

A Work Project, presented as part of the requirements for the Award of a Master's degree in  
Management from the Nova School of Business and Economics.

EXPLORING MATERIALITY DISCLOSURES IN NON-FINANCIAL REPORTING  
EVIDENCE FROM ANNUAL REPORTS IN EU COMPANIES

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## **Abstract**

Non-financial materiality is a new, vague concept that comes with many uncertainties in its application, leading to reports likely lacking objectiveness, reliability, and comparability. This work investigates materiality disclosures in non-financial reports from Euro Stoxx 50 listed companies in 2020, seeking insights into the status quo of reporting harmonization. Findings suggest that materiality disclosures in non-financial reporting are of great disparity. While legal environment and industry do not influence the degree of non-financial materiality disclosure, the choice of reporting framework does. Therefore, to increase reports' usability, it is recommended to the standard setter to develop a common reporting standard.

**Keywords:** Non-financial reporting, Materiality, Disclosure, CSRD, Sustainability, Harmonization

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## 1. Introduction

Over the last years, reporting on non-financial<sup>1</sup> matters has been of increasing importance (Eccles, Krzus, Rogers and Serafeim 2012). Awareness among investors is growing that sustainability both influences a company's financial performance risk and dictates its ability to refinance, with investments favorably directed towards sustainable projects and activities (COM 2021). In line, 96% of the world's 250 largest companies<sup>2</sup> report on sustainability in 2020 (KPMG 2020). These reports, however, are generally deemed insufficient in meeting financial statement users' needs. The plethora of existing private standards and frameworks on sustainability reporting, and in turn missing standardized guidelines on materiality, leave companies unsure about how and what to report to what extent (COM 2021; EFRAG 2021b). Moreover, materiality as a guidance for what is of relevance to financial statement users proves difficult in a non-financial setting as stakeholders are more heterogeneous than in a solely financial context (BMJV 2021; Reimsbach, Schiemann, Hahn and Schmiedchen 2020). As a result, reports often lack objectiveness, reliability, and comparability (COM 2021).

In 2021, considering these shortcomings, the European Commission (EC) in line with the European Green Deal and its 2020 Work Program published the *Corporate Sustainability Reporting Directive* (CSRD), a proposal to revise current European legislation, the Non-Financial Reporting Directive (NFRD). The CSRD proposal aims at further harmonizing reporting on non-financials and ensuring companies' disclosure of all *material* matters. Regarding materiality, the CSRD proposal clarifies the concept of *double materiality* in sustainability reporting and dictates the disclosure of sustainability risks affecting the company as well as the company's impacts on society and the environment. Further, it mandates

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<sup>1</sup> *Non-financial* and *sustainability* will be used interchangeably throughout this Work Project as both terminologies are present in (proposed) legislation with the NFRD and CSRD and used by companies in their reporting. Stakeholder interviews led by the EC revealed the term "non-financial" to be too narrow since it indicates no financial relevance, and a move to "sustainability information" was proposed (COM 2021, 23).

<sup>2</sup> Defined by revenue in the Fortune 500 ranking of 2019.

companies to report on the selection process of material topics and its stakeholders and suggests introducing a separate set of standards with sector specificities by 2023 (COM 2021). Despite the EC's intent to increase the quality of information on non-financial matters with the CSRD, researchers suggest double materiality in fact will bear both unreasonably high costs for companies and disclosure overload for financial statement users (Müller, Scheid and Baumüller 2021). Bossut, Hessenius, Jürgens, Pioch, Schiemann, Spandel and Tietmeyer (2021) argue further that no improvement in standardization and comparability in reports can be expected unless regulatory guidance on materiality of sustainability issues across different industries is provided immediately. International professional bodies, such as the International Accounting Standards Board (IASB) and Institute of Chartered Accountants of Scotland (ICAS), call for further discussion and invite papers on the matter.

Thus, in light of the recent EC proposal, it is of interest to investigate the status quo of materiality disclosures in non-financial reporting in Europe. Since the NFRD is a directive and as such laws are devised by each country individually (European Commission 2019), examining cross-country differences in materiality disclosures can give insights into the need for harmonization expressed by the EC. Further, analyzing cross-industry differences can advance the discussion on the necessity of industry-specific regulation. Hence, this Work Project aims to investigate materiality disclosures in various disclosure settings<sup>3</sup> under NFRD. The study addresses the call for greater research examining materiality in non-financial reporting and contributes to literature on disclosure of non-financial materiality and practice as it observes materiality disclosure across several countries and various industries and provides a first assessment on whether CSRD's proposal on materiality will increase usability of non-financial reporting for financial statement users.

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<sup>3</sup> Disclosure setting is dependent on the legal environment and industry-specific demands.

This Work Project proceeds as follows. Section 2 introduces the definition of materiality in the context of non-financial reporting regulation. Section 3 reviews the empirical research on non-financial materiality. The research questions, sampling criteria, data collection and preliminary data analysis are described in Section 4, while Section 5 discusses the research findings. Finally, a conclusion is given in Section 6, highlighting the contribution of the Work Project, its limitations, and directions for future research.

## **2. Materiality in Non-Financial Reporting**

### *2.1 Materiality in the European Union*

In financial reporting, material information refers to information if omitted or misstated able to influence a financial statement user's decision made based on those financial statements (Directive 2013/34/EU 2013; IASB 2018). With sustainability factors attracting increasing attention from stakeholders and statement users, on a European level, Directive 2014/95/EU broadened the scope of information to be reported from a narrow financial perspective to include sustainability matters: While a definition of materiality in the context of non-financial reporting was not explicitly given in the directive, companies subject to the directive should now prepare "a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters" (Directive 2014/95/EU 2014, Art 19a) while considering "current and foreseeable impacts" (Directive 2014/95/EU 2014). This requirement is twofold: An "undertaking's development, performance, (and) position" refers to the known financial perspective. "Impact of its activity", however, introduces a new perspective in reference to a company's sustainability. Nowadays, this is often referred to as *double materiality* where the former provides an outside-in and the latter an inside-out direction for

analysis. In other words, companies should both consider the risks the environment has on its own activities as well as the sustainability risks their activities exude outwards. Since financial and non-financial relevance of information are linked by the word “and” preparers and researchers are ambiguous in their understanding of whether relevancy of both must apply simultaneously to be deemed material or one suffices (Baumüller and Schaffhauser-Linzatti 2018). This difference in interpretation can have great impact on the scope of a non-financial report and lead to inconsistencies between statements.

Initially, with implementation, these high-level regulations meant to allow for “high flexibility in action” as the nature of corporate social responsibility (CSR) is multidimensional and diverse in businesses (Directive 2014/95/EU 2014). Non-binding guidelines on non-financial reporting were published in 2017 in an effort to provide clarity and help companies report in a more transparent, comparable, and relevant way. Still, differing opinions on whether the “and” should be read as such or as an “or” prevailed. Only recently in 2021, the European Commission released the CSRD that proposes a binding clarification on materiality and the concept of double materiality:

“(…) undertakings should consider each materiality perspective in its own right, and should disclose information that is material from both perspectives as well as information that is material from only one perspective” (COM 2021, 28).

Even with the interpretation of double materiality clarified, no uniform disclosure of materiality is expected as the NFRD allows for companies to choose freely if and upon which international, EU-based, or national framework reporting relies. The CSRD is demanding development of new and common mandatory sustainability standards as existing standards and frameworks do not satisfy all requirements set forth by the European Union.<sup>4</sup> Today, the Global

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<sup>4</sup> EFRAG published proposals for an EU sustainability reporting standard based on a double materiality approach in February 2021 (EFRAG 2021a).

Reporting Initiative (GRI) is the sustainability reporting standard dominantly used by statement preparers across the world (KPMG 2020). A material topic according to GRI is one that impacts the economy, environment, people, or human rights significantly (GRI 3 2021). This statement reflects the concept of stakeholder materiality. Here, a greater emphasis is put on active stakeholder engagement whereas double materiality takes environmental and social impacts into account more generally (Bossut et al. 2021). Exemplary, the *Sustainable Development Goal Disclosure (SDGD) Recommendations* apply a definition closer to double materiality and describe materiality as a threshold capable of changing conclusions drawn by: “stakeholders concerning the positive and negative impacts of the organisation on global achievement of the SDGs, and: providers of finance concerning the ability of the organisation to create long term value for the organisation and society” (Adams, Druckman and Picot 2020). Again, a twofold perspective is adopted: How does the organization affect sustainable development, and in what way does sustainable development impact the organization (Adams, Alhamood, Le Wang and Wang 2021)? Adams and Abhayawansa (2021), believing the ongoing discourse on harmonization to be other than sustainability-motivated with large asset managers involved, urge for standardized non-financial materiality not to rely too heavily on financial materiality and metrics.

With materiality still developing from a purely financial, quantitative threshold to one including non-financial information, gaps on consistent application exist in today’s non-financial reporting.

## *2.2 Materiality Determination Process*

As the definition of materiality in non-financial reporting is ambiguous (Bossut et al. 2021) and the NFRD in lieu of an existing mandatory common European reporting standard does not prescribe application of one existing standard or framework, the materiality determination

process differs from organization to organization, too. When determining materiality, organizations should employ an evidence-based, systematic process “to identify, prioritize and validate their material issues” (EFRAG 2021b, 73). Guidance on determining which information is of significance is available in standards and frameworks like the GRI (GRI 3) and from the International Integrated Reporting Council (IIRC), and in publications from *Big 4* audit companies<sup>5</sup>. While recommendations differ in detail, the general approach is similar: an organization first needs to understand the context of its activity, and then, with the help of relevant stakeholders, identify actual and potential risks and opportunities and assess their significance. In a last step, identified impacts in the form of risks and opportunities must be prioritized (GRI 2021; IIRC 2013; KPMG 2014). The resulting list of impactful information builds the basis for the organization’s non-financial reporting. An important decision along this process is the selection of stakeholders to involve in determining what is material as their views will likely be presented as all stakeholders’ unified understanding (Puroila and Mäkelä 2019). The AccountAbility’s AA1000 Stakeholder Engagement Standard is a widely accepted benchmark for good-quality engagement. The CSRD, aiming for more transparency, calls for the materiality determination process to be a mandatory disclosure requirement in non-financial reporting.

The output of the materiality determination process can be translated into a reporting tool, the *materiality matrix*. The matrix’s purpose is to illustrate the materiality analysis’ results and maps identified and prioritized material impacts on the *x*-axis to its relative importance to stakeholders’ decisions on the *y*-axis (Bellantuono, Pontrandolfo and Scozzi 2016; Beske, Hausteijn and Lorson 2020). While a materiality matrix can be a helpful tool during the stakeholder engagement and discloses material information in a comprehensible way to statement users, Puroila and Mäkelä (2019) criticize the simplified presentation as it is neither

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<sup>5</sup> Deloitte, EY, KPMG, and PWC.

able to represent possible contradictions between stakeholders nor to properly display the proportion of financial and non-financial relevance of a material topic due to the matrix's complete lack of value measurements. With that, the materiality matrix may seemingly fail at fulfilling its purpose as an aid towards comprehensiveness while at the same time providing high information significance. Viewed in the context of the non-financial report, ease of understandability may increase usability at the cost of comparability.

### **3. Literature Review**

Since first appearing in 1981, empirical research on non-financial information in reporting has steadily grown over the last decades with more than 100 articles published on the topic every year for the last five years (Pasko, Chen, Oriekhova, Brychko and Shalyhina 2021). Generally, research focuses on non-financial information disclosure and quality, but not specifically on materiality.

At the same time as researchers' interest was growing, regulation on non-financial reporting has strengthened. More regulation has been found to have a positive effect on materiality disclosure and reporting quality. Ferrer, López-Arceiz and del Rio (2020) determine Directive 2014/95/EU increased quality of sustainability reporting and improved sustainability disclosures. They compared earnings per share forecast accuracy over the years 2008 to 2017 in 434 European companies and results indeed show higher levels of accuracy. Similarly, Mion and Aduai (2019) detect higher quality mandatory non-financial disclosure in Germany and Italy with the implementation of the NFRD when conducting content analysis on FTSEMIB and DAX 30 listed companies. Beske et al. (2020) also investigate the German disclosure setting, and while voluntary application of NFRD leads to enlarged reporting, they do not find any improvement in disclosure of the materiality process. They surmise companies feign conformity by reporting more to legitimize their activities. Further findings of Mion and Aduai

(2019) suggest levels of sustainability reporting quality aligned between the two countries, Italy and Germany, due to standardized regulation. This implies, mandatory regulation is in fact effective in harmonization of reports across countries.

Fasan and Mio (2017), on the other hand, conclude standardization may not be necessary in an integrated reporting environment since their results suggest no significant link between legal environment and materiality disclosure. Instead, industry as well as board size and diversity are determinants of disclosure quality. In addition to industry, Torelli, Balluchi and Furlotti (2020) find the application level of GRI standards determines the materiality process in Italian companies in 2017.

Overall, researchers observe low information detail in materiality disclosure. Vara (2020), who examined both financial and non-financial materiality in listed Portuguese companies in 2018, concluded that Portugal's degree of materiality disclosure varies greatly between companies. When conducting a quantitative content analysis of 140 GRI-based sustainability reports, Machado, Dias and Fonseca (2021) determine organizations do not comprehensively report on their materiality determination process in that 22 percent of evaluated indicators were not fully disclosed. Even third-party assurance was not expected to increase report transparency.

In the case of high-quality materiality analysis, stakeholder engagement is one important factor (Torelli et al. 2020). Non-transparency, however, is most prevalent in disclosing stakeholder engagement as techniques can be difficult to compare (Guix, Bonilla, and Font 2018; Machado et al. 2021) and stakeholders do not always share the same view on what is material (Reimsbach et al. 2020; Jørgensen, Mjøs and Pedersen 2021). Beske et al. (2020) criticize the almost complete failure of German companies to reveal methods for stakeholder selection. In the lack of stakeholder engagement disclosure, they see an opportunity for statement preparers to intentionally adapt report content to their liking. The possibility of

misusing non-financial reports for advertising purposes is also seen in the sample of 53 companies from 15 countries in the wearing apparel industry. By comparing companies' reported materiality analysis and independent expert knowledge on topic prioritization, Ferrero-Ferrero, León and Muñoz-Torres (2021) find companies with better environmental performance may exploit materiality analysis for greenwashing purposes to enhance their standing. Reports' integrity, reliability and objectivity are thereby questioned. Gerwanski, Kordsachia and Velte (2019) give reason to believe reporting on sustainability matters in an integrated format is going to improve with the years. A cross-national sample between the years 2013 and 2016 and a manually constructed materiality disclosure quality score revealed the score to be positively associated with learning effects.

Due to non-financial materiality's lack of quantitative characteristics and susceptibility to subjective interpretation further research into the topic is needed. Moreover, as the implementation of NFRD is maturing, reporting can be assumed to have matured as well. With that, continuous study of quality and extent of materiality disclosures is of interest to researchers, practitioners, and standard setters, especially considering the recently proposed amendment to current legislation. Thus, this Work Project adds to literature by investigating materiality disclosures in the latest annual reports of European companies, contributing a current European-wide analysis.

## **4. Methodology and Data**

### *4.1 Research Questions*

This Work Project investigates materiality disclosures in non-financial reporting in European companies, with the objective of identifying patterns in materiality disclosure linked to company, industry, and country differences. To that extent, seven research questions are presented as follows:

**RQ1:** *Where and how is non-financial materiality disclosed?*

**RQ2:** *Does the non-financial information provide a definition of materiality and disclose a materiality determination process?*

**RQ3:** *What topics are deemed material?*

**RQ4:** *Were stakeholders engaged in identifying material topics and if so, what stakeholder groups? Is the stakeholder selection process disclosed?*

**RQ5:** *Is a materiality matrix part of the materiality determination process and is it disclosed?*

**RQ6:** *Which is the degree of materiality disclosure?*

**RQ7:** *Is there any association between the degree of materiality disclosure and the company and non-financial information characteristics?*

Materiality disclosures are characterized through the following variables: *Location* (RQ1, if non-financial information is presented in a separate report or together with financial information), *Volume* (RQ1, number of pages), *Wording* (RQ1, materiality, material/materially, immaterial, non-material, significant), *Determination Process* and *Definition* (RQ2, if the materiality determination process is disclosed and if an explicit definition of non-financial materiality is given), *Material topics* (RQ3, which non-financial topics are of materiality to a company), *Stakeholder engagement* (RQ4, if stakeholders are involved in the materiality determination process), *Stakeholder selection* (RQ4, if the stakeholder selection process is disclosed), *Matrix* and *Matrix disclosure* (RQ5, if a materiality matrix is used in the materiality determination process and displayed in the report). RQ1 through RQ5 were answered using univariate descriptive statistics. RQ1 further assessed association direction and strength with the Pearson's correlation coefficient<sup>6</sup>.

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<sup>6</sup> The Pearson's correlation coefficient is a number between -1 and +1. A coefficient close to -1 implies a strong negative linear relationship, a coefficient close to +1 implies a strong positive linear relationship. When the coefficient's value is close to zero there is no linear relationship between variables (Khamis 2008).

To determine the degree of materiality disclosure in RQ6, a Materiality Disclosure Score (MDS) was calculated. The MDS is based on six variables which characterize disclosure degree: disclosure of materiality determination process ( $d_i$ ), materiality definition ( $d_j$ ), stakeholder engagement ( $d_k$ ), stakeholder selection process ( $d_l$ ), use of materiality matrix ( $d_m$ ), display of materiality matrix ( $d_n$ ). Each variable is scored on a binary level on a scale from 0 to 1 that indicates whether materiality related information is present or not. This way, a maximum total of six could be reached. Formula [1] computes the MDS over all variables for each company:

$$MDS_m = \frac{\sum_{ijklmn=1}^n d_i + d_j + d_k + d_l + d_m + d_n}{6} \quad [1]$$

Where  $m = 1, 2, \dots, 41$

To answer RQ7, the dependent variable MDS was analyzed concerning industry, country, and standard as a company's report characteristic using a One-Way ANOVA analysis and Goodman and Kruskal's lambda<sup>7</sup>. Observations were clustered into groups of countries and industries.<sup>8</sup> To determine lambda, the MDS was divided into above and below mean. Association with company size (defined as number of employees, total assets, and performance in revenues) was measured with Pearson's correlation coefficient. All statistical analysis was performed using Excel and IBM SPSS Statistics 27.

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<sup>7</sup> Lambda is a number between 0 and 1. A value close to 1 implies strong association (Khamis 2008).

<sup>8</sup> Countries were grouped according to Nobes and Parker (2008). They categorize countries into two classes based on their historic accounting systems: One class's accounting system is micro-fair-judgmental and commercially driven (Group 1, The Netherlands and Ireland), the other is macro-uniform, government-driven, and tax-dominated. For this sample, the second class can further be divided into plan-based (Group 3, France, Belgium, and Spain) and not plan-based (Group 2, Germany and Italy) accounting systems. Nobes and Parker (2008) do not class Finland. In grouping Finland, this Work Projects refers to Mattessich (2007) and regards it together with the Netherlands and Ireland in Group 1.

Industries were grouped by proximity to each other: Conglomerate with Other, Trade and Consumption with Food and Luxury as Commerce, and Chemical, Pharmaceutical, Organic and Medicinal with Energy and Raw Materials.

## *4.2 Sample*

The population of this research consists of all 50 companies listed on the Euro Stoxx 50 at the end of 2020. Being listed on the Euro Stoxx 50 guarantees companies are most likely subject to mandatory reporting on non-financial information. Moreover, listed companies are required to publish annual reports. Access to and completeness of required information are thus assured. Analyzing companies in Europe across different countries and industries, as is the case for Euro Stoxx 50 listed companies, allows for observations in reporting harmonization. As harmonization determines comparability of reports, the population permits a statement on non-financial reporting's usability to statement users in Europe. The chosen period, 2020, is the most recent with a complete availability of company reports.

Two exclusion criteria were used to obtain the final sample: regulatory specificities and presence of non-financial information. Nine companies in the financial industry were excluded due to the sector-specific regulation and resulting lack of comparability. No companies were excluded because they did not report on non-financial information. The final sample consists of 41 European companies belonging to eight different industries as well as eight different countries. Regarding size, companies' resources in total assets range from €42 million corresponding to Air Liquide to €285,737 million corresponding to Daimler. Assets average around €76 million with a standard deviation of €77,361 million and median of €43,012 million, showing a large dispersion between companies. Similarly, large dispersion can be observed in revenues as a proxy for performance with an average of €41,658 million, standard deviation of €52,040 million and median of €22,587 million. Again, Air Liquide reports the lowest amount with €20,485 million in revenues. Volkswagen, on the other end, generated the highest revenue with €222,884 million in 2020. The number of employees ranges between 991 and 662,600 at year end. With that, aside from country-specific classification of listed companies as public

interest entities, all sample companies are required to report on non-financial information as stipulated by NFRD since they exceed an average number of employees of five hundred.

Non-financial information has been audited for 40 out of the 41 companies.<sup>9</sup> A clear majority of audits was performed by *Big 4* companies (95.00%) and with limited assurance (85.00%). All audit reports were unqualified.

As previously stated, companies are free to choose if and what standard or framework their reporting is based on. In the sample, in line with KPMG's most recent data (2020), GRI is the most referenced standard. Eighteen companies' reports solely apply GRI standards, another eighteen adhere to GRI in addition to other standards or frameworks. Only five companies do not refer to GRI at all, one being Paddy Power Betfair, which is the only one not to base its non-financial reporting on any standard or framework. Siemens applies no standard in its combined management report with the intent of reporting in a "focused manner" (Siemens AG 2020, 2), but the separate "Sustainability Information 2020" document is based on GRI. Other than GRI, the most common standards or frameworks observed are SDGs, Sustainability Accounting Standards Boards (SASB) and German-specific CSR-legislation, *CSR-RUG*.

#### *4.3 Data Collection*

Data was collected from the non-financial information published by the 41 sample companies for the year 2020. Non-financial information was reported together with financial information in a combined management report or integrated report, or in a separate sustainability or non-financial report. If companies reported about non-financial information in more than one report, data was collected for the one separately addressing non-financial information. Reports were downloaded directly from the companies' websites. This Work

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<sup>9</sup> Linde, the one company without external assurance, specifically states that the majority of reported data was reviewed within the KION Group Sustainability Report audit.

Project deployed exploratory research through content analysis for data collection: data was gathered analogously by hand in a time-consuming exercise, scanning reports for information related to non-financial information and, specifically, non-financial materiality. To answer RQ1, the build-in word search method in Adobe Acrobat Reader was used. After gathering the data, RQ3 and RQ4 required clustering of the data material into groups of stakeholders and topics. This method comes with the limitation of being dependent on a particular researcher’s subjectivity and ability.

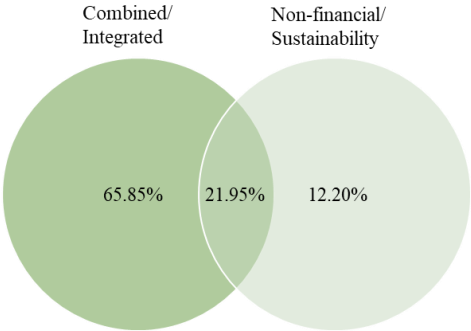
Data collection resulted in a database<sup>10</sup> containing information about non-financial information and materiality, namely the number of times materiality was mentioned, number of report pages containing non-financial information, and materiality disclosure characteristics concerning the materiality determination process.

**5. Results**

*5.1 Location, Volume, Wording (RQ1)*

Regarding location, 27 out of the sampled 41 companies (65.85%) report on non-financial information together with financial information in a combined or an integrated report. Five companies (12.20%) report on non-financial information in a separate report, nine companies (21.95%) publish both.

Chart 1: Location



On a country-level, France and the Netherlands require organizations to report non-financial information in the annual report. Germany leaves it to the organizations to choose whether to report in the management report or in a separate non-financial report. Ireland mandates information to be presented in the director’s report or in a separate report including a statement

<sup>10</sup> The database consists of 43 columns (the variables) and 41 rows.

in the director's report. As expected, with all sampled companies complying with their individual national regulation, no harmonization can be observed in the location of non-financial information. Further, separate reports carry different names: Next to non-financial and sustainability reports, companies publish non-financial information in sustainability supplements or sustainability information documents. Locating relevant information, thus, poses somewhat difficult for the statement user. This shortcoming was identified by the EC legislator and addressed in the CSRD that proposes mandatory disclosure in the management report.

All 41 companies together report non-financial information in 4,251 pages compared to 10,642 pages on financial information in 2020. Thus, 39.95% of reporting volume regards non-financial information. The least pages on non-financial reporting can be found in Germany in the logistics industry with Deutsche Post with ten pages, corresponding to 5.62% of the full reporting volume. On average, non-financial information accounts for 26.06% of total pages. The energy and raw materials industry is the industry reporting most on non-financial information both in absolute and relative terms with an average 250 pages making up almost 50% of total reporting. Close industry monitoring by the media may serve as an explanation for large non-financial reporting volume. As for wording, out of the observed terms *material/materially* occur most often in non-financial information with 1,169 counts, closely followed by *significant*. Table 1 provides the corresponding descriptive statistics. Materiality, on average, is mentioned ten times. Half of the companies refer to materiality at least seven times (median = 7). The higher average implies asymmetrical distribution slightly skewed to the left ( $10 > 7$ ). Four companies<sup>11</sup>, of which three do not apply GRI standards, make no mention of materiality. Report volume is positively linked to higher counts of materiality mentions at a

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<sup>11</sup> Adyen, Pernord Ricard, Paddy Power Betfair, and Vivendi.

significant level ( $r = 0.606, p < 0.05$ ), indicating more reporting about non-financial information leads to more reporting about non-financial materiality.

Wording	Materiality	Material/Materially	Significant	Immaterial	Non-material
Total	410	1,169	1,080	3	10
Average	10.00	28.51	26.34	0.07	0.24
Median	7	20	18	0	0
Mode	2	1	4	0	0
Maximum	49	161	154	1	3
Minimum	0	0	0	0	0
Range	49	161	154	1	3
St Deviation	10.92	36.95	33.52	0.26	0.62

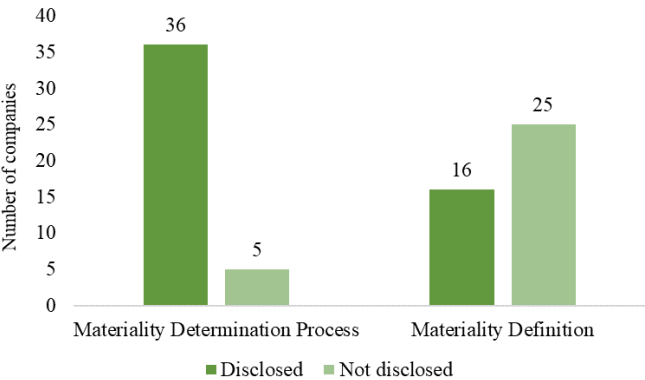
Table 1: Descriptive statistics on wording

*Immaterial* and *non-material* are rarely used in reporting about non-financial information, with the majority of companies not mentioning either at all (92.68% for immaterial; 82.93% for non-material). The common “Comply and Explain” principle demands in lieu of pursuing policies to provide a clear explanation for opting out of reporting (Accountancy Europe 2017). The evidence suggests, most companies choose to comply and report on matters instead of explaining their immateriality. One example of giving such an explanation is Philips: “The impact of future carbon pricing on Philips was deemed non-material due to the carbon neutrality in our operations by the end of 2020” (Koninklijke Philips N.V 2021, 256).

5.2 Determination Process and Definition (RQ2)

The materiality determination process is disclosed by 87.80% of companies. While non-disclosers vary in industry, a concentration in three countries is observed: France, Ireland, and the Netherlands. National requirements on materiality determination process

Chart 2: Disclosure of Materiality Determination Process and Materiality Definition



disclosure do not apply and cannot serve as an explanation. Notably, none of the companies not disclosing materiality determination processes base their reporting on GRI standards.

An explicit definition of materiality in the context of non-financial information is presented by 16 companies (39.02%). All but one<sup>12</sup> apply GRI standards in their reporting, nine companies use GRI exclusively with six following additional standards or frameworks. Observations indicate application of GRI leads to greater disclosure on both materiality determination processes and materiality definition. The given choice of framework, thus, inhibits comparability of reports. Mandatory application of one common standard as suggested by the CSRD is expected to further harmonization in this regard. When no explicit definition of materiality is provided, as is the case for 25 companies, statement users lack fundamental understanding of the reports' underlying assumptions. This clouds transparency of the reported information.

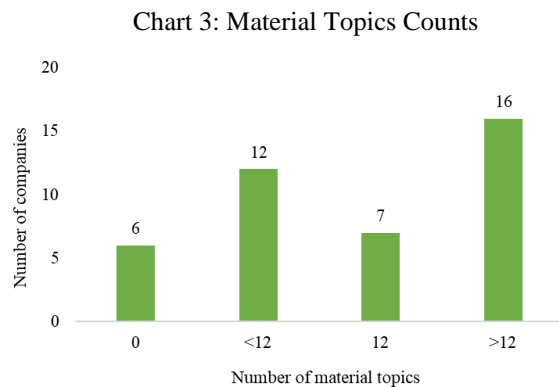
Towards the discussion of double materiality, the provided materiality definitions were assessed for matching the CSRD's understanding of non-financial materiality. Nine out of the sixteen companies that explicitly define the concept of materiality underlying their reporting on non-financial matters comply with the new clarification of topics being material if either significantly impacting the outside or inside. These findings reinforce the widely acknowledged call for one consistent interpretation of the directive's meaning of "and", that, by now, the CSRD has addressed. Still, due to the diverse application, the report scopes in 2020 are not as comparable as statement users need for robust decision-making. With implementation of the CSRD proposal, scopes should be expected to align.

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<sup>12</sup> Prosus with reference to SDGs.

### 5.3 Material Topics (RQ3)

85.37% of companies disclose the topics they deem material. On average, 11.65 topics are material to companies, with 12 being the most commonly observed (mode = 12) and 28<sup>13</sup> the highest value. A standard deviation of



6.99 confirms dispersion. Four out of the six companies not disclosing material topics do not adhere to GRI standards (corresponds to 80.00% of non-GRI users). This is consistent with findings in RQ2, materiality disclosures differ depending on the framework in use. SAP makes note of this in its non-financial information, too, and distinguishes between the number of material topics according to GRI (five topics are deemed material) and CSR-RUG (seven topics are deemed material). Two items were classified material in both cases.<sup>14</sup> This example showcases the lack of harmonization in reporting on non-financial materiality; companies' choices of framework and understanding of materiality greatly influence report scope.

The NFRD mandates reporting on four non-financial matters regardless of their materiality to the company: environmental matters, social and employee matters, respect for human rights, and anti-corruption and bribery matters. All companies reporting on material items (n = 35) deem environmental and social and employee matters material. Thirty-two companies consider respect for human rights material, thirty-three companies regard anti-corruption and bribery matters as material. Information that must be provided as per the directive, in summary, is almost always material to companies. Beyond NFRD's set items, 32<sup>15</sup> companies classify

<sup>13</sup> Reported by Kering, 2020.

<sup>14</sup> Material topics according to GRI: Security, privacy, and data protection; Ethics and compliance; Fair and inclusive workplace; Climate change and air quality; Governance.

Material topics according to CSR-RUG: Security, privacy, and data protection; Ethics and compliance; Talent and development; Customer Responsibility; Employee engagement; Innovation and digitalization; Business resilience (SAP SE 2021, 219).

<sup>15</sup> BASF, LVMH, and Volkswagen do not report on any additional material matters.

additional matters as material. Six topics with a distinctive tendency towards technology were identified as commonly reported as material among companies: 28.57% of companies classify data privacy as material, 25.71% innovation, 22.86% product/service quality or safety, 20.00% cybersecurity, 17.14% stakeholder engagement and 17.14% digitalization. Additional material topics broadly correspond to industry with Chemical, Pharmaceutical and Medicinal as well as Mechanical Engineering, Transport, Logistics and Food and Luxury focusing on those topics regarding product quality and safety. The technology industry, as expected, determines matters material in cybersecurity, digitalization, and data privacy.

#### *5.4 Stakeholder Engagement, Stakeholder Selection (RQ4)*

When determining materiality, 39 companies involve stakeholders.<sup>16</sup> Thirty-five of those disclose which stakeholders were involved in the process.<sup>17</sup> The majority of companies report an extensive list of both internal and external stakeholders clustered into: employees, customers and consumers, business partners, suppliers, investors, Non-Governmental Organizations (NGOs), regulators, society, and academia. Ten companies<sup>18</sup> from various industries and countries consult the media as an additional stakeholder. Industry-specific stakeholders can be observed for SAP in the technology industry and Airbus in the mechanical engineering, transports and logistics sector. The former involves an Artificial Intelligence Advisory Panel in the materiality determination process, while the latter engages airports.

The stakeholder selection process, namely the reasoning behind which stakeholders to engage at what time, is disclosed by 19 companies. Contrary to Beske et al. (2020) who criticize German companies for not disclosing the stakeholder selection process in a voluntary reporting setting, findings suggest 63.64% of German companies do report the selection process when

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<sup>16</sup> Paddy Power Betfair and Adyen do not disclose involvement of stakeholders.

<sup>17</sup> Deutsche Post, Deutsche Telekom, LVMH and Vinci do not disclose stakeholders that were involved in the materiality determination process.

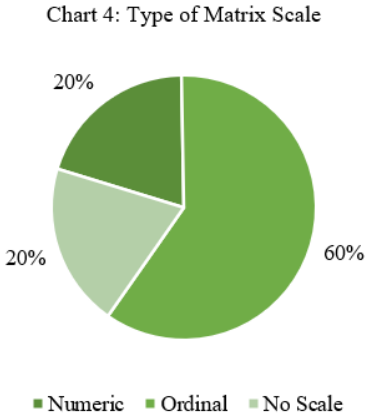
<sup>18</sup> Adidas, ASML, BMW, Enel, Inditex, Kone, Prosus, Siemens, Total and Volkswagen.

non-financial reporting is mandatory, which is above the sample country average of 47.83% (median = 42.84%, standard deviation = 38.97%).

Holistically, stakeholder engagement was stressed as an important part of materiality determination in the non-financial reports. RQ3 supports this observation as stakeholder engagement was one of the most common additional material items across countries and industries.

5.5 Materiality Matrix and Materiality Matrix Disclosure (RQ5)

In the materiality determination process, 23 companies use a materiality matrix as an aid. This corresponds to 56.10% of the sample. One company, ASML, uses and discloses a materiality table instead of a materiality matrix. It lists the core material themes for sustainability reporting in one column and marks their impact on the value chain in a second column. The impact can be upstream, on the company’s operations, and downstream. Twenty out of the twenty-three companies disclose their materiality matrix in the non-financial report as a chart with topic impact on the business and impact on external stakeholders on the axes. Neither is the inside and outside view consistently assigned to the x- and y-axis, nor are axes titles consistent: Instead of impact, axes are often titled relevance, importance, or priority.



Puroila and Mäkelä (2019) criticized the lack of value measurements in materiality matrices. While most materiality matrices come with some sort of measurement for a scale, findings confirm values are not consistently scaled across reports: 20.00% of companies do not disclose any scale, another 20.00% use a numeric scale while 60.00% deploy ordinal scaling. With numeric scales, ranges in absolute numbers or percentages can be found. Ordinal scales span

from low to high, core to crucial issues, or are simply marked with a minus and plus at each end. These differences in measurement and chart design prevent instant comparison between reports and seem somewhat arbitrary. However, materiality matrices helped greatly in the data collection process and are successful in communicating the most material topics to statement users.

*5.6 Disclosure Score (RQ6)*

To evaluate the degree of materiality disclosure a materiality disclosure score (MDS) was calculated as described in section 4.1. Appendix 4 shows the values achieved for each score component. Zero is the minimum possible score representing no reported materiality disclosures. One is the maximum achievable MDS and corresponds to perfect disclosure on all variables. Descriptive statistics on the MDS are presented in Table 2.

Some interesting findings are revealed here. Sampled companies reach a cumulative MDS of 25.5 out of a possible 41. This corresponds to an average score of 0.62 and a median of 0.67, implying at least half of the companies have an MDS lower or equal to 0.67. A score of 0.67 translates to disclosure on four out of the six possible variables. The most common value, the mode, is equal to the median, and present in 15 companies. Findings suggest, similarly to Beske et. al (2020), that companies generally report on materiality disclosures to some extent, albeit not in detail.

	Total	Average	Median	Mode	Maximum	Minimum	Range	St Deviation
<b>MDS</b>	25.50	0.62	0.67	0.67	1.00	0.00	1.00	0.26

Table 2: Descriptive statistics on MDS

Two companies<sup>19</sup> have a MDS of 0 and do not disclose any information about non-financial materiality. A perfect score, and with that full disclosure, is found in six companies, three of

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<sup>19</sup> Adyen and Paddy Power Betfair.

which are from Germany. Scores assuming the full range from 0 to 1 and a standard deviation of 0.26 imply little harmonization and in fact, prove the prevalent dispersion in disclosures on materiality. The directive currently in place, the NFRD, allows for too much flexibility in reporting about materiality, which leads to non-comparability and non-usability.

### *5.7 Association to Materiality Disclosures (RQ7)*

Harmonization in European non-financial information was suspected to be influenced by industry-specificities, varying legal environments, and choice of framework. When analyzing industry and country, results find that this is not the case. There is no significant difference in the mean values between industries (p-value = 0.40) and between countries (p-value = 0.24) and no proportional reduction in error (industry p-value = 0.41, country  $\lambda = 0.00$ ). MDS is not dependent on either variable. For countries, this may be due to the sampled countries having a very similar legal environment as shown in Appendix 4. In part, this confirms Fasan and Mio's (2017) findings: Legal environment does not affect materiality disclosure. Industry, however, was deemed significant. This cannot be validated through the sample for a mandatory disclosure setting. Industry-specific standards, as demanded by Bossut et. al (2021), may not be necessary for harmonized reporting. A significant difference in means is found between groups of standards. The p-value (p-value = 0.00) below the significance level of 5% indicates dependence between MDS and choice of standard or framework. Goodman and Kruskal's lambda ( $\lambda = 0.36$  and p-value = 0.02) confirm moderate association. Introduction of one common standard for all reporting entities is thus advisable to ensure harmonization in the future. Lastly, the association between MDS and company size represented by total assets, revenues, and number of employees is investigated. Findings show that size and MDS do not significantly correlate on a 95% confidence level. When considering a 90% level of confidence, a weak positive relationship with assets is found ( $r = 0.29$ , p-value = 0.07), implying that with increasing company means the MDS tends to increase, too.

It can be concluded that MDS, the disclosure degree, is dependent on the standard applied to non-financial reporting. This infers that under current regulation, companies can actively steer materiality disclosure by freely choosing which standard to base reporting on. Transparency, comparability, and usability of non-financial reports suffer as a result.

## **6. Conclusion**

The purpose of this Work Project was to investigate materiality disclosures in annual reports from European companies listed on the Euro Stoxx 50 for the year 2020. Materiality in non-financial reporting is a fairly new concept, and standard setters, regulators, and professional bodies as well as practitioners are yet to agree on a singular definition or determination process. The Directive 2014/95/EU, known as NFRD, first introduced the obligation to report on an organization's impact of its activity on the outside in addition to financial matters. With regulation being vague and leaving room for individual interpretation and implementation, non-financial reports are criticized for lacking objectiveness, reliability, and comparability. In an effort to improve non-financial reporting, the CSRD proposes further standardization.

This Work Project's findings validate criticism of non-financial reporting. Evidence from materiality disclosures in companies listed on the Euro Stoxx 50 is of considerable dispersion with companies reporting in different locations and to varying scope. Missing clear and uniform guidelines on non-financial reporting and materiality disclosures are found to promote non-harmonization and hinder comparability. As such, the degree of materiality disclosure is dependent on the framework used to create the report. In line with the CSRD, the Work Project suggests standardization as a means to improve non-financial reports' usability. A uniform disclosure location, common reporting standard, and singular materiality definition are recommendations to the standard setter. A need for industry-specific regulation was not identified. As for practitioners, under current legislation this Work Project recommends clear

disclosure of assumptions on materiality in the report to promote transparency and assure the non-financial report's usability and usefulness to stakeholders.

As with all empirical studies, this Work Project presents limitations that provide indications for future research. First, the analysis was performed for a single year and confined to a small sample of listed companies subject to mandatory non-financial reporting. While it serves a unique industry-wide European view, it does not adequately represent all industries and countries. Hence, the validity of findings should be assessed with caution. Future research can expand analysis over several periods and compare materiality disclosure between listed and unlisted companies in a mandatory disclosure setting to assess differences in the degree of materiality disclosure. Second, this Work Project was limited to the reporting on non-financial materiality disclosure, not on the quality of materiality disclosure. Quality of materiality disclosures greatly influences transparency, usability, and comparability of a non-financial report. To assess materiality disclosures in full, both scope and quality should be investigated. Furthermore, as stated previously, this research deployed analogous data collection by a single researcher. While research was conducted to the best of one's ability, data material may be prone to errors.

Nevertheless, this Work Project provides unique results on materiality disclosures, contributes to the discourse on harmonization in non-financial reporting, and offers a database that can be extended on by future research.

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## Appendices

### Appendix 1: Sample Population and Sources of Data

Company	Inclusion	Cause for Exclusion	Source of Data
AB InBev	Included		<a href="https://www.ab-inbev.com/news-media/latest-headlines/2020-annual-report/">https://www.ab-inbev.com/news-media/latest-headlines/2020-annual-report/</a>
Adidas	Included		<a href="https://www.adidas-group.com/en/investors/financial-reports/#/2020/">https://www.adidas-group.com/en/investors/financial-reports/#/2020/</a>
Adyen	Included		<a href="https://www.adyen.com/de_DE/investor-relations/financials">https://www.adyen.com/de_DE/investor-relations/financials</a>
Ahold Delhaize	Included		<a href="https://www.aholddelhaize.com/media/10540/ahold-delhaize-annual-report-2020.pdf">https://www.aholddelhaize.com/media/10540/ahold-delhaize-annual-report-2020.pdf</a>
Air Liquide	Included		<a href="https://airliquide.com/investors/documents-presentations">https://airliquide.com/investors/documents-presentations</a>
Airbus	Included		<a href="https://annualreport.airbus.com/">https://annualreport.airbus.com/</a>
Allianz	Excluded	Industry reporting specificities	<a href="https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/sustainability/documents/Allianz_Group_Sustainability_Report_2020-web.pdf">https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/sustainability/documents/Allianz_Group_Sustainability_Report_2020-web.pdf</a>
Amadeus IT	Included		<a href="https://corporate.amadeus.com/en/annual-reports/amadeus-annual-report-2020">https://corporate.amadeus.com/en/annual-reports/amadeus-annual-report-2020</a>
ASML	Included		<a href="https://www.asml.com/en/investors/annual-report/2020">https://www.asml.com/en/investors/annual-report/2020</a>
AXA	Excluded	Industry reporting specificities	<a href="https://www.axa.com/en/press/publications/2020-integrated-report-publication">https://www.axa.com/en/press/publications/2020-integrated-report-publication</a>
Banco Santander	Excluded	Industry reporting specificities	<a href="https://www.santander.com/en/our-approach/reports">https://www.santander.com/en/our-approach/reports</a>
BASF	Included		<a href="https://report.basf.com/2020/en/servicepages/downloads.html">https://report.basf.com/2020/en/servicepages/downloads.html</a>
Bayer	Included		<a href="https://www.bayer.com/de/medien/nachhaltigkeitsberichte">https://www.bayer.com/de/medien/nachhaltigkeitsberichte</a>
BMW	Included		<a href="https://report.bmwgroup.com/data/pdf/en/BMW-Group-Bericht-2020-EN.pdf">https://report.bmwgroup.com/data/pdf/en/BMW-Group-Bericht-2020-EN.pdf</a>
BNP Paribas	Excluded	Industry reporting specificities	<a href="https://group.bnpparibas/uploads/file/bnp_paribas_2020_integrated_report_en.pdf">https://group.bnpparibas/uploads/file/bnp_paribas_2020_integrated_report_en.pdf</a>
CRH	Included		<a href="https://www.crh.com/sustainability/publications">https://www.crh.com/sustainability/publications</a>
Daimler	Included		<a href="https://sustainabilityreport.daimler.com/2020/servicepages/downloads.html">https://sustainabilityreport.daimler.com/2020/servicepages/downloads.html</a>
Danone	Included		<a href="https://www.danone.com/investor-relations/publications-events/registrations-documents.html">https://www.danone.com/investor-relations/publications-events/registrations-documents.html</a>
Deutsche Börse	Excluded	Industry reporting specificities	<a href="https://www.deutsche-boerse.com/dbg-en/investor-relations/financial-reports/annual-reports/annual-report-2020">https://www.deutsche-boerse.com/dbg-en/investor-relations/financial-reports/annual-reports/annual-report-2020</a>
Deutsche Post	Included		<a href="https://www.dpdhl.com/en/investors/ir-download-center.html">https://www.dpdhl.com/en/investors/ir-download-center.html</a>
Deutsche Telekom	Included		<a href="https://report.telekom.com/annual-report-2020/services/downloads.html">https://report.telekom.com/annual-report-2020/services/downloads.html</a>
Enel	Included		<a href="https://www.enel.com/content/dam/enel-com/documenti/investitori/sostenibilita/2020/sustainability-report_2020.pdf">https://www.enel.com/content/dam/enel-com/documenti/investitori/sostenibilita/2020/sustainability-report_2020.pdf</a>
Engie	Included		<a href="https://www.engie.com/ri-Engie2021-ENG-vdef.pdf">RI-Engie2021-ENG-vdef.pdf</a>
ENI	Included		<a href="https://www.eni.com/assets/documents/eng/reports/2020/Annual-Report-2020.pdf">https://www.eni.com/assets/documents/eng/reports/2020/Annual-Report-2020.pdf</a>
EssilorLuxottica	Included		<a href="https://www.essilorluxottica.com/publications-and-downloads">https://www.essilorluxottica.com/publications-and-downloads</a>

*(Continues on next page)*

## Sample Population and Sources of Data (Continued)

Company	Inclusion	Cause for Exclusion	Source of Data
Iberdrola	Included		<a href="https://www.iberdrola.com/wcorp/gc/prod/en_US/corporativos/docs/IB_Sustainability_Report.pdf">https://www.iberdrola.com/wcorp/gc/prod/en_US/corporativos/docs/IB_Sustainability_Report.pdf</a>
Inditex	Included		<a href="https://www.inditex.com/documents/10279/664163/2020+Inditex+Annual+Report.pdf/cb184fcc-d1d5-a691-1ee3-8e46871615ab">https://www.inditex.com/documents/10279/664163/2020+Inditex+Annual+Report.pdf/cb184fcc-d1d5-a691-1ee3-8e46871615ab</a>
Infineon	Included		<a href="https://www.infineon.com/cms/en/about-infineon/investor/reports-and-presentations/?redirId=59391#annual-reports">https://www.infineon.com/cms/en/about-infineon/investor/reports-and-presentations/?redirId=59391#annual-reports</a>
ING Groep	Excluded	Industry reporting specificities	<a href="https://www.ing.com/Sustainability/The-world-around-us-1/Reporting.htm">https://www.ing.com/Sustainability/The-world-around-us-1/Reporting.htm</a>
Intesa Sanpaolo	Excluded	Industry reporting specificities	<a href="https://group.intesasanpaolo.com/en/sustainability">https://group.intesasanpaolo.com/en/sustainability</a>
Kering	Included		<a href="https://www.kering.com/en/finance/publications/">https://www.kering.com/en/finance/publications/</a>
Kone	Included		<a href="https://www.kone.com/en/investors/reports-and-presentations/financial-reports/?year=2020">https://www.kone.com/en/investors/reports-and-presentations/financial-reports/?year=2020</a>
Linde PLC	Included		<a href="https://www.linde-mh.com/en/About-us/Sustainability/">https://www.linde-mh.com/en/About-us/Sustainability/</a>
L'Oréal	Included		<a href="https://www.loreal-finance.com/eng/annual-report">https://www.loreal-finance.com/eng/annual-report</a>
LVMH Moët Hennessy Louis Vuitton	Included		<a href="https://www.lvmh.com/investors/investors-and-analysts/publications/">https://www.lvmh.com/investors/investors-and-analysts/publications/</a>
Münchener Rück	Excluded	Industry reporting specificities	<a href="https://www.munichre.com/de/unternehmen/corporate-responsibility.html">https://www.munichre.com/de/unternehmen/corporate-responsibility.html</a>
Paddy Power Betfair	Included		<a href="https://www.flutter.com/sites/paddy-power-betfair/files/Annual%20reports/annual-report-and-accounts-2020.pdf">https://www.flutter.com/sites/paddy-power-betfair/files/Annual%20reports/annual-report-and-accounts-2020.pdf</a>
Pernod Ricard	Included		<a href="https://www. Pernod-ricard.com/en/media/universal-registration-document-fy20">https://www. Pernod-ricard.com/en/media/universal-registration-document-fy20</a>
Philips Electronics	Included		<a href="https://www.results.philips.com/publications/ar20">https://www.results.philips.com/publications/ar20</a>
Prosus	Included		<a href="https://www.prosusreport2020.com/sustainability.html">https://www.prosusreport2020.com/sustainability.html</a>
Safran	Included		<a href="https://www.safran-group.com/finance/publications-results">https://www.safran-group.com/finance/publications-results</a>
Sanofi	Included		<a href="https://www.sanofi.com/en/investors/reports-and-publications/financial-and-csr-reports">https://www.sanofi.com/en/investors/reports-and-publications/financial-and-csr-reports</a>
SAP	Included		<a href="https://www.sap.com/integrated-reports/2020/en.html?pdf-asset=82fad7fb-d17d-0010-87a3-c30de2ffd8ff&amp;page=1">https://www.sap.com/integrated-reports/2020/en.html?pdf-asset=82fad7fb-d17d-0010-87a3-c30de2ffd8ff&amp;page=1</a>
Schneider Electric	Included		<a href="https://www.se.com/ww/en/about-us/investor-relations/regulatory-information/annual-reports.jsp">https://www.se.com/ww/en/about-us/investor-relations/regulatory-information/annual-reports.jsp</a>
Siemens	Included		<a href="https://assets.siemens-energy.com/siemens/assets/api/uuid:ce31f501-4351-4511-8c60-2715119fab88/sustainability-report-2020-siemens-energy.pdf">https://assets.siemens-energy.com/siemens/assets/api/uuid:ce31f501-4351-4511-8c60-2715119fab88/sustainability-report-2020-siemens-energy.pdf</a>
Total	Included		<a href="https://sustainable-performance.totalenergies.com/en/reporting/our-csr-reports">https://sustainable-performance.totalenergies.com/en/reporting/our-csr-reports</a>
Vinci	Included		<a href="https://www.vinci.com/vinci.nsf/en/finance-documentation-annual-reports/pages/index.htm">https://www.vinci.com/vinci.nsf/en/finance-documentation-annual-reports/pages/index.htm</a>
Vivendi	Included		<a href="https://www.vivendi.com/en/publication/annual-report-universal-registration-document-2020/">https://www.vivendi.com/en/publication/annual-report-universal-registration-document-2020/</a>
Volkswagen	Included		<a href="https://www.volkswagenag.com/en/sustainability/reporting.html">https://www.volkswagenag.com/en/sustainability/reporting.html</a>
Vonovia	Excluded	Industry reporting specificities	<a href="https://reports.vonovia.de/2020/sustainability-report/services/downloads.html">https://reports.vonovia.de/2020/sustainability-report/services/downloads.html</a>

## Appendix 2: Variables

	Variable	Proxy	Categories	Source	Measurement
Company Characterization	Industry	Industry sector	Chemical, Pharmaceutical, Organic and Medicinal, Conglomerate, Energy and Raw Materials, Food and Luxury, Mechanical Engineering, Transport, Logistics, Other, Technology, Trade and Consumption	boerse.de	Nominal
	Country	Registered country	Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Spain	Annual report	Nominal
	Assets	Total Assets		Annual report	Scale
	Performance	Revenues		Annual report	Scale
	ROE	Net Income/Equity		Annual report	Scale
	Employees	Number of employees		Annual report	Scale
NFI Characterization	Big 4	Auditor is a Big 4 auditing company.		NFI	Nominal
	Assurance	NFI have been assured with limited assurance, presence of statement, or reasonable assurance.	Limited, Presence of Statement, Reasonable	NFI	Nominal
	Audit Opinion	Audit opinion is qualified or unqualified.	Qualified, Unqualified	NFI	Nominal
	Standard	Standard or framework the NFI is based upon clustered into GRI, GRI and other, and other.	GRI, GRI +, other	NFI	Nominal
Materiality	Location	NFI are presented together with financial information, separately, or both.	Combined, Separate, Both	NFI	Nominal
	Volume	Number of report pages on NFI.		NFI	Scale
	Wording	Words used when referring to materiality.	Materiality, Material/Materially, Significant, Immaterial, Non-material	NFI	Nominal
	Determination Process	Disclosure of materiality determination process.	Yes = 1; No = 0	NFI	Nominal
	Definition	Explicit definition provided or not.	Yes = 1; No = 0	NFI	Nominal
	Material Items	Matters deemed material.		NFI	Nominal
	Stakeholder Engagement	Involvement of stakeholders in materiality determination process.	Yes = 1; No = 0	NFI	Nominal
	Stakeholder Selection	Stakeholder selection process disclosed or not.	Yes = 1; No = 0	NFI	Nominal
	Matrix	Materiality matrix aided the materiality determination process.	Yes = 1; No = 0	NFI	Nominal
	Matrix Display	Disclosure of materiality matrix.	Yes = 1; No = 0	NFI	Nominal
	Disclosure Score	Degree of materiality disclosure.	Between 0 and 1	NFI	Scale

### Appendix 3: Sample - Cross Reference Tables

#### A) Industry, Country, and Reporting Standard

<i>Industry/ Country</i>	<i>Reporting Standard</i>	<i>Chemical, Pharmaceutical, Organic and Medicinal</i>	<i>Conglomerate</i>	<i>Energy and Raw Materials</i>	<i>Trade and Consumption</i>	<i>Mechanical Engineering, Transport, Logistics</i>	<i>Food and Luxury</i>	<i>Technology</i>	<i>Other</i>		
<i>Belgium</i>	<i>GRI</i>	0	0	0	0	0	0	0	0	0	0
	<i>GRI +</i>	0	0	0	0	0	1	0	0	0	1
	<i>other</i>	0	0	0	0	0	0	0	0	0	0
<i>Finland</i>	<i>GRI</i>	0	0	0	0	0	1	0	0	0	1
	<i>GRI +</i>	0	0	0	0	0	0	0	0	0	0
	<i>other</i>	0	0	0	0	0	0	0	0	0	0
<i>France</i>	<i>GRI</i>	1	1	1	1	1	0	0	0	0	4
	<i>GRI +</i>	1	0	1	2	0	1	2	1	8	14
	<i>other</i>	0	0	0	1	0	1	0	0	2	
<i>Germany</i>	<i>GRI</i>	2	0	0	1	1	0	3	0	7	
	<i>GRI +</i>	0	0	0	0	3	0	1	0	4	11
	<i>other</i>	0	0	0	0	0	0	0	0	0	0
<i>Ireland</i>	<i>GRI</i>	0	0	0	0	0	0	0	0	0	0
	<i>GRI +</i>	1	0	0	0	0	0	0	1	2	3
	<i>other</i>	0	0	0	0	0	0	0	0	1	1
<i>Italy</i>	<i>GRI</i>	0	1	1	0	0	0	0	0	0	2
	<i>GRI +</i>	0	0	0	0	0	0	0	0	0	0
	<i>other</i>	0	0	0	0	0	0	0	0	0	0
<i>Netherlands</i>	<i>GRI</i>	0	0	0	0	1	0	1	0	2	
	<i>GRI +</i>	0	0	0	1	0	0	1	0	2	6
	<i>other</i>	0	1	0	0	0	0	1	0	2	
<i>Spain</i>	<i>GRI</i>	0	0	1	0	0	0	1	0	2	
	<i>GRI +</i>	0	0	0	1	0	0	0	0	1	3
	<i>other</i>	0	0	0	0	0	0	0	0	0	0
		5	3	4	7	6	3	10	3	41	41

#### B) Reporting Standard and Country

<i>Reporting Standard/ Country</i>	<i>GRI</i>	<i>GRI +</i>	<i>Other</i>	
<i>Belgium</i>	0	1	0	1
<i>Finland</i>	1	0	0	1
<i>France</i>	4	8	2	14
<i>Germany</i>	7	4	0	11
<i>Ireland</i>	0	2	1	3
<i>Italy</i>	2	0	0	2
<i>Netherlands</i>	2	2	2	6
<i>Spain</i>	2	1	0	3
	18	18	5	41

## Appendix 4: Legal Environment

Country	Belgium	Finland	France	Germany	
<b>Regulation</b>	Amendment to Companies Code 2564/ (2016/2017)	Amendment 1376/2016 and Amendment 1441/2016 to the Accounting Act	Amendments to the Law on Accounting PZE No. 51	CSR Directive Implementation Act	
<b>Company Scope</b>	1. Employees: over 500 2. Net turnover: over EUR 34 million; or Balance sheet total: over EUR 17 million 3. PIEs: Listed companies, credit institutions, insurance and reinsurance undertakings, settlement organisations	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, credit institutions, insurance and reinsurance undertakings	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, credit institutions, insurance providers 4. Non-listed sociétés anonymes and non-listed investment funds shall comply if they have a net turnover over EUR 100 million	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Credit institutions, insurance undertakings, capital market oriented companies in the legal form of a limited liability company or cooperative	
<b>Report Features</b>	<b>Matters</b>	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	
	<b>Content</b>	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use	
	<b>Location</b>	- Management report, or - Separate report with reference to management report	- Annual report, or - Separate report published alongside the management report - Separate report available within 6 months of the balance sheet date with reference in the annual report	- Annual report within 8 months of financial year end and made available on website for 5 years	- Management report, or - Separate non-financial report, within 4 months after the balance sheet date
	<b>Standard/Framework</b>	International or EU based reporting framework	International or EU based reporting framework	International or EU based reporting framework	International or EU based reporting framework
<b>Auditor's Involvement</b>	Presence of statement and consistency check of disclosures as part of the review of the management report	Presence of statement	Presence of statement, presence of statement and content when a company has 500+ employees and turnover over EUR 100 million in turnover or balance sheet	Presence of statement	

(Continues on next page)

## Legal Environment (Continued)

Country	Ireland	Italy	The Netherlands	Spain	
<b>Regulation</b>	European Union Regulations 2017	Legislative Decree 30 December 2016, n. 254	Decree Disclosures of Non-financial Information PbEU, 2014, L330 and Decree Disclosure Diversity Policy PbEU, 2014, L330	Anteproyecto de Ley sobre información no financiera y diversidad	
<b>Company Scope</b>	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, credit institutions, insurance undertakings	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, banks, insurance and reinsurance undertakings	1. Employees: over 500 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, insurance undertakings, banks	1. Employees: over 250 2. Net turnover: over EUR 40 million; or Balance sheet total: over EUR 20 million 3. PIEs: Listed companies, credit institutions, insurance undertakings, payment and electronic money institutions, pension funds, investment services and collective investment institutions entities if special criteria are met	
<b>Report Features</b>	<b>Matters</b>	- Environmental matters - Social and employee matters - Human rights matters - Corruption and anti-bribery matters	- Environmental - Social and employee matters - Respect for human rights - Corruption and anti-bribery matters	- Environmental matters - Social and employee matters - Respect for human rights - Anti-corruption and bribery matters - Community matters	
	<b>Content</b>	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use	- A description of the undertaking's business model - Company policies relating to non-financial matters, and the outcomes of those policies - Principle risks related to non-financial matters and business activities - Any non-financial KPIs in use - An explanation of corporate social responsibility relevant sums in the financial statements	
	<b>Location</b>	- Director's report, or - Separate report published on the website within 6 months of financial year end, including a statement in the director's report	- Management's report, or - Separate report with approval of the administrative body and at disposal of the supervisory body and auditor, within the deadline for the financial statements, published on the company register and alongside the management report	- Annual management report	- Management report, or - Separate report published alongside the management report, or - Consolidated management report (only possible if the 'company scope' criteria are exceeded for 2 consecutive years)
	<b>Standard/Framework</b>	International or EU based reporting framework	International, national or EU based reporting framework, or a mix thereof	International, national or EU based reporting framework	International, EU-based or national reporting framework.
<b>Auditor's Involvement</b>	Presence of statement	Presence and content of statement	Presence of statement and consistency check of disclosures and identification of material misstatements	Presence of statement	

Based on Accountancy Europe (2017).

## Appendix 5: GRI 102: General Disclosures

Stakeholder Engagement	
102-40	List of stakeholder groups
102-41	Collective bargaining agreements
102-42	Identifying and selecting stakeholders
102-43	Approach to stakeholder engagement
102-44	Key topics and concerns raised
Reporting Practice	
102-45	Entities included in the consolidated financial statements
102-46	Defining report content and topic boundaries
102-47	List of material topics
102-48	Restatements of information
102-49	Changes in reporting
102-50	Reporting period
102-51	Date of most recent report
102-52	Reporting cycle
102-53	Contact point for questions regarding the report
102-54	Claims of reporting in accordance with the GRI Standards
102-55	GRI content index
102-56	External assurance

*Based on GRI (2016).*

## Appendix 6: Materiality Disclosure Score (MDS)

Company	Determination Process	Definition	Stakeholder Engagement	Stakeholder Selection	Matrix	Matrix Display	Total	MDS
AB InBev	1	0	1	0	1	1	4	0.666666667
Adidas	1	0	1	0	0	0	2	0.333333333
Adyen	0	0	0	0	0	0	0	0
Ahold Delhaize	1	0	1	1	1	0	4	0.666666667
Air Liquide	1	1	1	1	1	1	6	1
Airbus	1	0	1	0	1	1	4	0.666666667
Amadeus IT	1	1	1	0	1	1	5	0.833333333
ASML	1	1	1	1	0	0	4	0.666666667
BASF	1	1	1	1	0	0	4	0.666666667
Bayer	1	1	1	1	1	1	6	1
BMW	1	1	1	1	1	1	6	1
CRH	1	0	1	0	1	1	4	0.666666667
Daimler	1	1	1	1	1	1	6	1
Danone	1	0	1	0	1	1	4	0.666666667
Deutsche Post	1	0	1	0	0	0	2	0.333333333
Deutsche Telekom	1	0	1	0	1	1	4	0.666666667
Enel	1	1	1	1	1	1	6	1
Engie	1	0	1	0	1	1	4	0.666666667
ENI	1	1	1	1	0	0	4	0.666666667
EssilorLuxottica	1	0	1	1	1	0	4	0.666666667
Iberdrola	1	1	1	1	1	1	6	1
Inditex	1	1	1	0	1	1	5	0.833333333
Infineon	1	1	1	1	0	0	4	0.666666667
Kering	1	1	1	0	1	1	5	0.833333333
Kone	1	0	1	1	0	0	3	0.5
Linde PLC	1	0	1	0	1	1	4	0.666666667
L'Oréal	1	0	1	1	0	0	3	0.5
LVMH Moët Hennessy Louis Vuitton	0	0	1	0	1	0	2	0.333333333
Paddy Power Betfair	0	0	0	0	0	0	0	0
Pernord Ricard	0	0	1	0	0	0	1	0.166666667
Philips Electronics	1	1	1	0	1	1	5	0.833333333
Prosus	0	1	1	1	0	0	3	0.5
Safran	1	0	1	0	1	1	4	0.666666667
Sanofi	1	0	1	1	0	0	3	0.5
SAP	1	0	1	1	1	1	5	0.833333333
Schneider Electric	1	0	1	1	1	1	5	0.833333333
Siemens	1	0	1	0	0	0	2	0.333333333
Total	1	0	1	0	0	0	2	0.333333333
Vinci	1	0	1	0	0	0	2	0.333333333
Vivendi	1	0	1	0	0	0	2	0.333333333
Volkswagen	1	1	1	1	0	0	4	0.666666667

## Appendix 7: Materiality Disclosure Score Frequencies

		MDS			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	,0000000000000000	2	4,9	4,9	4,9
	,1666666666666667	1	2,4	2,4	7,3
	,3333333333333333	7	17,1	17,1	24,4
	,5000000000000000	4	9,8	9,8	34,1
	,6666666666666667	15	36,6	36,6	70,7
	,8333333333333333	6	14,6	14,6	85,4
	1,0000000000000000	6	14,6	14,6	100,0
	Total	41	100,0	100,0	

## Appendix 8: One-Way ANOVA

### A) Industry and MDS

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Group 1	9	6.5	0.722222222	0.055555556
Group 2	6	2.83333333	0.472222222	0.115740741
Group 3	10	5.66666667	0.566666667	0.050617284
Group 4	6	4.16666667	0.694444444	0.071296296
Group 5	10	6.33333333	0.633333333	0.072839506

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.288392051	4	0.072098013	1.042070904	0.39912178	2.633532094
Within Groups	2.490740741	36	0.069187243			
Total	2.779132791	40				

### B) Country and MDS

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Group 1	10	5.16667	0.51667	0.08302
Group 2	13	9.16667	0.70513	0.06553
Group 3	18	11.1667	0.62037	0.06146

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.200832696	2	0.100416348	1.4799756	0.240469032	3.244818361
Within Groups	2.578300095	38	0.067850002			
Total	2.779132791	40				

### C) Reporting Standard and MDS

#### SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
GRI	18	12	0.666666667	0.052287582
GRI +	18	12.5	0.694444444	0.04003268
other	5	1	0.2	0.047222222

#### ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.020799458	2	0.510399729	11.03043964	0.000166973	3.244818361
Within Groups	1.758333333	38	0.04627193			
Total	2.779132791	40				

## Appendix 9: SPSS Results on Goodman and Kruskal's lambda

### A) Industry and MDS

#### IndustriesGrouped \* MDSMean

**Crosstab**

Count

		MDSMean		Total
		above	below	
IndustriesGrouped	1	7	2	9
	2	2	4	6
	3	6	4	10
	4	4	2	6
	5	8	2	10
Total		27	14	41

#### Directional Measures

			Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Lambda	Symmetric	,089	,128	,670	,503
		IndustriesGrouped Dependent	,065	,146	,427	,669
		MDSMean Dependent	,143	,162	,823	,410
	Goodman and Kruskal tau	IndustriesGrouped Dependent	,024	,024		,418 <sup>c</sup>
		MDSMean Dependent	,108	,097		,364 <sup>c</sup>

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on chi-square approximation

### B) Country and MDS

#### CountriesGrouped \* MDSMean Crosstabulation

Count

		MDSMean		Total
		above	below	
CountriesGrouped	Group 1	6	4	10
	Group 2	10	3	13
	Group 3	11	7	18
Total		27	14	41

#### Directional Measures

			Value	Asymptotic Standard Error <sup>a</sup>	Approximate T	Approximate Significance
Nominal by Nominal	Lambda	Symmetric	,000	,000	. <sup>b</sup>	. <sup>b</sup>
		CountriesGrouped Dependent	,000	,000	. <sup>b</sup>	. <sup>b</sup>
		MDSMean Dependent	,000	,000	. <sup>b</sup>	. <sup>b</sup>
	Goodman and Kruskal tau	CountriesGrouped Dependent	,013	,024		,598 <sup>c</sup>
		MDSMean Dependent	,025	,046		,602 <sup>c</sup>

a. Not assuming the null hypothesis.

b. Cannot be computed because the asymptotic standard error equals zero.

c. Based on chi-square approximation

## C) Reporting Standard and MDS

### Standard \* MDSMean

**Crosstab**

Count

		MDSMean		Total
		above	below	
Standard	GRI	12	6	18
	GRI +	15	3	18
	other	0	5	5
Total		27	14	41

### Directional Measures

			Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Lambda	Symmetric	,216	,131	1,450	,147
		Standard Dependent	,130	,211	,580	,562
		MDSMean Dependent	,357	,128	2,386	,017
	Goodman and Kruskal tau	Standard Dependent	,092	,054		,026 <sup>c</sup>
		MDSMean Dependent	,295	,080		,003 <sup>c</sup>

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on chi-square approximation

## Appendix 10: SPSS Results on Association between MDS and Company Size

**Correlations**

		MDS	Assets	Revenues	Employees
MDS	Pearson Correlation	1	,285	,080	,054
	Sig. (2-tailed)		,071	,621	,739
	N	41	41	41	41
Assets	Pearson Correlation	,285	1	,672	,414
	Sig. (2-tailed)	,071		<,001	,007
	N	41	41	41	41
Revenues	Pearson Correlation	,080	,672	1	,526
	Sig. (2-tailed)	,621	<,001		<,001
	N	41	41	41	41
Employees	Pearson Correlation	,054	,414	,526	1
	Sig. (2-tailed)	,739	,007	<,001	
	N	41	41	41	41

## Appendix 11: Abbreviations, Initials, and Acronyms

BMJV	Bundesministerium der Justiz und für Verbraucherschutz
CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
EC	European Commission
EFRAG	European Financial Reporting Advisory Group
EY	Ernst & Young
GRI	Global Reporting Initiative
IASB	International Accounting Standards Board
ICAS	Institute of Chartered Accountants of Scotland
IIRC	International Integrated Reporting Council
MDS	Materiality Disclosure Score
NFI	Non-Financial Information
NFRD	Non-Financial Reporting Directive
NGO	Non-Governmental Organization
PWC	PricewaterhouseCoopers
SASB	Sustainability Accounting Standards Boards
SDGD	Sustainable Development Goal Disclosure