

RESEARCH ARTICLE

Enhancing environmental information transparency through corporate social responsibility reporting regulation

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Abstract

This research aims to contribute to the scientific debate about the lack of interlinkages between mandatory non-financial reporting and sustainable business models. For our purposes, a counter-accounting analysis was conducted on the non-financial reports of a sample of 145 Italian firms interested by the Directive 2014/95/EU effects. Specifically, the study adopts an empirical approach to evaluate environmental information transparency, which represents one of the main critical issues concerning the non-financial declarations prepared by European Italian Public Interest Entities (PIEs) to comply with Directive 2014/95/EU. The results highlight that corporate governance and report characteristics affect environmental transparency. Furthermore, the results confirm the overall attitude to avoid the disclosure of unfavourable or unavailable environmental information through impression management strategies. Finally, the analysis underlines the opportunities for policymakers to rethink mandatory non-financial reporting to sustain the ecological transition of European PIEs.

KEYWORDS

comply-or-explain, directive 2014/95/EU, environmental accounting, transparency

1 | INTRODUCTION

The transition towards a zero-emission economy represents one of the main challenges for the European Union (European Commission, 2020c). However, the achievement of this ambitious goal requires the involvement of firms due to their impact on ecosystems. Thus, the European Commission has started to develop a new form of regulation to sustain firms' ecological transition.

The European Green Deal (EGD) represents one of the main initiatives recently introduced by European companies (European Commission, 2019). The EGD consists of a set of actions that allow the reduction of carbon and air pollutants in the atmosphere while balancing economic development, safety and European citizens' quality of life (Brodny & Tutak, 2021). Furthermore, the policy includes initiatives developed to favour the development of financial

markets inspired by ethical and sustainable principles. In particular, the centrality of financial markets is related to the wide attention paid by the European Commission to sustainable and socially responsible investments (SRI) (European Commission, 2018; European Parliament, 2014; Venturelli et al., 2020).

Another relevant regulatory provision at the European level concerns the establishment of the European climate law. The document translates the Green Deal environmental requirements into goals aiming to reach climate neutrality by 2050. Moreover, the document highlights how the reduction of emissions requires the active participation of the member states (European Commission, 2020a).

A first attempt to increase financial markets' transparency in Europe is represented by the transposition by member states of Directive 2014/95/EU (Global Reporting Initiative & CSR Europe, 2017). However, the first 5 years after its launch were

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characterised by academics and practitioners' scepticism (Di Tullio et al., 2019; The Alliance for Corporate Transparency, 2020). The debate about the Directive's effectiveness in achieving greater transparency and better quality disclosure is still open.

Specifically, Caputo et al. (2020) have highlighted how the Directive 2014/95/EU's mandatory approach results in a more straightforward application for the late adopters than the early ones. Their study shows how the Directive 2014/95/EU should be kept up to date to reflect the organisations' changes while keeping the world environmentally and socially sensible (Biondi et al., 2020).

In this sense, during the first months of 2020, public consultation was done to collect contributions about Directive 2014/95/EU's revision (European Commission, 2020b). Furthermore, the topic's relevance was confirmed by including Directive 2014/95/EU revision within the EGD.

The absence of mandatory interlinkages between accounting practices and strategies represents one of the primary limits of Directive 2014/95/EU (The Alliance for Corporate Transparency, 2020). The development of interlinkage between the two dimensions of sustainable practices is often hindered by obstacles related to cultural factors. Furthermore, the Directive 2014/95/EU's contents regard accounting practices, while adopting sustainable practices is related to firms' orientation towards socially responsible themes. Thus, the evaluation of the externalities related to the adoption of non-financial reports prepared on a mandatory basis requires the adoption of a cautionary approach to provide useful insights useful policymakers, academics and practitioners (García-Torea et al., 2019; Jackson et al., 2020).

The aim of this study is to evaluate the determinants affecting environmental information transparency. This study will analyse the transparency of environmental information by analysing the environmental omissions disclosed by Italian Public Interest Entities (PIEs) within their non-financial declarations. In detail, the research was conducted through the counter-accounting analysis of the omissions disclosed on a mandatory basis by Italian PIEs to be compliant with the national law (Macellari et al., 2021; Vinnari & Laine, 2017). Furthermore, the data were analysed through quantitative methods to evaluate which organisation factors favour environmental information omissions (Hahn & Kühnen, 2013).

The paper is structured as follows. Section 2 consists of a literature review on transparency, non-financial reporting in Europe and environmental accounting practices. Section 3 consists of the methodology section, and Section 4 highlights the empirical evidence collected within the paper. Section 5 provides the main evidence collected, and, finally, Section 6 provides details about the study's main implications.

2 | LITERATURE REVIEW

2.1 | Transparency in non-financial reporting practices

In the last few years, many studies have provided evidence about non-financial reporting determinants (Helfaya & Whittington, 2019).

The need to analyse the determinants of non-financial reporting's quality is related to the theoretical interlinkage between transparency and sustainable practices. Considering the theoretical misalignment between firms' communications and their activities (Doni, Corvino, & Bianchi Martini, 2019; Schoeneborn et al., 2020), prior studies agreed about the signalling effects related to the disclosure of non-financial information (Gold & Heikkurinen, 2018; Watson et al., 2002). In particular, this concept was analysed by academics during the early stage of research about non-financial reporting quality. However, the broad adoption of non-financial reports and the increasing number of corporate scandals related to the adoption of unsustainable practices favoured the development of new reflections about the phenomenon (Dumay et al., 2015; Mahoney et al., 2013).

Several authors have analysed transparency in order to provide insights about non-financial reporting reliability. The topic's roots were developed by financial reporting scholars, who paid specific attention to the transparency principle (Barth & Schipper, 2008). However, despite similarities between the two fields, non-financial reporting transparency represents a standalone topic within the debate (Dando & Swift, 2003). Furthermore, the independence of the topic was confirmed by standard setters (Global Reporting Initiative, 2016).

Regarding the definition of 'non-financial reporting transparency', several authors have proposed a possible definition. According to Williams (2005), transparency is openness aimed at interpersonal trust among organisations and stakeholders. Bushman et al. (2004), meanwhile, describe transparency as monitoring support used by investors to keep managers and directors accountable. Specifically, transparency enhances allocative and dynamic efficiency, showing how firms act when putting corporate social responsibility (CSR) into practice (Büyükoçkan & Karabulut, 2018). In this sense, academics agreed about the need to analyse the phenomenon in order to highlight the interlinkages between corporate communication and business strategy. The disclosure of CSR is a channel used by organisations to engage with stakeholders through the communication of non-economic themes (García-Sánchez et al., 2019). Yet CSR reporting can also act as a tool to provide a distorted image of the company. Boiral (2013) reveals that that companies disclosing their overly narcissistic significantly reduces CSR reporting's transparency feature. Moreover, studies have revealed that transparency is still weak in the reporting activities. According to Kolk (2008), transparency in the disclosed environmental information should be increased by providing more detailed data.

In these terms, the attention paid by non-financial accounting scholars resides in the central role played by such practices because, unlike social ones, their impact on firms' organisation is much more substantial in terms of competitive advantage (Simoni et al., 2020). Specifically, companies that can provide a sufficient level of transparency on non-financial topics provide valuable and comparable data to potential investors and public sector organisations (Lash & Wellington, 2007).

2.2 | The Global Reporting Initiative and environmental practices

One of the leading standard-setter used to disclose environmental information is represented by the Global Reporting Initiative (GRI), which represents a multi-stakeholder framework covering four reporting areas, including sustainability and governance structure and management systems (Argento et al., 2019; Orazalin & Mahmood, 2019). The GRI's relevance has been emphasised by many surveys developed over the last years about the state of the art of non-financial reporting (KPMG, 2017; The Alliance for Corporate Transparency, 2020). According to García-Sánchez et al. (2019), adopting the GRI guidelines represents a noticeable improvement in firm communication and allows companies to align their strategies to the stakeholders' interests. On the point, Fuente et al. (2017) state that the adoption of the GRI guidelines represents an effective solution to answer the stakeholders' demand for a higher degree of transparency. Besides, the GRI guidelines' multi-layered structure is relevant for companies seeking legitimacy to operate, because it assures a certain degree of reliability and confidence in the disclosed environmental practices of firms (Wachira et al., 2019).

One of the most relevant aspects of the GRI Standards appears when addressing sustainability reporting: The most recent guidelines provide the possibility to express a firm's environmental performance in terms of 'limits and demands', referring to the sector or the region the firms operate in (Tost et al., 2018). Specifically, as Gallego-Álvarez et al. (2018) have demonstrated, the disclosure of environmental topics is heterogeneous among the different sectors and attracts increasing attention from the stakeholders and the investors. In this sense, the disclosures' readability appears to be strongly linked with the need to adopt a common reporting language among companies.

The GRI 300 indicators have been developed to set out a common language for firms when disclosing environmental and sustainability topics, such as materials, energy, water and emissions (Gallego-Álvarez et al., 2018). The GRI indicators aim is to assure a good quality level of disclosure in non-financial reports to provide helpful information to the stakeholders. However, the reporting practice often misses some stakeholders' requests. Specifically, GRI indicators provide the raw disclosure of sustainable practices, but they do not promote a broad vision of firms' performances (García-Sánchez et al., 2019; Siew, 2015). Moreover, the adoption of GRI 300 cannot avoid the risks related to the adoption of unethical behaviours. Organisations tend to choose only the indicators they want to disclose: this phenomenon is known as 'cherry-picking' and involves focusing on specific areas to influence decision-making or to get better control of resources (Farneti et al., 2019; Manes-Rossi, 2019).

2.3 | Non-financial reporting regulation in Europe

Despite the increase in the overall number of non-financial reports disclosed annually within Europe, practitioners, policymakers and

academics agree that the transposition of Directive 2014/95/EU's effects has been limited by the lack of orientation towards sustainable practices among business enterprises. In particular, this regards the disclosure of environmental information, which requires specific environmental management systems to collect the data over time (Lock & Seele, 2016). On this point, a survey conducted by The Alliance for Corporate Transparency (2020) on a sample of 1000 European PIEs highlighted that only a limited number of firms provided information on their environmental impacts. Disclosing unfavourable information could also negatively affect firms' market value due to the direct relationship between financial performance and reputation (Pizzi et al., 2020). Furthermore, more recently, this evidence has been confirmed by the choice of investment funds to include social and environmental criteria within their decision-making processes (BlackRock, 2020). Thus, the disclosure of environmental information has been disappointing due to organisational and cultural barriers.

Regarding the position of academics on the relationship between Directive 95/2014/EU and the disclosure of environmental indicators, numerous studies have criticised the absence of specific requirements (Table 1). Directive 95/2014/EU is characterised by a principle-based approach that allows preparers to comply with the law without any limit in reporting standards and indicators. Besides, preparers could avoid the adverse effects of disclosing unfavourable or unavailable information through the comply-or-explain principle (Pizzi et al., 2020).

3 | THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

During the last years, academics have developed theories to understand which factors impact non-financial reporting practices. The phenomenon was analysed from different perspectives due to the coexistence of different institutional pressures on firms' behaviours (Dumay et al., 2019). Prior studies on the effects of non-financial reporting regulation have highlighted a paradigm shift in terms of the firms' behaviours caused by the transition from voluntary to mandatory CSR (Gatti et al., 2019). Another perspective was suggested by Ackers and Eccles (2015) regarding the South African context. The authors stated that firms adopted a tick-box approach to be compliant with King Code III's requirement without a reasonable orientation towards non-financial themes. Thus, understanding the determinants that affect non-financial reporting practices in regulated contexts requires identifying a theoretical framework different from the traditional paradigm used in early studies (Hahn & Kühnen, 2013, p. 11).

3.1 | Corporate governance characteristics

Over the last few years, many academics have studied the enabling role of corporate governance on non-financial reporting practices (Hahn & Kühnen, 2013). In particular, these studies have evaluated

TABLE 1 Directive 95/2014/EU and environmental accounting: A review

Sources	Sample origin	Years of analysis	Companies included	Findings
Venturelli et al. (2019)	Italy and United Kingdom	2016	343	The different degrees of compliance about sustainability risks are much higher in British companies than in Italian ones.
Dumitru et al. (2017)	Poland and Romania	2014	40	The item-by-item analysis showed that Romanian companies generally disclose environmental information than polish companies.
Leopizzi et al. (2020)	Italy	2017	202	The risks most widely disclosed by Italian PIEs are environmental.
Pizzi et al. (2020)	Italy	2018	202	Italian PIEs omit information on their environmental impact through the comply-or-explain mechanism.
Mazzotta et al. (2020)	Italy	2017	32	The adoption of the GRI-referenced standard is a signal of unreliability in the disclosed environmental information.
Doni, Bianchi Martini, et al. (2019)	Italy	2013–2014	60	Italian companies need to improve environmental risk assessment and sustainability practices disclosure.
Ferrer et al. (2020)	15 countries	2008–2017	434	As a result of the directive, analysts can assess firms' sustainability performance (environmental, social and governance practices) more accurately and produce more reliable forecasts.
Mittelbach-Hörmanseder et al. (2020)	16 countries	2008–2016	600	CSR awareness and employee protection have a negative effect on the explanatory power of disclosed information on environmental matters.
Mio et al. (2020)	Europe	2016–2017	253	Large companies operating in more environmentally sensitive industries need to engage in non-financial reporting to secure their legitimacy in society.
Veltri et al. (2020)	Italy	2017	51	Italian companies in the sample disclose information about health and safety risk and environmental risks better than information about corruption and bribery, social and employee risks and human rights risks.
Krasodomska et al. (2020)	Poland	2018	73	The lack of compulsory environmental disclosures has discouraged managers from voluntarily disclosing such information.

the mechanisms that favour non-financial information disclosure (Baldini et al., 2018; Vitolla et al., 2020).

Board size represents one of the central dimensions analysed by academics. In particular, prior literature suggests that a large board is more likely to disclose the directors' involvement within decision-making processes about environmental practices (Frias-Aceituno et al., 2013). However, the scientific debate is characterised by divergent findings caused by the proliferation of studies about corporate governance's contribution to reporting practices. Many studies confirm the existence of a positive relationship between the two dimensions, as supported by Lagasio and Cucari's (2019) meta-analysis of a sample of 24 articles. Yet other studies have found a negative or non-significant relationship between board size and socially responsible activities (Kiliç et al., 2015; Rao & Tilt, 2016). Accordingly, the following hypothesis has been formulated:

H1a. Board size positively affects environmental information transparency.

Recent years have been characterised by the rapid development of several initiatives to involve women and independent directors within the board of directors (BoD). This phenomenon has been characterised both by the opportunity to increase the diversity of ideas and hire external experts from civil society (e.g., managers, academics and politicians).

Although findings differ, a large part of the literature agrees that women and independent directors positively affect non-financial reporting practices (Deschênes et al., 2015; Sheela et al., 2016). Previous studies highlight that feminine boards are more oriented than masculine ones to disclosing non-financial information (Velte, 2017). Thus, the positive impact is related not to a different degree of expertise in non-financial reporting practices but to a different attitude

towards sustainable development. Specifically, according to Setó-Pamies (2015), the presence of women on the board is associated with greater flexibility in CSR reporting practices and favours the disclosure of a broader range of non-financial topics. Accordingly, the following hypothesis has been formulated:

H1b. An increase in the percentage of women involved on the board of directors positively affects environmental information transparency.

Regarding the independent directors, prior studies have highlighted that the theoretical absence of a connection between independent directors and owners positively affects non-financial reporting transparency (Deschênes et al., 2015; Elsayih et al., 2018). In general, according to previous studies, a more significant number of outside directors are associated with a more robust sustainability performance (Chams & García-Blandón, 2019; Galbreath, 2016), and to socially responsible corporate behaviours (O'Neill et al., 1989). Accordingly, the following hypothesis has been formulated:

H1c. An increase in the percentage of independent directors involved within the board positively affects environmental information transparency.

An increasing number of studies have discussed the qualitative factors affecting board effectiveness. In particular, several studies have included meeting frequency within their analysis (Khan et al., 2019; Majumder et al., 2017). However, no studies have explicitly studied the impact of board meetings on environmental information transparency. Accordingly, the following hypothesis has been formulated:

H1d. Board meeting frequency positively affects environmental information transparency.

One of the central debates on the relationship between corporate governance and non-financial reporting is the so-called CEO duality. According to prior studies, it represents a limit for effective accountability regarding unfavourable information due to the CEO's interest in the firm's performance (Muttakin et al., 2018). In particular, previous studies have shown that the CEO's disclosure of non-financial information could be addressed by unethical purposes (such as impression management or greenwashing) (Cho et al., 2015; Di Tullio et al., 2019). In this sense, even the inclusion of incentives and benefits related to ESG targets negatively affects this information (Mio et al., 2015). Accordingly, the following hypothesis has been formulated:

H1e. CEO duality negatively affects environmental information transparency.

Boards of directors have to deal with various criticisms related to their strategies (Fuente et al., 2017). Thus, the CSR subcommittee has

an advantage when dealing with environmental reporting due to its specific focus on non-financial themes (Gallego-Álvarez & Pucheta-Martínez, 2020; García-Sánchez et al., 2019). Moreover, according to Martínez-Ferrero et al. (2020), the presence of a CSR subcommittee assures more significant CSR commitment and, thus, represents a driver for better CSR performances. Accordingly, the following hypothesis has been formulated:

H1f. The presence of a CSR committee positively affects environmental information transparency.

Finally, a controversial topic discussed in previous studies is the role of auditors in environmental reporting. Specifically, the literature has pointed out that auditors play a marginal role in sustainability reporting or have a limited perspective on non-financial reporting practices (Kent & Zunker, 2013; Lombardi et al., 2019). However, the transition from a voluntary to a mandatory approach to non-financial reporting practices has favoured the auditors' involvement within those practices. Concerning this point, prior studies have highlighted that internal auditors could enhance the development of non-financial reporting tools through their internal monitoring activities (Ackers, 2016; Cohen & Simnett, 2015). Accordingly, the following hypothesis has been formulated:

H1g. Auditors' involvement positively affects environmental information transparency.

3.2 | Non-financial reports' characteristics

In the last few years, many companies have shown an interest in disclosing their environmental practices voluntarily, others as part of a mandatory fulfilment (Doni, Bianchi Martini, et al., 2019). Moreover, the disclosing firms have to deal with many limitations when reporting to assure completeness and readability for the stakeholders (La Torre et al., 2018).

With these premises, we considered the role of non-financial report length, because as argued by Hackston and Milne (1996), the number of pages in a report plays a central role when measuring the quality of the disclosed sustainability information. Moreover, as Pizzi et al. (2020) have revealed, the report length provides insights about the strategy adopted by companies in disclosing CSR. Meanwhile, some literature supports the idea that a narrative style, so a significant number of pages in a report could be a signal of the company's impression management strategy. Thus, we hypothesise that report length has a positive influence regarding environmental indicator omissions.

H2a. The number of pages in a non-financial report positively affects environmental information transparency.

Directive 2014/95/EU allows firms to disclose non-financial information by adopting different reporting standards. However, prior

studies have highlighted that virtuous firms usually adopt the GRI to comply with the law (Pizzi et al., 2020; The Alliance for Corporate Transparency, 2020). In this sense, GRI adoption could enhance the disclosure of reports characterised by a high degree of transparency (Talbot & Boiral, 2018). Accordingly, the following hypothesis has been formulated:

H2b. Adherence to the GRI framework positively affects environmental information transparency.

Lastly, Directive 2014/95/EU does not require a specific reporting framework. Thus, firms can alternatively disclose their non-financial information within combined reports or standalone documents. However, academics have highlighted that the adoption of standalone reports favours the disclosure of non-financial information in a more detailed way (Kiliç et al., 2015). Nevertheless, the literature has not shown evidence on the relationship between CSR reporting completeness and its integration with financial information in combined reports (Lock & Seele, 2016). In this sense and specifically for environmental information, we have formulated the following hypothesis:

H2c. The adoption of a combined report negatively affects environmental information transparency.

3.3 | Firms' characteristics

The development of socially responsible activities is driven by several factors related to firms' characteristics. Individual firms have the opportunity to adopt non-financial reporting tools in order to achieve reputational benefits. Adopting socially responsible activities could be driven both by an orientation towards sustainability and the need to engage with stakeholders (Deegan, 2019; Domingues et al., 2017). In particular, several studies have highlighted that firms operating in environmentally sensitive sectors are more inclined to disclose their contribution to society (Cho et al., 2012; Meng et al., 2019). However, the prioritisation of the topics to disclose is influenced by the need to avoid the risks of negative market externalities related to the communication of unfavourable information (Pizzi et al., 2020; Siano et al., 2017). As a consequence, the following hypothesis has been formulated:

H3a. Environmental risk negatively affects environmental information transparency.

A widely analysed perspective in non-financial reporting studies is that of organisational size. Specifically, socially responsible activities are typically related to large firms. Several studies have observed differences between large enterprises and Small and Medium Enterprises (SMEs) in non-financial reporting practices (Perrini et al., 2007; Santos, 2011). One of the main differences is the availability of technical and financial resources (Doni, Bianchi

Martini, et al., 2019; Venturelli et al., 2020). In fact, large firms disclose more detailed environmental information in their reports than SMEs due to their opportunity to implement non-financial accounting systems within their organisation. Thus, the last hypothesis is as follows:

H3b. Firms' size positively affects environmental information transparency.

4 | METHODS

4.1 | Sample and data

The analysis has been conducted on a sample of 145 Italian PIEs that are interested by the effects of Directive 2014/95/EU during the 2017 fiscal year (Table 2). The choice to analyse the Italian context was driven by the opportunity to evaluate an institutional context with specific criticisms related to Directive 2014/95/EU (Doni, Bianchi Martini, et al., 2019; Venturelli et al., 2019). Furthermore, the analysis was conducted on non-financial organisations to avoid bias relating to the different approaches towards non-financial reporting practices by financial organisations (Kiliç et al., 2015). However, the sample size is consistent with prior studies on mandatory non-financial reporting in Europe (Doni, Bianchi Martini, et al., 2019; Nicolo et al., 2020).

4.2 | Analysis

The analysis was conducted through an empirical analysis based on Poisson regression, which is particularly suitable for an analysis that shows a count variable as the dependent one (Donnelly & Mulcahy, 2008; Malesios et al., 2018). Furthermore, the adoption of Poisson regression instead of the traditional ordinary least squares (OLS) method helps to overcome many limitations, such as having zeros in the dependent variable and reducing estimation bias caused by heteroskedasticity in the error term (Paniagua et al., 2018).

TABLE 2 Sample composition

Sectors	Frequency	%
Basic materials	4	2.759
Consumer goods	14	9.655
Consumer services	22	15.172
Healthcare	6	4.138
Industrial	69	47.586
Oil&Gas	15	10.345
Telecommunication	15	10.345
Total	145	100

4.2.1 | Dependent variable

The evaluation of environmental information transparency was conducted through a counter-accounting approach (Macellari et al., 2021). The analysis was conducted through the identification of the overall number of omissions about GRI 300 disclosed by Italian PIEs. The adoption of the scoring index in order to evaluate the quality of non-financial reports followed the methodological approach proposed by Helfaya and Whittington (2019). Specifically, the score

evaluates non-financial disclosure transparency by counting the omissions related to the GRI 300. We considered an increase in the overall number of omissions as a signal of the non-financial reporting's lack of transparency.

The omission count was conducted through a manual content analysis on firms' GRI content index (Pizzi et al., 2020). The choice to use content analysis was based on the methodological suggestions presented in some of the leading papers on social and environmental accounting (Milne & Adler, 1999; Unerman, 2000). The content

TABLE 3 Variables' description

Research hypothesis	Perspective	Code	Description	Source	References	Expected sign
Dependent variable						
		OMIT	Number of GRI 300 related omissions in non-financial reports.	Non-financial report	Boiral (2013) and Orazalin and Mahmood (2019)	
Independent variables						
H1a	Governance	BODS	Number of board members.	Corporate governance report	Chams and Garcia-Blandòn (2019) and Rao and Tilt (2016)	+
H1b	Governance	WOM %	Percentage of female directors	Corporate governance report	Fuente et al. (2017) and Welbeck (2017)	+
H1c	Governance	IND%	Percentage of independent directors	Corporate governance report	Deschênes et al., 2015; Naciti (2019)	+
H1d	Governance	CEOD	Dummy variable, takes value 1 if CEO is also chairman, 0 otherwise.	Corporate governance report	Sheela et al., 2016 and Chams and Garcia-Blandòn (2019)	-
H1e	Governance	BCOM	Dummy variable, takes value 1 if the CSR committee is present, 0 otherwise.	Corporate governance report	Orazalin and Mahmood (2019) and Fuente et al. (2017)	-
H1f	Governance	NMET	Number of board meeting in a year.	Corporate governance report	Mio et al. (2015) and Bhuiyan and Hooks (2016)	+
H1g	Governance	AUD	Dummy variable, takes 1 if auditors have been involved in CSR reporting	Non-financial report	Kent and Zunker (2013) and Du et al. (2018)	+
H2a	Report	NPAG	Number of non-financial report pages.	Non-financial report	Hackston and Milne (1996) and Unerman (2000)	+
H2b	Report	GRES	Dummy variable, takes one if the non-financial report refers to GRI standards, 0 otherwise.	Non-financial report	Rankin et al. (2011) and Lock and Seele (2016)	-
H2c	Report	COMB	Dummy variable, takes 1 if the non-financial report is combined with the financial report, 0 otherwise.	Non-financial report/financial report	Kılıç et al. (2015) and Nishitani et al. (2020)	+
Control variables						
H3a	Firm	TRUC	Value that assesses environmental risks in economic terms.	BvD's 'AIDA' database	Aigbedo (2020) and Pizzi (2018)	+
H3b	Firm	SIZE	Natural logarithm of total assets.	BvD's 'AIDA' database	Khan et al. (2020) and Chams and Garcia-Blandòn (2019)	+
	Firm	ROA	Measure of capital profitability.	BvD's 'AIDA' database	Naciti (2019) and Rankin et al. (2011)	+

analysis has been divided in three phases. The first step consisted of identifying the units represented by the non-financial reports published by the sampled companies on their official websites. The second step consisted of codifying the units operated. Finally, the data have been analysed separately by each researcher to increase the reliability of the evaluation.

$$EDS = \sum_i Omission_GRI\ 300_i$$

4.2.2 | Independent variables

The data about corporate governance were collected by analysing the official documents published by the Italian PIEs on a mandatory basis (Table 3). In particular, we collected the data concerning the number of board members (BODS), the percentage of female directors in the BoD (WOM%), the percentage of independent directors (IND%) and the number of meetings (NMET) in a year. Furthermore, three dummy variables were used to check CEO duality (CEOD), the presence of a

specific CSR committee (BCOM) and the involvement of auditors (AUD) in the CSR reporting process. Regarding the non-financial report's characteristics, we considered the number of pages (NPAG), the degree of adherence to GRI standards (GREF) and the adoption of a combined report (COMB). Finally, the firms' characteristics were used as control variables. In particular, using the Bureau Van Dick's Aida database, we considered the firm's environmental sensitivity (TRUC), its size (SIZE) and its return on assets (ROA).

Table 4 summarises the main statistics related to the variables used in the study.

5 | RESULTS

5.1 | Descriptive analysis

The analysis reveals that the sector with the lowest degree of environmental information transparency is industrial, followed by healthcare and oil and gas (Table 5). This evidence confirms prior studies on environmental reporting in the more controversial sectors (Abdo et al., 2018; Cho et al., 2015). In detail, those studies underlined that the attitude to avoid reputational risks is higher for firms with a direct impact on society. Thus, the adoption of accountability strategies represents a tool to mitigate such risks and limits the negative externalities that could derive from stakeholder pressure (Mahmood & Orazalin, 2017; Testa et al., 2018).

5.2 | Empirical analysis

Before deploying our Poisson regression, correlation analysis (Table 6) was performed to exclude multicollinearity among the variables. According to the methodological approach suggested by Kalnins (2018), collinearity analysis offers the possibility to test the strength of the relationship between observations: The absence of a correlation higher than 0.6 confirms the quality of the analysis.

Table 7 shows the results of the performed Poisson regression. Specifically, it emerges how the size of the BoD and the percentages of independent and female directors are not significant for the dependent variables. Linked with what has been pointed out while analysing

TABLE 4 Descriptive analysis of the variables used in the study

Variable	Mean	Min.	Max.	Std. dev.
OMIT	0.36	0.00	14.00	1.37
BODS	9.64	1.00	18.00	2.86
WOM%	0.32	0.00	0.56	0.09
IND%	0.44	0.00	1.00	0.23
CEOD	0.24	0.00	1.00	0.43
NMET	10.15	1.00	28.00	4.64
BCOM	0.53	0.00	1.00	0.50
AUD	0.72	0.00	1.00	0.45
GREF	0.34	0.00	1.00	0.48
COMB	0.25	0.00	1.00	0.44
NPAG	93.97	17.00	382.00	59.59
TRUC	4.86	0.26	39.85	7.20
ROA	7.23	-122.86	76.61	19.98
SIZE	13.31	6.70	20.36	19.92

TABLE 5 Non-financial reporting transparency: Omissions' analysis

Sector	Omissions	Mean	Min	Max	St. dev
Basic materials	0.00	0.00	0.00	0.00	0.00
Consumer goods	4.00	0.29	0.00	3.00	0.83
Consumer services	4.00	0.18	0.00	4.00	0.85
Healthcare	16.00	3.20	0.00	14.00	6.06
Industrial	17.00	0.25	0.00	4.00	0.70
Oil&Gas	7.00	0.47	0.00	4.00	1.13
Telecommunication	3.00	0.20	0.00	1.00	0.41
Total	51.00	0.36	0.00	14.00	1.37

TABLE 6 Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) OMIT	1.000													
(2) BODS	.007	1.000												
(3) WOM%	.014	-.046	1.000											
(4) IND%	.021	.227	.282	1.000										
(5) CEOD	-.074	-.157	.014	-.104	1.000									
(6) NMET	-.010	.007	.033	-.200	.179	1.000								
(7) BCOM	-.104	.136	.117	.168	-.151	-.033	1.000							
(8) AUD	.137	.231	.088	.177	-.203	-.167	-.010	1.000						
(9) GREF	-.098	-.091	.050	-.166	.073	.039	-.273	-.089	1.000					
(10) COMB	-.000	.046	-.117	.078	.067	-.114	-.041	-.150	.279	1.000				
(11) NPAG	.095	.165	.163	.199	-.194	.005	.295	.180	-.386	-.315	1.000			
(12) TRUC	.054	.075	-.017	-.105	.069	.064	.095	.132	-.134	-.018	.045	1.000		
(13) ROA	.106	.041	.070	-.019	-.143	.073	-.209	.134	-.076	-.185	.184	-.054	1.000	
(14) SIZE	.025	.065	.099	.086	-.259	.138	.262	.154	-.124	-.076	.064	.170	.107	1.000

TABLE 7 Poisson regressions

	(1) OMIT	(2) OMIT	(3) OMIT	(4) OMIT	(5) OMIT
BODS	.044 (0.051)	.008 (0.051)			-.044 (0.056)
WOM%	.765 (1.731)	.377 (1.877)			1.987 (2.467)
IND%	.154 (0.680)	.362 (0.713)			-.726 (0.919)
CEOD	-.969** (0.481)	-.883* (0.484)			-.902* (0.545)
NMET	.005 (0.035)	.025 (0.037)			-.017 (0.043)
BCOM		-1.080*** (0.312)			-1.400*** (0.400)
AUD		2.060*** (0.737)			1.949*** (0.752)
GREF			-.525 (0.363)		-1.396*** (0.475)
COMB			.711** (0.335)		1.083*** (0.414)
NPAG			.004* (0.002)		.005* (0.003)
TRUC				.027* (0.016)	.012 (0.016)
ROA				.023*** (0.007)	.020* (0.010)
SIZE				.045 (0.074)	.029 (0.089)
_cons	-1.663** (0.818)	-2.840** (1.125)	-1.474*** (0.335)	-2.041** (1.029)	-2.856* (1.634)
Obs.	141	140	142	131	129
Pseudo R ²	.027	.130	.029	.042	.206

Note: Standard errors are in parenthesis.

*** $p < .01$. ** $p < .05$. * $p < .1$.

the descriptive statistics, it appears that board composition attributes have little influence on CSR reporting practices (Amran et al., 2014; Rao & Tilt, 2016; Rezaee et al., 2020).

Subsequently, Hypothesis H1a, the CEOD variable, related to the presence of CEO duality, seems to have a negative effect on GRI 300 omission and, specifically, in Models (1), (2) and (5). Model (1) is particularly significant ($\beta = -.969$, p value $< .001$), a result which is consistent with previous studies. In particular, the presence of a CEO who is also a chairman increases a firm's greater integrity and sensibility towards CSR best practices (Dienes et al., 2014; Wan et al., 2020).

NMET, which is not significant to our dependent variable, confirms that board meeting frequency is not relevant for environmental reporting, because it is usually connected with the practical necessities of larger boards (Dienes & Velte, 2016). Yet the BCOM variable, indicative of the presence of a CSR committee, supports Hypothesis H1b, showing a negative association in Models (2) and (5) with the GRI 300 omissions ($\beta = -1.080$ in Model 2 and $\beta = -1.400$ in Model 5). The result confirms the relevant influence of board committees in terms of disclosed sustainability information, particularly as they are supervise the actions of directors

(Amran et al., 2014; García-Sánchez et al., 2019; Mahmood & Orazalin, 2017).

Moreover, supporting Hypothesis H1c, auditors' involvement in CSR reporting is strongly significant for the OMIT-dependent variable. It shows a positive association ($\beta = -2.060$ in Model 2 and $\beta = 1.949$ in Model 5) with our dependent variable. Similarly to prior studies, the results confirm the central role of the BoD and the marginal role of auditors in non-financial reporting practices (Lombardi et al., 2019).

We found a slight significance and positive association in Models (4) and (5) concerning the length of non-financial reports and GRI omissions ($\beta = .004$ for Model 4 and $\beta = .005$ for Model 5). This evidence supports Hypothesis H2a and confirms that a report's length represents a firm's orientation towards sustainable practices (Muslu et al., 2019).

The GRI adherence variable is negatively associated ($\beta = -1.396$, p value $< .01$) with our dependent variable in Model (5). The result, which confirms Hypothesis H2b, supports the evidence advanced by previous studies highlighting the role of GRI standards in supporting effective sustainability and environmental disclosure (Dienes et al., 2014; Diouf & Boiral, 2017).

Moreover, we observe that the COMB variable, which is related to the adoption of a combined report instead of a standalone one, is positively associated in Models (4) and (5) with GRI omissions (respectively $\beta = .711$ and $\beta = 1.083$). Confirming Hypothesis H2c, our result is also in line with previous studies, which agree that a standalone report assures better and more reliable information (Arena et al., 2018; Lock & Seele, 2016).

Supporting Hypothesis H3a, a light-weighted negative significance ($\beta = .027$), which was reduced only to Model (4), is found on the variable TRUC variable, showing how this score helps improve environmental disclosure in terms of completeness (Lee, 2012; Tadros & Magnan, 2019).

Finally, concerning the ROA control variable, a positive influence is found in Models (4) and (5) with our dependent variable ($\beta = .023$, p value $< .01$ for Model 4).

6 | DISCUSSION

The findings highlight that corporate governance and report characteristics affect non-financial reporting quality. Regarding corporate governance's characteristics, the results highlight that provision of internal mechanisms positively influences the transparency of the environmental information disclosed within the NFD. In particular, this study has found a positive relationship between the existence of a CSR committee and non-financial reporting quality. CSR committees play a mediating role and promote a more comprehensive set of sustainability practices by organisations (Martínez-Ferrero et al., 2020). Furthermore, the involvement of internal auditors within non-financial reporting practices represents another signal of transparency. The positive effects related to the two variables concur with evidence from prior studies on mandatory non-financial reporting. According to García-Sánchez et al. (2019), the existence of a CSR committee favours the disclosure of high-quality non-financial information.

Regarding internal auditors' involvement in non-financial reporting practices, their enabling role is related to their independence. As observed by prior studies on CSR, their involvement in non-financial practices positively affects the achievement of a high degree of transparency (Lombardi et al., 2019). Furthermore, our results confirm the negative impact CEO duality has on transparency. According to prior studies on corporate governance, CEO duality represents one of the main drivers that negatively affect non-financial reporting transparency (Lagasio & Cucari, 2019; Rao & Tilt, 2016). Moreover, the comply-or-explain principle allows them to be compliant without implementing environmental strategies (Pizzi et al., 2020). As revealed by Muttakin et al. (2018) and Jackling and Johl (2009), CEO duality limits corporate interest towards sustainability and reduces the representation of stakeholders minorities. Regarding this study's second contribution, our findings reveal a positive relationship between non-financial reporting transparency and specific report characteristics. In detail, we found that the adoption of a combined report and greater length of the report negatively affected the transparency of environmental information. These results agree with prior studies on Directive 95/2014/EU. In particular, the adoption of combined reports is characterised by a low degree of transparency (Pizzi et al., 2020). In this sense, the adoption of less sophisticated accounting tools represents a signal of non-orientation towards environmental practices. Yet integrated reporting adoption represents an accountability tool that allows the disclosure of the necessary non-financial information requested by Directive 2014/95/EU (Ferrer et al., 2020; Nicolò et al., 2020).

Furthermore, the negative effect of length is related to adopting rhetorical strategies used to engage with stakeholders. In fact, contrary to the first wave of non-financial reporting practices (Hackston & Milne, 1996), the current scenario is characterised by the disclosure of non-financial information through an indicator-based approach (e.g., GRI-Comprehensive, SDGR and SDG Compass) (Ferrer et al., 2020).

7 | CONCLUSION

Building a more sustainable planet requires the direct involvement of the private sector. Directive 95/2014/EU represented the first attempt to encourage European PIEs to integrate sustainable practices within their strategies. As evidenced by The Alliance for Corporate Transparency (2020) data, the integration of environmental topics within firms' strategies has been limited. The same perspective has been highlighted within the public consultation on Directive 95/2014/EU's revision (European Commission, 2020b). Thus, the following years will be characterised by identifying new strategies to reinforce European environmental policies.

The theoretical implications of the study are represented by the extension of scientific knowledge about mandatory non-financial reporting. This study provides new insights about the criticisms related to implementing a non-financial reporting system on a mandatory basis. The development of non-financial reports prepared on a mandatory basis without an orientation towards sustainable development

practices does not represent an effective tool (Bebbington et al., 2012). Furthermore, this analysis confirms the overall attitude of avoiding the disclosure of unfavourable or unavailable information through accounting mechanisms based on the use or abuse of the comply-or-explain principle (Pizzi et al., 2020). In this sense, the abuse of the principle, even if allowed by law, is a clear signal of reporting only favourable information. Thus, the study will contribute to the actual debate on the phenomena of greenwashing and impression management and the criticism about the comply-or-explain principle.

The policy implications are directly related to the theoretical ones. First, understanding the dynamics that negatively affect firms' behaviours represents one of the main challenges for policymakers. The analysis underlines the opportunities for policymakers to rethink mandatory non-financial reporting in Europe through the revision of Directive 95/2014/EU. However, the risks of adopting unethical mechanisms (e.g., greenwashing and impression management) underline the need to rethink non-financial reporting practices to favour the sustainable transition by European PIEs. Furthermore, the disclosure of environmental information by European PIEs not only represents a signal of orientation towards sustainable practices but also acts as a tool to favour SRI investors.

The present study also has other practical implications. It highlights corporate governance's central role in assuring reporting quality and identifies the positive effect on transparency provided by specialised firm bodies' sustainability practices, such as the CSR committee. The present study also opens the door towards more extensive use of the counter-accounting method in future non-financial reporting research.

Striving towards more sustainable planet represents an ambitious challenge for policymakers. Accounting scholars' contribution could be relevant within policymaking activities due to the exigence to define more effective policies. This research tried to fill this gap through analysing environmental information. However, the approach used has limitations related to the time horizon as well as its focus on a single country and a single topic. In particular, focusing on a single country prevents the generalisation of the results. In this sense, future research should replicate our study in other countries with different levels of environmental sustainability integration and different economic conditions.

Furthermore, future research should evaluate the limits related to the disclosure of non-financial information on a mandatory basis. Thus, understanding the dynamics related to other dimensions of sustainable development (e.g., gender diversity and human rights) will favour identifying new insights useful for academics and policymakers.

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