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How the Categorisation of SDG Targets into ESG Pillars can Inform the Corporate SDG Report

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In this research, SDG standards are mapped to the environmental, social, and governance (ESG) pillars through Triple-Bottom Line (TBL) groupings based on the Global Reporting Initiative (GRI) guidelines and accounting items, which allow SDG standards to be harmonised with the ESG pillars. Two methodologies developed in the literature for classifying SDG standards into TBL groupings were also used to create a ranking scheme. This scheme can help companies determine which SDG standards are most important for their sustainability reporting. Companies report on the steps they have taken towards sustainability and the sustainability aspects of their operations in their ESG sustainability reports. In many cases, their reporting includes information on SDGs, which, like ESG reporting, does not have a standard disclosure methodology, so announcements are made with different information, in different formats, by different companies. To make SDG reporting more consistent, harmonisation with existing ESG reporting methodologies could be identified as a forward step in this field because it would help to produce more informed, consistent SDG reporting. In addition to integrating SDGs into ESG reporting methodologies, SDGs also could be integrated into ESG scoring methodologies, which would be more relevant to stakeholders and the stock market. The paper will review ESG reporting and scoring methodologies, with a particular focus on which methodology is most appropriate for harmonisation. By defining the integration methodology, the study contributes to the public policy discussion about sustainable reporting.

1. Introduction

Companies disclose the steps they have taken towards sustainability in their operations via their Environmental, Social and (Corporate) Governance (ESG) reports (Perello-Marin et al., 2022). Sustainability disclosures cover many topics such as waste minimisation, wastewater engineering, and other innovations related to the environment (e.g., green materials processing, heat mass transfer, and so forth), which are important elements of required annual corporate reports. In many cases, these releases include information on Sustainable Development Goals (SDGs), which, like ESG reporting, lack a standard disclosure methodology. Consequently, announcements made by different enterprises appear in different formats and contain different information. To make SDG disclosures more meaningful, harmonisation with existing ESG reporting methodologies would be a big step forward because it would help to produce more consistent SDG announcements. This paper reviews ESG reporting and scoring methodologies, with a particular focus on their suitability for harmonisation. By analysing these procedures and identifying the most appropriate methodology, the study contributes to the public policy discussion about sustainable reporting. Besides these disclosures, companies often also report their targeted SDGs in keeping with SDG 12.6 (UN, 2015). A firm's SDGs reflect its intentions regarding sustainability and thus commit its decision-makers to take concrete actions that deliver measurable results. Because SDGs comprise nonbinding aims agreed upon by the United Nations (UN), they represent desirable activities rather than legal requirements. In contrast, reporting ESG information (including particulars pertaining to sustainability) in many instances already is, or soon will be, mandatory. For example, the regulations embodied in the European Sustainability Reporting Standards "ESRS" will enter into force in 2024 (ESRS, 2022).

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1.1 Literature

Sustainability reporting is the practice of publicly reporting on companies' economic, environmental, and social impacts (Perello-Marin et al., 2022). It aims to advise stakeholders on how an organisation is progressing towards sustainable development (Calabrese et al., 2021). In this regard, several tools have been proposed to help companies organise and disclose sustainability information (Tsalis et al., 2022). One of the most popular sustainability reporting frameworks is the Global Reporting Initiative (GRI), which enjoys worldwide usage (Perello-Marin et al., 2022). Reporting against the 84 GRI guidelines is a widely accepted method for disclosing companies' sustainability commitments and their contributions to the 17 UN Sustainable Development Goals (UN, 2015). The GRI guidelines are structured along an accounting "triple bottom line" (TBL) that is based on three groupings of goals (economic, social, and environmental) (Calabrese et al., 2021). Researchers have shown that companies using the GRI framework are more likely to disclose SDG-related information in their reports (Jan et al., 2021). Interestingly, one study has established that if the level of information on environmental GRI guidelines is high, then the company's environmental SDG ranking will also be high (Gutiérrez-Ponce, 2023). Businesses rely on the ESG framework to report progress within its three pillars for the purpose of gaining financial benefits. In contrast, the pursuit of the SDGs focuses on achieving a sustainable future. Hence, even though classifying SDGs within the ESG framework theoretically may seem straightforward, doing so in practice poses some problems (Jonsdottir et al., 2021). One can divide the GRI guidelines along three dimensions (Szennay et al., 2019) according to the TBL's three-goal groupings (Elalfy et al., 2021). Some researchers argue that one also might approach SDG reporting within the GRI framework more easily by utilising a triple-bottom-line methodology (see Table 1), as well as listing some supporting provisions and regulations such as the "EU Sustainable Financial Disclosure Regulation (SFDR), Corporate Sustainability Reporting Directive (CSRD), Taxonomy and International Financial Reporting Standards (IFRS)" (Sætra, 2023). Based on the nine methodologies reviewed in the literature, Table 1 shows the classification of SDG criteria into TBLs.

Table 1: Classification of SDG standards in the TBL groups/ESG pillars based on the literature reviewed

Author	Methodology	Environmental	Social	Economy/Governance
Szennay et al., 2019	GRI, 2016	2, 3, 6, 7, 8, 11, 12, 13, 14, 15, 17	1, 2, 3, 4, 5, 8, 11, 16, 17	3, 8, 9, 10, 11, 17
Jan et al., 2021	GRI, 2020	6, 7, 13, 14, 15, 11, 12, 17	1, 2, 3, 4, 5, 11, 12, 16, 17	2, 3, 8, 9, 10, 17
Gutiérrez-Ponce, 2023	GRI, 2020	6, 7, 13, 14, 15, 11, 12, 17	1, 2, 3, 4, 5, 11, 12, 16, 17	2, 3, 8, 9, 10, 17
Perello-Marin et al., 2022	GRI, 2020	3, 6, 7, 9, 11, 12, 13	3, 4, 5, 8, 9, 10, 12, 16	3, 4, 5, 7, 8, 9, 10,
Calabrese et al., 2021	GRI, 2020	3, 6, 7, 8, 9, 11, 12	2, 3, 4, 5, 8, 10, 16, 17	6, 8, 9, 10, 11, 12, 16, 17
Macneil et al., 2021	GRI, 2020	3, 6, 7, 9, 11, 12, 13, 14, 15	3, 5, 6, 8, 9, 11, 12, 14, 15, 17	8, 9, 11, 12, 13, 15, 17
Khaled et al., 2021	Refinitiv, 2022	2, 3, 6, 7, 8, 9, 11, 12, 13, 14, 15, 17	1, 2, 3, 4, 5, 8, 10, 12, 16, 17	5, 12, 17
Saetra, 2022	Berenberg, 2018	6, 7, 9, 11, 12, 13, 14, 15	1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 16	5, 8, 9, 11, 12, 13, 16, 17
Sustainalytics, 2022	Sustainalytics, 2022	2, 3, 6, 7, 9, 11, 12, 13, 14, 15	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16	8, 9, 11, 16, 17

In any event, earlier research noted that sustainability reporting is subject to different regulations in various countries Sætra (2021). For instance, in Europe, the EU Taxonomy (an implementation framework for achieving the EU's green goals), the Green Deal (a political agreement, now in force, that aims to make the EU climate neutral by 2050), the CSRD, and the SFDR impose certain disclosure requirements on companies. Meanwhile, in the United States, the Securities and Exchange Commission (SEC) allows enterprises great discretion concerning the content of their sustainability reporting. Hence, a coherent and harmonized scheme, such as the framework provided by the GRI guidelines, would make SDG reporting more comparable across businesses and countries (Kücükgül et al., 2022). Several researchers, therefore, have advocated examining the SDG standards with a view to the GRI guidelines (Tsalis et al., 2020). Other scholars have identified the GRI guidelines as a framework to support reporting on SDGs (Costa et al., 2022). A combination of either SDG standards or SDGs within the architecture of the GRI guidelines would embody "double materiality" in reporting because the disclosed information would pertain both to an entity's financial value and its environmental impact (Aguado-Correa et al., 2023). Many organisations following the GRI guidelines and reporting index already tend to incorporate SDGs in their sustainability disclosures. This tendency demonstrates that SDG disclosures are compatible with GRI reporting (Elalfy et al., 2021). Furthermore, association with the GRI and the Global

Compact (the UN's corporate sustainability reporting initiative) encourages companies to report on their SDGs (Curtó-Pagés et al., 2021). In fact, among twenty publications reviewed in connection with this research, six announcements included a statement on the integration of SDG standards within the GRI guideline framework. Moreover, they did so in keeping with the TBL approach (Gutiérrez-Ponce, 2023). The methodology employed consists of classifying relevant SDG standards into the aforementioned three TBL groupings (environmental, social, and economic) (MacNeil et al., 2021).

2. Approach

The approach taken here examines the publicly accessible methodologies employed by six different for-profit and non-profit organisations for sustainability reporting. The criteria for analysing them have been developed in light of the indicators defined in the SDG Compass for reporting purposes (SDG Compass, 2015). SDG standards relevant to a given methodology are assigned to their respective ESG pillar. Proceeding in this fashion helps to clarify the differences between the two methodologies and harmonise them. The number of relevant accounting line items is also examined. The for-profit organizations in the study are Refinitiv (2022), Sustainalytics (2022), and S&P Global (2022), while the non-profit entities are the GRI (2022b), the SASB (2022), and the ESRS (2022). Documents published by these six organizations comprised the source of primary data for this research. The first step of the analysis assessed the SDG-related pertinence of the organisations' respective methodologies based on those documents. Two of the six organisations had readily available accounting line items that could be linked to SDGs. Three other organisations just published aggregated data for groups of accounting items (e.g., "labour protection") rather than individual accounting line-item information. No description of the sixth organization's methodology was available. Accordingly, only the first two organizations' methodologies proved suitable for further investigation. The next step was to clarify the relationship of the GRI guidelines with the SDGs and to calculate percentage relevance values and indices. Then, the strength and relevance of the relationship of the SDGs to the ESG pillars and the triple bottom line were estimated. Below are the formulae for the calculations involved.

Classification of GRI guidelines into the TBL groupings, where "GRIs" is the number of GRI guidelines that can be linked to SDGs in a given grouping, "GRIn" is the number of relevant GRI guidelines in a given grouping, "GRIp" is the Proportion of SDG-relevant GRI guidelines in the TBL grouping.

GRIs / GRIn = GRIp (1)

Relevant GRI guidelines based on the TBL groupings, where "GRIk" is the GRI guidelines under a given TBL grouping that are relevant to a specific SDG standard, "GRIt" is the total of GRI guidelines under a given TBL grouping, "GRIr" is the ratio of GRI guidelines relevant to SDG standards in relation to the total GRI guidelines under a given TBL grouping.

GRIk / GRIt = GRIr (2)

3. Results

Whether the source documents contained a sufficient description of the relevant methodology and accounting information to apply the above metrics is shown in Table 2. The points made in the previous section are illustrated in Table 2. Five of the six organizations explained the methodologies they applied, but just two of them gave examples of their metrics. Moreover, these two organizations S&P Global and GRI were the sole providers of line-item accounting information. Hence, only these two organizations' documents proved adequate for further analysis.

Table 2: Data availability from the institutions analysed

Organization	Source	Methodology available?	Accounting line items
Refinitiv	Refinitiv, 2022	Yes (without metrics)	None
Sustainalytics	Sustainalytics, 2022	Yes (without metrics)	None
S&P Global	S&P Global, 2022	Yes (with metrics)	Yes (partly with GRI)
GRI	GRI, 2022b	Yes (with metrics)	Yes
SASB	SASB, 2022	Yes (without metrics)	None
ESRS	ESRS, 2022	None	None

In the case of S&P Global, besides describing its methodology fully, the organization also indicated the source of each metric (S&P Global, 2022). In several cases that source was the GRI. This approach allowed S&P Global to integrate its information with the SDGs because GRI has a harmonisation document ("Linking the SDGs and the GRI Standards") for the SDGs (GRI, 2022a). The supplementary material (Lukács and Rickards, 2023) displays the relevant accounting line items (insofar as available) provided by each of the two organisations

and the number of the SDG standard to which the items can be linked. For the GRI methodology, the results are based on the “Consolidated Set of the GRI Standards” (GRI, 2022b). The data presented indicate the net number of GRI guidelines linked to specific SDG standards after filtering out duplicates. Despite there being only 84 GRI guidelines, there nevertheless are 195 such links with the 17 SDG standards because a given GRI guideline may be relevant for more than one SDG standard. As for the S&P Global ESG methodology, it employs the Corporate Sustainability Questionnaire (CSA), whose 112 queries can be linked to the GRI guidelines. In total, there were 359 such linkages because many questions were deemed relevant to more than one GRI guideline. Following this screening, the 359 links to GRI guidelines (GRI, 2022a) were assigned to the 17 SDG standards in keeping with “Linking the SDGs and the GRI Standards". After eliminating duplicates, there were a total of 122 GRI links to the SDG standards.

3.1 SDG-TBL harmonisation

The supplementary material (Lukács and Rickards, 2023) furthermore contains the classification of GRI guidelines according to TBL groupings in keeping with the “Consolidated Set of the GRI Standards”. According to that document, of the total of 84 GRI guidelines, 31 could be classified in the environmental grouping, 36 in the social grouping, and 17 in the economic grouping. The reported percentages can be obtained as the number GRI guidelines in a given grouping divided by the total number of GRI guidelines (e.g.: (31/84)*100=36.90%). The GRI guidelines relevant to the respective methodology (GRI or S&P Global) are assigned to TBL groupings based on the appropriate GRI (GRI, 2022b) or GRI-SDG classification document (GRI, 2022a). For a given methodology, the proportion of GRI guidelines relevant to the SDG standards in a particular grouping can be calculated as follows. For example, 30 of the GRI guidelines classified in the TBL’s environmental grouping can be linked to its SDG standards, so the proportion of GRI guidelines relevant to that grouping is: (30/31)*100 = 96.77 %. In this way, it is possible to obtain the actual percentage of the SDG-relevant GRI guidelines for the given methodology compared to the theoretically possible total GRI guidelines in the given grouping. The analysis shows the GRI methodology has a stronger relationship to the TBL’s groupings than does the S&P Global methodology. The number of GRI guidelines linked to a specific SDG in keeping with a given methodology (GRI or S&P Global) is presented in the supplementary material (Lukács and Rickards, 2023), together with their percentage contribution to the SDGs of the number of relevant GRI items in the pillar. In the Economic Pillar, the best contribution scores for the GRI methodology were achieved for SDGs 1 and 8, while for the S&P Global methodology the SDGs were 1, 8, 10, and 17. In the social pillar, the GRI methodology achieved the best contribution for SDG 8 with 66.67 %, while the S&P Global methodology also contributed the most to SDG 8 with 52.78 %. The importance of SDG 8 apparently is due to its close association with both economic and social goals. In the environmental pillar, GRI's methodology for SDG 12 made the largest contribution to the pillar. The same was true for S&P Global’s methodology. Like SDG 8, SDG 12 heavyweight in the environmental pillar can be attributed to its specific characteristics.

3.2 SDG-ESG harmonisation

After classifying specific SDG standards to GRI guidelines into the TBL groupings, the next step is integrating them into the ESG pillars (see Table 3). Of the TBL’s three groupings, its environmental and social groupings correspond closely to the ESG’s environmental and social pillars, respectively. While differing in their labels, the TBL’s economic grouping nonetheless fits well with the ESG’s (corporate) governance pillar too. Their good fit is partly because both deal mainly with economic issues. Furthermore, there is a sharp distinction between the TBL’s economic grouping's contents and the ESG’s environmental and social pillars, which precludes classifying the former into either of the latter categories. Likewise, the substance of the ESG’s governance pillar varies markedly from the import of the TBL’s environmental and social groupings.

Table 3: SDG harmonisation to ESG

	Methodology	Environmental	Social	Governance
Own research (1)	GRI	3, 6, 7, 8, 11, 12, 13, 14, 15, 16	1, 2, 3, 4, 5, 8, 10, 12, 16	1, 3, 5, 8, 9, 10, 11, 13, 16, 17
Own research (2)	S&P Global (GRI)	3, 6, 7, 8, 11, 12, 13, 14, 15	2, 3, 4, 5, 8, 10, 16	1, 8, 9, 10, 16, 17

We illustrate the classification of SDG standards into ESG pillars (in Table 4), broken down into levels, ranging from extremely important (level 1) to slightly important (level 5). The determination of the levels includes the methodology for classifying SDG standards into 9 TBL groups (see Table 1) and 2 additional methodologies in Table 3. So, on level 1 are the SDG standards that are met 11 times out of the 11 methodologies examined. For example, if SDG standard 6 always appeared in pillar E in the 11 cases examined, it is classified as level 1. The other levels are structured in a similar way according to the criteria given in Table 4. The number of occurrences

of an SDG standard in the 11 methodologies examined determines the level at which that SDG standard is positioned. Furthermore, the SDG standard is assigned to the pillar in which it occurred the most frequently in the 11 methodologies examined.

Table 4: SDG standards importance ranking based on the ESG pillars

Level	Criteria (methodological overlap)	Importance	Environmental	Social	Governance
Level 1	11 out of 11	Extremely important	6, 7, 11, 12	3, 5	-
Level 2	10 out of 11	Very important	13	4, 16	8, 9
Level 3	9 out of 11	Fairly important	14, 15	2, 8	17
Level 4	7, 8 out of 11	Important	3	9, 10	5, 12, 3, 16
Level 5	5, 6 out of 11	Slightly important	8, 9	1, 17, 10, 12	11, 10

Based on the ranking presented in Table 4, there were no SDG standards that were not classified under one or more pillars. For companies, the ranking presented in Table 4 can serve as important information. The ranking identifies individual SDG standards together with the ESG pillars to which they respectively contribute. The next step of the research can be to establish such linkages on an industry-specific basis. This development could help companies operating in various industries to report on the SDG standards that are most important to them.

4. Discussion and conclusions

Currently, there is no generally accepted methodology for companies to report on their SDGs, which makes it difficult to compare reports across time, entities, and countries. This study examined the methodology employed by 6 organisations. Only two of them had relevant accounting line-item data that were publicly available for analysis. At present, GRI guidelines comprise the most widely used sustainability reporting methodology. Furthermore, it is the only one with which accounting line items can be harmonised directly with SDG standards. By default, GRI guideline-based harmonisation therefore could become the foundation for SDG reporting. Additionally, the GRI guideline methodology can be applied to the ESG pillars easily via TBL groupings. Two earlier studies (Berenberg, 2018) previously tried to classify SDG standards into ESG pillars (Khaled et al., 2021). Their respective qualitative approaches lacked a common starting point. In contrast, the present research relied on the "Consolidated Set of GRI Standards" and "Linking the SDGs and the GRI Standards" as a uniform basis to analyse six methodologies (see Table 2). It also linked the GRI guidelines to the CSA questionnaire, those guidelines to the SDG standards, the standards in turn to TBL groupings, and then harmonised the groupings with the ESG pillars. Proceeding in this fashion constitutes a new approach compared to the prior efforts. Moreover, the unique ranking scheme (see Table 4) developed here reveals the relative importance of all 17 SDG standards within the ESG pillars. Effective reporting on the Sustainable Development Goals is a difficult task for companies because they must link individual accounting line items to specific SDG standards, regardless of the methodology they apply. One can say the same about their efforts to align their SDGs with ESG pillars. As for the 9 methodologies suggested by various scholars (listed in Table 1) and the 4 other methodologies put forward by rating entities (listed in Table 2 but excluded from further analysis), they also very well may link accounting line items to SDG standards. Because they do not make publicly available the necessary data to demonstrate such linkages, these methodologies could not be examined in detail. The lack of such a broader analysis represents a limitation on the scope of our research. If these data become available, future research might include them. Another avenue for future research might be the development of industry-specific SDG rankings. Such rankings could have additional value for enterprises in disclosing their sustainability goals and achievements by facilitating narrower, industry-specific comparisons.

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