A4_diversityandOpportunityPolicyElements/ DiversityandOpportunity A4_wagesandWorkingConditionControversies A4_humanRightsProcesses/ChildLabour A4_humanRightsProcesses/ForcedLabour A4_humanRightsProcessesHumanRights A4_diversityandOpportunityPolicyElements/ WorkLifeBalance A4_positiveDiscrimination A4_tradeUnionRepresentation A4_strikes B_pctemployeeUnionized B_pctWomenEmpl B_genderPayGap B_policyAgainstChildLabor B_totalIncidentRate
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	A4_landEnvironmentalImpactReduction A4_sustainableBuildingProducts B_GHGScope1 B_GHGScope2 B_greenBuilding B_sustainPackaging CDP_integratedPerformaceScore CDP_scope1EmissionsGlobally
Goal 10: Reduced inequalities within and among countries	This is a goal for government actors and civil society organizations. Therefore, this goal is not included in the SDG index
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	A4_publicHealthControversies A4_productImpactControversiesenv A4_spillsandPollutionControversies A4_envResourceControversies A4_landEnvironmentalImpactReduction A4_sustainableBuildingProducts

Table A1.

*(continued)*

Sustainable Development Goal	Variables of measure
Goal 12: Ensure sustainable consumption and production patterns	<p>A4_biodiversityControversies  A4_productImpactControversies  A4_envResourceControversies  A4_consumerControversies  A4_envSupplyChainManagement  A4_landEnvironmentalImpactReduction  A4_sustainableBuildingProducts  A4_productImpactMediaControversies  A4_commercialRisksandClimateOpportunities  waste (merged)  hazardousWaste (merged)  wasteRecycled (merged)  B_wasteReduction  B_greenBuilding  B_envSupplyMgt  B_sustainPackaging  B_envQualMgt  B_biodiversityPol</p>
Goal 13: Take urgent action to combat climate change and its impacts	<p>A4_ISO9000  A4_Supplier ESG training  B_GRIChecked  B_GRICompliance  B_verificationType  B_GHGScope1  B_GHGScope2  B_UNGlobalCompactSig  B_emissionReduction  B_climateChangeProducts  B_climateChangePol  B_employeeCSRtraining  CDP_integratedPerformaceScore  CDP_scope1EmissionsGlobally</p>
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	<p>A4_biodiversityControversies  A4_spillsandPollutionControversies  A4_spillImpactReduction  B_biodiversityPol  Not many variables in the data set measure ocean sustainability</p>
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt reserve land degradation and halt biodiversity loss	<p>A4_biodiversityControversies  A4_businessEthicsControversies  B_biodiversityPol  Not many variables in the data set measure forest sustainability</p>

(continued)

Table A1.

Sustainable Development Goal	Variables of measure
Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	A4_businessEthicsControversies A4_privacyControversies A4_marketingControversies A4_productLabellingControversies A4_taxFraudControversies B_antiBriberyEthicsPolicy B_ethicsPol
Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development	A4_envSupplyChainPartnershipTermination A4_ISO9000 A4_taxFraudControversies A4_donationsTotal A4_technologyKnow-HowSharing A4_privacyControversies B_GRIChecked B_GRICompliance B_verificationType B_UNGlobalCompactSig B_renewElectricityTargetPol B_energyEfficiencyPol B_climateChangePol B_biodiversityPol B_ethicsPol

**Table A1.** Notes: A4 refers to ASSET4; B refers to Bloomberg; CDP refers to carbon disclosure project

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