ABSTRACT

Nowadays, sustainable development is widely considered as the leading paradigm for future growth. Over the last years, research has provided a business case for sustainability, showing it pays in terms of superior financial, operative and competitive performance. Nevertheless, at business level, sustainability is often equated to eco-efficiency. The key to corporate sustainability goes beyond the efficiency point of view, regarding the effectiveness of firms’ sustainable strategies and policies: the question is not anymore whether being “green” or not, but how being “green”. Measuring sustainability effectiveness and its effects on firms’ performance is currently one of the major issues in the corporate sustainability theory building. This paper aims to contribute to this process in two ways: providing an innovative measure of corporate sustainability effectiveness, that is the level of disclosure of sustainable information in GRI non-financial reports, and analyzing the outcomes of effective sustainable strategies and policies on companies’ market value. I propose a longitudinal study of the Fortune Global 500 companies in order to show that higher level of disclosure determines higher market value. Results show that the issuance of a GRI referenced report determines a positive effect on market capitalization, even if a full disclosure stance (A and A+ GRI Application Levels) has a negative effect on market value in the period of analysis.
INTRODUCTION

“There’s no alternative to sustainable development” (Nidumolu, Prahalad, & Rangaswami, p.57, 2009). Nowadays, the leading paradigm for future development is the sustainable one. There is a growing consensus from institutions, regulators, stakeholders, managers and researchers that believe in the “sustainability imperative” (Lubin & Esty, 2010). Most of research has proved a business case for sustainability, showing that social and environmental friendly policies and strategies pay in terms of superior financial, operative and competitive performance. It is possible to summarize the early paradigm of sustainable development in the definition provided by the World Commission on Environment and Development (WCED) in the widely cited Our Common Future (1987, p.41): “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Then, sustainability has found its conversion into the firm dimension. Concepts and theories such as corporate social responsibility (CSR), corporate sustainability, triple bottom line and sustainable entrepreneurship were born in order to describe whether and how sustainability exist at the firm level (Dyllick & Hockerts, 2002; Elkington, 1997; Van Marrewijk, 2003; Young & Tilley, 2006; Schaltegger & Wagner, 2011)

Consequently, although there are still some skeptical positions about the returns of firms’ sustainable strategies, the issue is not anymore whether being “green” or not, but how being “green”, i.e. in which ways and following which principles sustainable strategies are implemented and carried out (Roca & Searcy, 2011; Smith, 2003). Indeed, at the business level, the “mantra” of sustainability is “often equated with eco-efficiency”, thus considering only an aspect of corporate
sustainability, disregarding the effectiveness of sustainable strategies and policies (Dyllick & Hockerts, 2002).

Therefore, the aim of this paper lies in clarifying the relationship between corporate sustainability and economic performance beyond the sole efficiency point of view. In order to give an answer to this task, I propose the level (i.e. amount) of disclosure of environmental and social information in voluntary non-financial reports as indicator of corporate sustainability effectiveness. Through a longitudinal analysis of the Fortune Global 500 companies over 3 years (2010, 2011, 2012), this study intends to show whether and how a deeper grade of disclosure, supported by measurable and verifiable information, determines superior financial performance improving firms’ market value. The Global Reporting Initiative (GRI) Sustainability Disclosure Database (Global Reporting Initiative, 2012) provides non-financial reports and their level of disclosure.

In the next section, I present relevant literature regarding sustainability disclosure of information, environmental performance and their effect on financial performance, thus developing hypotheses then tested by the quantitative analysis.

Methodology section sheds light on sampling strategy, model building and operationalization of concepts. In particular, this part explains the use of GRI framework as the standard of non-financial reports.

In conclusion, results are shown, and implications for research and management are discussed. Study limitations and avenues for future research are also indicated.

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1 The database is available on the Internet: http://database.globalreporting.org/
LITERATURE REVIEW

Over the last years, the relationship among environmental and social performances, disclosure of this information in social and environmental reports and firms’ financial performances has been object of a plenty of studies and researches. On one hand, Scholars’ reflection focused on answering the well-known question “does it pay to be green?” (Bansal & Gao, 2006; Christmann, 2000; Lee, Faff, & Langfield-Smith, 2009; Hart & Ahuja, 1996; King & Lenox, 2001; Klassen & McLaughlin, 1996; Konar & Cohen, 2001; Russo & Fouts, 1997). On the other hand, research analyzed the reasons that prompt disclosure of social and environmental information and their effects on firms’ performances, asking whether disclosure truly promotes and mirrors enhanced results or it is just a tool to respond to stakeholders’ pressure (Dawkins & Fraas, 2011; Dawkins & Fraas, 2010; Clarkson, Li, Richardson, & Vasvari, 2007; Clarkson, Overell, & Chapple, 2011; Hassan & Burgess, 2011).

This growing attention is due to the interest in finding in which terms and with which effects sustainability paradigm can exist at business level, i.e. “to bring sustainability down to earth” (Reinhardt, 1999; Dyllick, 1999; Fussler & James, 1996). Corporate sustainability theory aims to give an answer to those issues, moving beyond the efficiency point of view, building an inclusive and effective framework of social, environmental and economic value (Dyllick & Hockerts, 2002; Van Marrewijk, 2003). While efficiency deals with doing things right, effectiveness regards doing right things, that is meeting the objective being an ecologically sustainable company by answering the question: how close is the firm to the environment’s carrying capacity?. Efficiency “is not a strategy over the long term, because it does not reach deep enough” (McDonough & Braungart, p.
85, 1998), as it considers only relative improvements and not the absolute use degree of environmental and social resources and their thresholds of irreversible deterioration.

Although there are various propositions of corporate sustainability (Gobbels, 2002; Panapanaan, Linnanen, Karvonen, & Phan, 2003) and its interactions with other key concepts such as CSR and triple bottom line, a broad definition can be inferred from literature: “in general corporate sustainability and CSR refer to company activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders” (Van Marrewijk, p.102, 2003).

This study aims to build a comprehensive bridge over the three key concepts of level of disclosure in sustainability reports, environmental performance and financial performance, integrating them and contributing in such way in advancing research in this field.

**Level of disclosure and environmental performance**

Firstly, in order to validate the choice of level of disclosure as indicator of sustainability, I consider literature regarding the relationship between disclosure and environmental performance. Empirical evidence about the utility of non-financial reports in indicating sustainability performance is mixed. Indeed there are several both internal and external factors, further than the only sustainable performance, inducing firms’ disclosure: stakeholders’ pressures, mandatory requirements, industrial peers’ strategies, image and reputation, media coverage (Clarkson, Li, Richardson, & Vasvari, 2007; Zeng, Xu, & Tam, 2011).

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2 Irreversibility, non-substitutability and non-linearity of natural and social capital
Early studies (Ingram and Frazier, 1980; Wiseman, 1982; Freedman and Wasley, 1990) show no significant association between environmental disclosure and performance, thus indicating an overall poor quality of sustainability reports at that time. Bewley and Li (2000), Patten (2002) and Clarkson et al. (2011) identify that higher amounts of disclosure are positively associated with measures of environmental pollution. Clarkson et al. (2007), Al-Tuwaijri et al. (2004), Dawkins and Fraas (2010, 2011), Arimura, Hibiki, & Katayama (2007) on the contrary, provide evidence of a positive relationship between environmental performance and level of disclosure. The reasons behind this ambiguity lies in methodological shortcomings, such as small and cross-sectional samples, mix of voluntary and mandatory reports, use of unfit or biased disclosure index, e.g. Wiseman index\(^3\) (Clarkson, Li, Richardson, & Vasvari, 2007).

Therefore, studies and researches on this topic can be divided into two main opposite stands: those referring to the voluntary disclosure theory (Dye, 1985; Verrecchia, 1983) and those referring to socio-political theories (Patten, 1992 Skinner, 1994; Gray, Kouhy, & Lavers, 1995). The first theory, in line with signaling theory (Spence, 1973), posits that better performers have a proactive attitude towards stakeholders, thus they signal their improved results through higher levels of disclosure of verifiable and measurable -difficult to mimic- data. Differently, inferior performers choose to disclose less or to be “silent”. The latter theory claims that firms have a defensive approach towards disclosure: companies with poor sustainability results use reports in order to explain or justify their shortcomings, aiming to defend their legitimacy to operate.

Recent studies are trying to overcome this dichotomy in theory, looking for an integrative interpretation of the two stances. In particular, (Cho, Patten, & Roberts (2006) suggest that *reports*

\(^3\) For acknowledgement about the inadequacy of Wiseman index, see Clarkson, 2007
quality is a major issue in studying the relationship with environmental performance, while Clarkson, Li, Richardson, & Vasvari (2007, p.23) assert that socio-political theories are “robust in predicting what is being said”. “Companies with superior environmental performance […] seek to reveal their performance type, something not directly observable to investors and other stakeholders, through direct voluntary disclosures that cannot be easily mimicked by poor performers” (the so called “hard disclosure”) (Clarkson, Li, Richardson, & Vasvari, p.6, 2007). Consequently, these last firms make unverifiable and unmeasurable (the so called “soft disclosure”) claims to show their commitment to sustainability, in order to defend their legitimacy.

Dawkins and Fraas (2010) observe a non-linear relationship between environmental disclosure and environmental performance. They conclude that the U-shape is due to firms’ different approaches to corporate sustainability performance (Fombrun, Gardberg, & Barnet, 2000): “firms that are rated highly for environmental strengths utilize environmental disclosure as an opportunity platform, while those that exhibit more environmental weaknesses use disclosure as a safety net against threats to legitimacy” (Dawkins & Fraas, p.393, 2010).

Concluding, empirical evidence shows that both poor and high performers disclose. The main difference lies in the quality, hard or soft, of their non-financial reports. As a result, I adopt the level of disclosure of hard, measurable and verifiable information as a good indirect proxy for effectiveness of corporate sustainability strategies and policies.

Impacts on economic performance

Academic positions regarding the effects of firms’ sustainable strategies and policies on economic performances are various. On one side, there are scholars who believe that a sustainability-driven attitude leads firms to increasing efficiency, strengthening brand and market value, and improving competitiveness (Hart & Ahuja, 1996; Porter & Van der Linde, 1995; Porter & Kramer, 2011). On
the other side, there are opposing views according to which the only responsibility of a company is the use of its resources to engage in activities designed to increase profits (Friedman, 1970; Bragdon & Marlin, 1972; Vance, 1975; Brammer, Brooks, & Pavelin, 2006). Empirical results strongly depend on different methods used to operationalize both sustainability and economic measures: empirical evidence can be grouped according to the type of these measures (Pogutz & Russo, 2009).

Concerning economic measures, researchers distinguish between financial performance and operating results. In the first set, measures such as market value, abnormal returns and Tobin’s Q are used (Klassen & McLaughlin, 1996; Dowell, Hart, & Yeung, 2000; Konar & Cohen, 2001; King & Lenox, 2001; Lee, Faff, & Langfield-Smith, 2009; Burnett, Skousen, & Wright, 2011), while the second one utilizes accounting metrics, viz. ROS, ROA, ROE (Hart & Ahuja, 1996; Russo & Fouts, 1997). Nevertheless, empirical results show that sustainable performance has higher significance in terms of financial measures (Pogutz & Russo, 2009; Connelly & Limpaphayom, 2004; Lee, Faff, & Langfield-Smith, 2009), insofar as these last better stand for long-term outcomes: improvements in the short-term are marginal or not significant at all.

Considering the side of measures and variables operationalizing sustainability performance, literature offers a widespread choice of both direct and indirect indicators of firms’ impact on natural environment. Data provided by the US Environmental Protection Agency (EPA) in the Toxic Release Inventory (TRI) is preferred in many researches as a direct measure (Hart & Ahuja, 1996; King & Lenox, 2001). Other studies use as an alternative indirect indicators: granting of environmental awards (Klassen & McLaughlin, 1996; Hassan & Burgess, 2011); presence of certifications (e.g. ISO 14000 series) (Arimura, Hibiki, & Katayama, 2007; Prasertsang, Ussahawanitchakit, & Jhundra-indra, 2012; Burnett, Skousen, & Wright, 2011); compliance to
local, national or international laws (Dowell, Hart, & Yeung, 2000); listing in sustainability indices (e.g. Dow Jones Sustainability Index, DJSI) (Lee, Faff, & Langfield-Smith, 2009); fines and penalties infliction (Xu, Zeng, & Tam, 2011). Finally yet importantly, other researchers employ data collected through surveys (Connelly & Limpaphayom, 2004; Klassen & Angell, 1998; Stanwick & Stanwick, 2000). Notwithstanding this variety, most studies focus only on the environmental side of sustainability, whereas according to corporate sustainability theory, “the separation of the three [economic, social and environmental] areas makes sense at the operational level, while a strategic decision would only be possible when considering the three dimensions simultaneously.” (Dyllick & Hockerts, p.139, 2002).

As this paper operationalizes sustainability performances through level of disclosure, it is relevant to consider in detail literature which studies the effects of this variable on economic results. Burnett, Skousen, & Wright (2011) show that the issuance of a non-financial report has a positive effect on firms’ market value, especially in the long term. Xu, Zeng, & Tam (2011) observe stock market’s reaction to disclosure of environmental violations for Chinese listed companies, finding that “the average reduction in market value is estimated to be much lower than the estimated changes in market value for similar events in other countries” (Zeng, Xu, & Tam, p.227, 2011). Using a dataset provided by the Thailand Institute of Directors’ Corporate Governance Benchmarking Survey, Connelly and Limpaphayom (2004) find a significant positive and non-linear relationship between environmental reporting and market valuation, while no link is evidenced with accounting performance. Stanwick and Stanwick (2000, p.155) conduct an examination of 469 US firms’ environmental disclosures, their result shows that “firms classified as high financial performers have higher incidences of environmental policies and/or descriptions of environmental commitment than firms classified as low performers”.


Hypothesis development

One common limitation of researches studying the link between the disclosure of information concerning sustainable performance and economic result lies in the fact that they do not accurately consider the quality -hard or soft- of disclosure. In such way, their results may not exactly represent a true sustainable performance: the effects of internal and external factors different from sustainability may bias their disclosure measures (Zeng, Xu, & Tam, 2011). Indeed, even “firms failing to meet environmental expectations […] can mitigate the negative effects by disclosing information and expressing commitment to the environment” (Brown & Deegan, 1998). Nevertheless, as suggested by Clarkson, Li, Richardson, & Vasvari, (2007) and Cho, Patten, & Roberts (2006), they can disclose only unverifiable and unmeasurable (soft) information, while “the good EP [environmental performance] firm will voluntarily disclose objective measures of environmental impact (e.g. quantitative environmental performance indicators) and will benchmark its performance relative to the industry, something the poor EP firm will not want to do.” (Clarkson, Li, Richardson, & Vasvari, p.7, 2007).
As illustrated in Figure 1, only hard disclosure is an unbiased estimator of sustainable performances, since it has a positive relationship with these last.

In particular, Clarkson, Li, Richardson, & Vasvari (2007), and Clarkson, Overell, & Chapple (2011) indicate that reports based on GRI frameworks and guidelines put heavy emphasis on objective, measurable and verifiable information. “It is the Global Reporting Initiative’s mission to fulfill this need [to communicate clearly and openly about sustainability, with consistent language and metrics] by providing a trusted and credible framework for sustainability reporting” (Global Reporting Initiative, p.2, 2011a). As posited in the guidelines, GRI framework is based on 4 principles for defining report contents and 6 principles for ensuring reporting quality. The first ones are:
1) **Materiality** (report information should reflect the organization’s significant economic, environmental, and social impacts or would substantively influence the assessments and decisions of stakeholders);

2) **Stakeholder inclusiveness** (the report should identify firm’s stakeholders and explain how it responds to their expectations);

3) **Sustainability context** (the report should present the organization’s performance in the wider context of sustainability);

4) **Completeness** (coverage of the material topics and indicators and definition of the report boundary should be sufficient to reflect significant economic, environmental, and social impacts and enable stakeholders to assess the reporting organization’s performance in the reporting period).

The others are:

1) **Balance** (the report should reflect positive and negative aspects of the organization’s performance to enable a reasoned assessment of overall performance);

2) **Comparability** (issues and information should be selected, compiled, and reported consistently. Reported information should be presented in a manner that enables stakeholders to analyze changes in the organization’s performance over time, and could support analysis relative to their organizations);

3) **Accuracy** (the reported information should be sufficiently accurate and detailed for stakeholders to assess the reporting organization’s performance);
4) **Timeliness** (reporting occurs on a regular schedule and information is available in time for stakeholders to make informed decisions);

5) **Clarity** (information should be made available in a manner that is understandable and accessible to stakeholders using the report)

6) **Reliability** (information and processes used in the preparation of a report should be gathered, recorded, compiled, analyzed, and disclosed in a way that could be subject to examination and that establishes the quality and materiality of the information).

Hence, after showing that GRI disclosure is verifiable and measurable, thus positively linked to sustainable performance, I formulate the first hypothesis:

**Hypothesis 1:** The issuance of a GRI referenced sustainability report has a positive impact on firms’ market value

The publication of a report, even if guided by GRI guidelines, does not represent the maximum level of disclosure. As Dawkins and Fraas (2010, p.385-386) advance: “it may be that companies that have a adopted a full disclosure have done so because they fundamentally believe that their strengths outweigh their weaknesses and are committed to environmental disclosure as a matter of value”. Consequently, it is interesting to evaluate the effect of full disclosure on companies’ economic performance, as it expresses a truly sustainable effective attitude.

**Hypothesis 2:** the issuance of a full-disclosed GRI report has a higher positive impact on firms’ market value than the single publication of a GRI report
METHODOLOGY

This work proposes a longitudinal study of the effects of partial and full hard disclosure on firms’ market value in order to test the abovementioned hypotheses. Clarkson, Li, Richardson, & Vasvari (2007), Aktas, Kayalidere, & Kargin, (2013), and Dawkins and Fraas (2010) advocate research in such direction: “future research should examine poor and strong performers’ use of more disclosure techniques (partial or full) to capture a greater variation of type and form of environmental responses” (Dawkins & Fraas, p.393, 2010).

In the next paragraphs, I provide details regarding data and sample, the operationalization of disclosure and the econometric model.

Data and Sample

As explained by Brown, de Jong, & Levy, (2009), in recent years large multinational enterprises have dominated sustainability reporting. For this reason, I have selected the companies listed in the Fortune Global 500 2012 ranking as the sampling frame. I have collected financial data for a period of analysis of three years (2010, 2011, 2012), thus originating a dataset of 1500 firm-year observations. After having excluded outliers, firms missing financial data and companies belonging to the banking, financial and insurance industries, the final sample results in a balanced panel consisting of 537 observations, 179 per year. Other researchers (Stanwick & Stanwick, 2000) have encouraged a longitudinal study approach; in particular, Clarkson, Li, Richardson, & Vasvari, (2011, p.55) observe, “the application of voluntary disclosure theory to a cross-sectional comparison of environmental disclosures may be partly unsuitable”.

Table 1 provides descriptive statistics of the final sample. It includes companies operating in 7 industries (agriculture, chemicals/heavy industry, light industry, services/IT, energy, shipping/transport/distribution and wholesale/retail/food), coming from 26 different countries representing 6 world areas (North America, South America, Europe, Asia, Far East, Oceania).

| industry                          | No. of firms | Avg. profits (B. $) | Std. Dev. Profits (B. $) | Avg. Assets (B. $) | Std. Dev. Assets (B. $) | Avg. net revenues (B. $) | Dev. Std. net revenues (B. $) |
|-----------------------------------|--------------|---------------------|--------------------------|--------------------|--------------------------|--------------------------|----------------------------|
| agriculture                       | 4            | 2,71                | 1,70                     | 38,81              | 10,67                    | 49,30                    | 31,74                      |
| chemicals/heavy industry         | 24           | 7,36                | 6,06                     | 87,02              | 37,94                    | 64,18                    | 50,03                      |
| energy                            | 29           | 10,36               | 12,53                    | 125,44             | 109,45                   | 117,92                   | 122,14                     |
| light industry                    | 55           | 3,46                | 5,28                     | 85,00              | 118,94                   | 63,06                    | 55,57                      |
| services/IT                       | 23           | 5,85                | 5,20                     | 103,37             | 78,34                    | 66,70                    | 33,65                      |
| shipping/transport/distribution   | 16           | 2,12                | 2,18                     | 62,18              | 70,04                    | 62,70                    | 31,88                      |
| Wholesale/retail/food             | 28           | 3,61                | 4,11                     | 52,12              | 45,43                    | 72,31                    | 82,71                      |

*Table 1: Descriptive statistics for the final sample, 2012 data*

**Operationalization of disclosure**

In the literature review section, I have already provided a conceptual validation of the use of GRI reporting for the purposes of this study: it is endowed with hard disclosure. Yet, a methodological justification is still required. As there is not a commonly accepted definition of corporate reporting in the published literature (Schaltegger & Burritt, 2009; Roca & Searcy, 2011; Aktas, Kayalidere,
& Kargin, 2013), it is important to shed light on the reasons that explain the choice of GRI framework as representative of non-financial reporting.

The Global Reporting Initiative is a non-profit organization founded in 1997 in Boston. Initially, it was a department of the Coalition for Environmentally Responsible Economies (CERES) with the mandate to develop an inclusive, multi-stakeholder reporting framework. The first version of the Guidelines, known as G1, was launched in 2000, while GRI still was a department of CERES. In 2001, it became an independent institution. One year later, the G2 version of Guidelines was released. In May 2013 the fourth generation of Guidelines, the G4, was available. Today, the Sustainability Disclosure Database features more than 13000 reports from over 5000 organizations. As Aktas, Kayalidere, & Kargin, (2013, p. 105) indicate, “GRI is the most well-known guideline for sustainability reporting”. Brown, de Jong, & Levy, (2009) argue that GRI exhibits several features of an established institution, such as broad uptake and legitimacy. In their analysis of indicators disclosed in corporate sustainability reports, Roca and Searcy (2012) investigated 94 non-financial reports, finding that 45 of them (47,9%) use the GRI G3 Guidelines, while 31 include indicators explicitly identified as GRI indicators.

According to GRI Guidelines (Global Reporting Initiative, 2011a), each report consists in three sections: Profile Disclosures, Disclosures on Management Approach, Performance Indicators & Sector Supplement Performance Indicators. The first set includes information about strategy and analysis, organization profile, report parameters, governance, commitment and engagement. The second one regards the management attitude towards each topic covered by the report (economic, environmental, social issues). The last section discloses qualitative and quantitative data regarding economic and environmental performance, results in term of labor practices and decent work, human rights, society and product responsibility.
A GRI report is not mandatory in all its sections, due to its voluntary nature. For this reason, each reporting organization should declare the grade to which it has applied the framework specified in the Guidelines. The “Applications Levels” (AL) system assesses the grade of disclosure, giving a score that goes from C (minimum disclosure) to A (full disclosure). Report makers self-declare their Application Level, and, in addition, they can have their self-declaration externally assured by a third party (receiving a “+” to their AL) and/or request the GRI to check the self-declaration (Global Reporting Initiative, 2011b). Table 2 presents details about the AL system, while I provide the full GRI G3.1 Checklist in the Appendix at the end of this paper.

| Profile Disclosure | Report on: 1.1 2.1-2.10 3.1-3.8, 3.10-3.12 4.1-4.4, 4.14-4.15 | Report on all criteria listed for level C, plus: 1.2 3.9-3.13 4.5-4.13, 4.16-4.17 | Same as requirement for Level B |
|--------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------|
| Disclosure on Management Approach | Not required | Management approach disclosure for each indicator category | Management approach disclosure for each indicator category |
| Performance Indicators & Sector Supplements Performance Indicators | Report fully on a minimum of any 10 performance indicators, including at least one from each of: social, economic, and environment. | Report fully on a minimum of any 20 performance indicators, including at least one from each of: economic, environment, human rights, labor, society, product responsibility | Respond on each core and Sector Supplement indicator with due regard to the materiality principle by either: A) reporting on the indicator or B) explaining the reason for its omission |

| Report Application Level | C | B | A |

*Table 2: Report Application Level system (GRI 2011)*

Data regarding reports’ Application Level is available in the GRI Sustainability Disclosure Database. In order to strengthen the validity of the Application Level, I have excluded self-declared reports, as well as non-GRI reports. Table 3 presents GRI reporting information for the sample.
| **GRI Application Level** | **No. of firms** | **Third party checked - GRI checked** |
|---------------------------|-----------------|-------------------------------------|
| A                         | 5               | Yes                                 |
| A+                        | 75              | Yes                                 |
| B                         | 9               | Yes                                 |
| B+                        | 26              | Yes                                 |
| C                         | 2               | Yes                                 |
| C+                        | 3               | Yes                                 |
| Undeclared                | 1               | Yes                                 |

*Table 3: GRI Application Levels for the sample. Data 2010-2012*

**Econometric model**

Ohlson, (1995) provides a model for examining the variation of market value, or price, of the firm at date $t$ when a vector of other value-relevant information changes. Burnett, Skousen, & Wright (2011) use such model in their analysis of eco-effective management, linking firm value and corporate sustainability. In particular, they add cash flow from operations, leverage grade, and ROA to the original model, since relevant literature (Barth, Beaver, Hand, & Landsman, 1999; Martinez, 2003; Schaltegger, Burritt, & R., 2000; Cormier & Magnan, 2003; Cormier, Gordon, & Magnan, 2004) indicates that such elements enhance model’s robustness and explanatory power.

As seen before, GRI Application Level is an ordinal, non-metric, scale. Its values are rank-ordered, but are not equidistant one from the other. For this reason, statistical techniques such as correlation, regression, and analysis of variance are not suitable. I converted the level of disclosure into two dichotomous variables, GRI1 and GRI2, following the criteria reported in Table 3, to overcome this issue.
| GRI1 | No issuance of a GRI report | Issuance of a GRI report in at least one of the three years of analysis |
|------|----------------------------|-------------------------------------------------|
| GRI2 | Publication of a GRI report with an application level score lower than A in each of the three years of analysis | Publication of a GRI report with an A application level score in at least one of the three years of analysis |

Table 4 Conversion of GRI Application Level in dichotomous variables

Thus, the equation of the model is:

\[ MKV_{it} = a_0 + a_1 TSE_{it} + a_2 ROA_{it} + a_3 CFO_{it} + a_4 LEV_{it} + a_5 GRI1_{it} + a_6 GRI2_{it} + e_{it} \]

Where:

- \( MKV_{it} \) = market capitalization of firm \( i \) at date \( t \)
- \( TSE_{it} \) = total shareholder equity
- \( ROA_{it} \) = return on activities
- \( CFO_{it} \) = cash flow from operations
- \( LEV_{it} \) = long-term debt/equity

With the aim of mitigating heteroscedasticity and controlling for size, net revenues scale MKV, TSE and CFO. Moreover, industry, year and geographical dummies are included in the analysis to control their effects. To test the validity of the model beyond endogeneity issues, I run a second version of the model with MKV values of the subsequent years (\( MKV_{it+1} \)) as dependent variable. In this case, I drop observations from the last year of analysis, studying a two-year (2010-2011) panel.
RESULTS

I test the hypotheses running a weighted least square (WLS) regression. There are several justifications for using such kind of regression. First, the Breusch-Pagan test shows that a pooled OLS model is inadequate, in favor of the random effect alternative (p-value < 0.000001). Indeed, the fixed-effects model is unfit because it excludes the predictors from the analysis. Following a technique proposed by Mundlak (1978), means of independent variables are included in the regression to relax the assumption in the random-effects estimator that the observed variables are uncorrelated with the unobserved variables. The Hausman test verifies that the assumptions underlying the random effects regression are satisfied. Its results show that the generalized least squares (GLS) estimates are consistent (p-value = 0.705146). Although I scale MKV, TSE, and CFO by net revenues, heteroscedasticity is still present, as confirmed by White’s test (p-value = 0.00240797) and Wald test (p-value = 0). For this reason, I use a WLS regression with weights based on per-unit error variances. Table 5 provides the results of Model 1.
Table 5: Model 1, WLS using 536 observations. Included 179 cross-sectional units. Dependent variable: market capitalization. Weights based on per-units error variances.

|                | Coefficient | Std. Error | t-ratio | p-value |
|----------------|-------------|------------|---------|---------|
| const          | -0.0138859  | 0.164685   | -0.0843 | 0.93284 |
| Equity         | 1.02961     | 0.255027   | 4.0373  | 0.00006 *** |
| Cash flow      | 0.910707    | 0.285011   | 3.1953  | 0.00148 *** |
| ROA            | -0.152596   | 0.297717   | -0.5126 | 0.60848 |
| Leverage       | 0.00897531  | 0.0111752  | 0.8031  | 0.42226 |
| GRI1           | 0.292201    | 0.0349656  | 8.3568  | <0.00001 *** |
| GRI2           | -0.416158   | 0.0383412  | -10.8541 | <0.00001 *** |
| Mean equity    | -0.486558   | 0.261224   | -1.8626 | 0.06309 * |
| Mean cash flow | 4.8357      | 0.398384   | 12.1383 | <0.00001 *** |
| Mean leverage  | -0.0486779  | 0.0122448  | -3.9754 | 0.00008 *** |
| Mean ROA       | 1.95122     | 0.365727   | 5.3352  | <0.00001 *** |

Industry control | Yes
Geo control      | Yes
Year control      | Yes

*** indicate significance at p ≤ 0,01
** indicate significance at p ≤ 0,05
* indicate significance at p ≤ 0,1

As expected, Equity and Cash flow are strongly significant and positive. ROA and Leverage significance level is below 0,1, even if their mean values are significant. Mean ROA has a positive coefficient, while Mean leverage is negative. The variables of interest, GRI1 and GRI2 are both significant at 0,01 level. GRI1 effect is positive, confirming hypothesis 1. Therefore, the issuance of a GRI report determines a significant positive effect on market capitalization. Surprisingly, GRI2 has a negative coefficient, rejecting the proposition of hypothesis 2. A full disclosure stance is not valued by the market, at least in the period of observation. The analysis includes control effects of industry, world area and year of investigation. For what concerns measures of fit, R-squared (0,88) and adjusted R-squared (0,87) show that more than two-thirds of the variance of the dependent variable are explained by the model.
As the dependent variable is the market capitalization at the same year of the predictors, one may argue that the causality direction of the relationship is still unclear. In order to overcome this endogeneity issue, I propose a second model, in which the dependent variable is the market value of subsequent years ($MKV_{t+1}$). Table 6 reports the results of this 2-years analysis.

Table 6: Model 2, WLS using 358 observations. Included 179 cross-sectional units. Dependent variable: market capitalization $t+1$. Weights based on per-unit error variances.

| Coefficient | Std. Error | t-ratio | p-value |
|--------------|------------|---------|---------|
| const        | -0.254073  | 0.174866| -1.4530 | 0.14717 |
| Equity       | -0.201208  | 0.344413| -0.5842 | 0.55947 |
| Cash Flow    | -0.317027  | 0.514773| -0.6159 | 0.53841 |
| ROA          | -0.715084  | 0.275153| -2.5989 | 0.00977 ***|
| Leverage     | 0.0210082  | 0.033272| 0.6314  | 0.52820 |
| GRI1         | 0.327056   | 0.030504| 10.7217 | <0.00001 ***|
| GRI2         | -0.503471  | 0.035490| -14.1859| <0.00001 ***|
| Mean equity  | 0.663248   | 0.355385| 1.8663  | 0.06288 * |
| Mean cash flow | 6.05749   | 0.650826| 9.3074  | <0.00001 ***|
| Mean leverage| -0.0530417 | 0.026228| -2.0223 | 0.04394 ** |
| Mean ROA     | 2.45574    | 0.240566| 10.2082 | <0.00001 ***|

Industry control | Yes
Geo control | Yes
Year control | Yes

*** indicate significance at $p \leq 0.01$
** indicate significance at $p \leq 0.05$
* indicate significance at $p \leq 0.1$

This robustness check shows that the predictors’ effects are still significant at 0.01 level. The model includes industry, geographical and year control variables. Observing the measures of fit, R-squared (0.94) and adjusted R-squared (0.93) confirm that the model explains most of the variation of the dependent variable. In particular, the signs of the variables of interest are confirmed. Thus, as before, data supports hypothesis 1 and rejects hypothesis 2. GRI1 has a positive coefficient, even greater than the one depicted in Model 1, while GRI2 has again a negative effect on market capitalization, with a higher coefficient than the one presented in Model 1. This may suggest that GRI2 sign could change if observed in a longer period.
Collected data is not sufficient to lead a long-run analysis and verify this proposition. However, it is possible to draw some indications through an interaction. Here, I propose to juxtapose the interaction between GRI1 and Leverage against GRI2 and Leverage. Indeed, high levels of financial leverage have a negative effect on market value. Clarkson, Li, Richardson, & Vasvari, (2007), and Lee, Faff, & Langfield-Smith, (2009) indicate that good environmental performers take advantage of a lower cost of capital because moneylenders consider them less risky. Table 7 presents the result of the regression with the suggested interactions.

Table 7: Model 3, WLS using 358 observations. Included 179 cross-sectional units. Dependent variable: market capitalization t+1. Weights based on per-unit error variances. Interactions: GRI1xLeverage, GRI2xLeverage

|            | Coefficient | Std. Error | t-ratio | p-value |
|------------|-------------|------------|---------|---------|
| const      | -0.11297    | 0.183506   | -0.6156 | 0.53857 |
| Equity     | -0.0710024  | 0.360769   | -0.1968 | 0.84410 |
| Cash flow  | 0.0800377   | 0.534866   | 0.1496  | 0.88114 |
| ROA        | -0.624383   | 0.313287   | -1.9930 | 0.04708 ** |
| Leverage   | 0.0784953   | 0.0249592  | 3.1449  | 0.00181 *** |
| GRI1       | 0.642987    | 0.0773257  | 8.3153  | <0.00001 *** |
| GRI2       | -0.765435   | 0.0861102  | -8.890  | <0.00001 *** |
| Mean equity| 0.43112     | 0.372393   | 1.1577  | 0.24782 |
| Mean cash flow | 5.9606     | 0.677354   | 8.7998  | <0.00001 *** |
| Mean leverage| -0.0634581 | 0.0288236  | -2.2016 | 0.02838 ** |
| Mean ROA   | 2.26089     | 0.283094   | 7.9864  | <0.00001 *** |
| GRI1xLeverage | -0.54138   | 0.0935644  | -5.7862 | <0.00001 *** |
| GRI2xLeverage | 0.443684   | 0.108271   | 4.0979  | 0.00005 *** |

Industry control Yes
Geo control Yes
Year control Yes

*** indicate significance at p ≤ 0.01
** indicate significance at p ≤ 0.05
* indicate significance at p ≤ 0.1

The proposed interactions are both significant at 0.01. Measures of fit suggest that most of the variation is explained by the model (R-squared = 0.95; adjusted R-squared = 0.94). Interestingly, GRI1xLeverage has a negative slope, while GRI2xLeverage has a positive one. This means that
grade of leverage determines a positive effect on market value only for firms which adopt a full disclosure stance. Moneylenders considers these firms as less risky, so their cost of debt is lower.

**DISCUSSION AND CONCLUSIONS**

Sustainability is a complex and holistic paradigm of development, which has yet to find its comprehensive declination at business level. Corporate sustainability theory aims to cope with this task, building models that include economic, societal and environmental dimensions. Moreover, it moves over the only *efficiency* point of view (Dyllick & Hockerts, 2002), embracing an *effectiveness* perspective (McDonough & Braungart, 1998).

This paper contributes to corporate sustainability theory in two ways. Firstly, it provides an innovative indirect measure for corporate sustainability effectiveness, which is level of disclosure in GRI reports. This measure has three main advantages. First, it is endowed with hard disclosure, which is verifiable, measurable and not imitable by poor sustainable performers (Clarkson, Li, Richardson, & Vasvari, 2007). Therefore, it overwhelms the debate between the voluntary disclosure theory and the socio-political one, suggesting a combination of the two. Second, GRI Guidelines are the most recognized framework for sustainability reporting (Roca & Searcy, 2011). Third, GRI reporting framework includes environmental, societal and economic disclosures, applying a triple bottom line (Elkington, 1997) approach.

The second contribution to theory lies in the analysis of the relationship between different levels of disclosure and market value. Higher levels of disclosure represent a stronger attitude towards sustainability (Dawkins & Fraas, 2010), enacted by effective sustainable strategies and policies. Such analysis moves beyond the traditional question “does it pay to be green?” (Hart & Ahuja, 1996), exploring *how* different sustainable stances determine financial performance.
The 3-years longitudinal analysis of the Fortune Global 500 companies provides interesting results. I test the relationship between market capitalization and level of disclosure in GRI reporting through Ohlson’s (1995) model, controlling for industry, geographical and year effects. The regression shows that the issuance of a GRI sustainability reports has a positive and statistically significant effect on firms’ market capitalization. A second model with market value of subsequent years as dependent variable confirms this outcome, proving the relationship causal direction. This result indicates that sustainable operating firms have economic returns in the period of analysis, which is short. However, if one considers how much these firms are sustainable there are still improvement margins. Indeed, they are not reporting on all GRI framework items. Under this point of view, their sustainable strategies are less effective than those enacted by fully disclosing companies.

Surprisingly, a full disclosure stance determines a negative and statistically significant effect on market value in both models. As Connelly & Limpaphayom (2004) suggest, this means that there may be an optimal level of sustainable reporting. Notwithstanding this, literature indicates that the outcomes of sustainable stances become manifest in the long period (Pogutz & Russo, 2009; Clarkson, Overell, & Chapple, 2011). As collected data covers only a 3-years period, it is not sufficient to draw conclusion regarding the long run. Still, it is possible to find evidence of the presence of fully disclosing firms advantages against partial disclosing ones. Hence, I propose a third model by interacting the level of disclosure and grade of leverage in order to find an indication of long period advantages for fully disclosing firms. Results show that the interaction between grade of leverage and full disclosure is positive and statistically significant, while the interaction between grade of leverage and issuance of a GRI report is negative and statistically significant. This means that fully disclosing firms take advantage of a lower cost of debt capital, because
moneylenders consider them less risky than firms with partial disclosure. In the long run, this could be a source of competitive advantage for fully disclosing firms against partially disclosing ones.

Although this research provides an interesting contribution to corporate sustainability theory, it also has some limitations that open avenues for future studies. In particular, the sample cannot overcome a common limitation of sustainability empirical analysis, which is the size bias: the Fortune Global 500 are the biggest companies in the world, thus generalization of results is limited to this kind of businesses. Another limitation lies in the lack of direct testing of the relationship between level of disclosure and sustainable performance. Further research could build a simultaneous equation model or a structural equation model in order to test sustainable performance, level of disclosure and economic performance at the same time. This study focus on GRI Application Level as a whole: additional research could analyze the disclosure of specific items of GRI non-financial reports. Lastly, the outcome underlines to managers and researchers the importance of disclosure quality, offering a path for future research. It would be of interest to understand the components and indicators of disclosure quality, as well as to juxtapose the effects on firm performance of hard disclosure against soft disclosure.
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## STANDARD DISCLOSURES PART I: Profile Disclosures

### 1. Strategy and Analysis

| Profile Disclosure | Disclosure |
|--------------------|------------|
| 1.1                | Statement from the most senior decision-maker of the organization. |
| 1.2                | Description of key impacts, risks, and opportunities. |

### 2. Organizational Profile

| Profile Disclosure | Disclosure |
|--------------------|------------|
| 2.1                | Name of the organization. |
| 2.2                | Primary brands, products, and/or services. |
| 2.3                | Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures. |
| 2.4                | Location of organization's headquarters. |
| 2.5                | Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report. |
| 2.6                | Nature of ownership and legal form. |
| 2.7                | Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries). |
| 2.8                | Scale of the reporting organization. |
| 2.9                | Significant changes during the reporting period regarding size, structure, or ownership. |
| 2.10               | Awards received in the reporting period. |

### 3. Report Parameters

| Profile Disclosure | Disclosure |
|--------------------|------------|
| 3.1 | Reporting period (e.g., fiscal/calendar year) for information provided. |
| 3.2 | Date of most recent previous report (if any). |
| 3.3 | Reporting cycle (annual, biennial, etc.) |
| 3.4 | Contact point for questions regarding the report or its contents. |
| 3.5 | Process for defining report content. |
| 3.6 | Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance. |
| 3.7 | State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope). |
| 3.8 | Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations. |
| 3.9 | Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report. Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols. |
| 3.10 | Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g., mergers/acquisitions, change of base years/periods, nature of business, measurement methods). |
| 3.11 | Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report. |
| 3.12 | Table identifying the location of the Standard Disclosures in the report. |
| 3.13 | Policy and current practice with regard to seeking external assurance for the report. |

### 4. Governance, Commitments, and Engagement

| Profile Disclosure | Disclosure |
|-------------------|------------|
| 4.1 | Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight. |
| 4.2 | Indicate whether the Chair of the highest governance body is also an executive officer. |
| 4.3 | For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members. |
| 4.4 | Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body. |
| 4.5 | Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performance (including social and environmental performance). |
| 4.6 | Processes in place for the highest governance body to ensure conflicts of interest are avoided. |
| 4.7 | Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity. |
| 4.8 | Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation. |
| 4.9 | Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles. |
| 4.10 | Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance. |
| 4.11 | Explanation of whether and how the precautionary approach or principle is addressed by the organization. |
| 4.12 | Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses. |
| 4.13 | Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding beyond routine membership dues; or * Views membership as strategic. |
| 4.14 | List of stakeholder groups engaged by the organization. |
| 4.15 | Basis for identification and selection of stakeholders with whom to engage. |
| 4.16 | Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group. |
| 4.17 | Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting. |

| G3.1 DMAs | Disclosure |
| DMA EC | Disclosure on Management Approach EC |
| Aspects | Economic performance |
| DMA EN | Disclosure on Management Approach EN |
|--------|--------------------------------------|
| Aspects | Materials                           |
|         | Energy                              |
|         | Water                               |
|         | Biodiversity                        |
|         | Emissions, effluents and waste       |
|         | Products and services                |
|         | Compliance                          |
|         | Transport                           |
|         | Overall                             |

| DMA LA | Disclosure on Management Approach LA |
|--------|--------------------------------------|
| Aspects | Employment                           |
|         | Labor/management relations           |
|         | Occupational health and safety       |
|         | Training and education               |
|         | Diversity and equal opportunity      |
|         | Equal remuneration for women and men |

| DMA HR | Disclosure on Management Approach HR |
|--------|--------------------------------------|
| Aspects | Investment and procurement practices |
|         | Non-discrimination                    |
|         | Freedom of association and collective bargaining |
|         | Child labor                           |
|         | Prevention of forced and compulsory labor |
|         | Security practices                    |
|         | Indigenous rights                     |
|         | Assessment                            |
|         | Remediation                           |

| DMA SO | Disclosure on Management Approach SO |
|--------|--------------------------------------|
| Aspects | Local communities                    |
|         | Corruption                           |
|         | Public policy                        |
|         | Anti-competitive behavior             |
|         | Compliance                           |

| DMA PR | Disclosure on Management Approach PR |
|--------|--------------------------------------|
| Aspects | Customer health and safety           |
|         | Product and service labelling         |
|         | Marketing communications              |
| Customer privacy                                      |
| Compliance                                          |

**Economic Indicator** Disclosure

**Economic performance**

| EC1 | Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments. |
| EC2 | Financial implications and other risks and opportunities for the organization's activities due to climate change. |
| EC3 | Coverage of the organization's defined benefit plan obligations. |
| EC4 | Significant financial assistance received from government. |

**Market presence**

| EC5 | Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation. |
| EC6 | Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation. |
| EC7 | Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation. |

**Indirect economic impacts**

| EC8 | Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement. |
| EC9 | Understanding and describing significant indirect economic impacts, including the extent of impacts. |

**Environmental Indicator** Disclosure

**Materials**

| EN1 | Materials used by weight or volume. |
| EN2 | Percentage of materials used that are recycled input materials. |

**Energy**

| EN3 | Direct energy consumption by primary energy source. |
| EN4 | Indirect energy consumption by primary source. |
| EN5 | Energy saved due to conservation and efficiency improvements. |
| EN6 | Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN7 | Initiatives to reduce indirect energy consumption and reductions achieved.                                                                                                                                 |
| Water |                                                                                                                                                                                                    |
| EN8 | Total water withdrawal by source.                                                                                                                                                                   |
| EN9 | Water sources significantly affected by withdrawal of water.                                                                                                                                          |
| EN10 | Percentage and total volume of water recycled and reused.                                                                                                                                             |
| Biodiversity |                                                                                                                                                                                                    |
| EN11 | Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.                                                                 |
| EN12 | Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.                                   |
| EN13 | Habitats protected or restored.                                                                                                                                                                      |
| EN14 | Strategies, current actions, and future plans for managing impacts on biodiversity.                                                                                                                   |
| EN15 | Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.                                                      |
| Emissions, effluents and waste |                                                                                                                                                                                                    |
| EN16 | Total direct and indirect greenhouse gas emissions by weight.                                                                                                                                          |
| EN17 | Other relevant indirect greenhouse gas emissions by weight.                                                                                                                                             |
| EN18 | Initiatives to reduce greenhouse gas emissions and reductions achieved.                                                                                                                               |
| EN19 | Emissions of ozone-depleting substances by weight.                                                                                                                                                       |
| EN20 | NOx, SOx, and other significant air emissions by type and weight.                                                                                                                                      |
| EN21 | Total water discharge by quality and destination.                                                                                                                                                         |
| EN22 | Total weight of waste by type and disposal method.                                                                                                                                                       |
| EN23 | Total number and volume of significant spills.                                                                                                                                                            |
| EN24 | Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally. |
| EN25 | Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff. |
| Products and services |                                                                                                                                                                                                    |
| EN26 | Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.                                                                                                 |
| EN27 | Percentage of products sold and their packaging materials that are reclaimed by category.                                                                                                                  |
| Compliance |                                                                                                                                                                                                    |
| Indicator | Description |
|-----------|-------------|
| **EN28** | Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. |
| **Transport** | Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce. |
| **Overall** | Total environmental protection expenditures and investments by type. |
| **Social: Labor Practices and Decent Work** | Disclosure |
| **Employment** | Disclosure |
| **LA1** | Total workforce by employment type, employment contract, and region, broken down by gender. |
| **LA2** | Total number and rate of new employee hires and employee turnover by age group, gender, and region. |
| **LA3** | Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations. |
| **LA15** | Return to work and retention rates after parental leave, by gender. |
| **Labor/management relations** | Percentage of employees covered by collective bargaining agreements. |
| **LA4** | Percentage of employees covered by collective bargaining agreements. |
| **LA5** | Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements. |
| **Occupational health and safety** | Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs. |
| **LA6** | Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs. |
| **LA7** | Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender. |
| **LA8** | Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases. |
| **LA9** | Health and safety topics covered in formal agreements with trade unions. |
| **Training and education** | Average hours of training per year per employee by gender, and by employee category. |
| **LA10** | Average hours of training per year per employee by gender, and by employee category. |
| **LA11** | Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. |
| **LA12** | Percentage of employees receiving regular performance and career development reviews, by gender. |
| Diversity and equal opportunity |
|--------------------------------|
| **LA13** | Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity. |

| Equal remuneration for women and men |
|-------------------------------------|
| **LA14** | Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation. |

| Social: Human Rights |
|----------------------|
| **Indicator** | **Disclosure** |

| Investment and procurement practices |
|-------------------------------------|
| **HR1** | Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening. |
| **HR2** | Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken. |
| **HR3** | Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained. |

| Non-discrimination |
|--------------------|
| **HR4** | Total number of incidents of discrimination and corrective actions taken. |

| Freedom of association and collective bargaining |
|-----------------------------------|
| **HR5** | Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights. |

| Child labor |
|------------|
| **HR6** | Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor. |

| Prevention of forced and compulsory labor |
|------------------------------------------|
| **HR7** | Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor. |

| Security practices |
|-------------------|
| **HR8** | Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations. |

| Indigenous rights |
|-------------------|
| **HR9** | Total number of incidents of violations involving rights of indigenous people and actions taken. |

| Assessment |
|------------|
| Indicator | Description |
|-----------|-------------|
| HR10 | Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments. |
| Remediation | |
| HR11 | Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms. |
| Social: Society | |
| Indicator | Disclosure |
| Local communities | |
| SO1 | Percentage of operations with implemented local community engagement, impact assessments, and development programs. |
| SO9 | Operations with significant potential or actual negative impacts on local communities. |
| SO10 | Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities. |
| Corruption | |
| SO2 | Percentage and total number of business units analyzed for risks related to corruption. |
| SO3 | Percentage of employees trained in organization's anti-corruption policies and procedures. |
| SO4 | Actions taken in response to incidents of corruption. |
| Public policy | |
| SO5 | Public policy positions and participation in public policy development and lobbying. |
| SO6 | Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country. |
| Anti-competitive behavior | |
| SO7 | Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes. |
| Compliance | |
| SO8 | Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations. |
| Social: Product Responsibility | |
| Indicator | Disclosure |
| Customer health and safety | |
| PR1 | Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures. |
| PR2         | Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes. |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product and service labelling |                                                                                                                                                                                                 |
| PR3         | Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.                                                                                     |
| PR4         | Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.                                                                                           |
| PR5         | Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.                                                                                                                                             |
| Marketing communications |                                                                                                                                                                                                 |
| PR6         | Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.                                                                                   |
| PR7         | Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.                                      |
| Customer privacy |                                                                                                                                                                                                 |
| PR8         | Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.                                                                                                                                         |
| Compliance |                                                                                                                                                                                                                                                      |
| PR9         | Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.                                                                                                                |