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Environmental claims and executive compensation plans: Is there a link? An empirical investigation of Italian listed companies

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ABSTRACT

This paper moves from the relevance that greenwashing has assumed in recent years and aims to investigate whether the environmental claims made by companies truly reflect their actions. Specifically, it analyzes the relationship between environmental claims and strategic intentionality toward environmental sustainability, proxied by the use and weight of incentives linked to environmental targets in executive compensation plans. By adopting this approach, the study offers a more nuanced perspective on greenwashing, addressing the limitations of the prevalent performance-based view. Based on the analysis of the companies listed on the FTSE Italia All-share index 2021, the paper highlights that companies that draft sustainability plans and declare carbon neutrality goals tend to include environmental targets in their executive compensation plans more frequently and with greater weights compared to other companies. Conversely, merely reporting environmental performance in sustainability (or integrated) reports is not associated with the use of environmental targets in executive compensation plans, suggesting the potential existence of greenwashing practices. The study emphasizes the relevance of considering the executive compensation structure when examining potential signs of greenwashing. It also provides evidence of the need for standardized and transparent corporate compensation disclosure as a significant implication.

1. Introduction

In recent years, international environmental policies such as the Paris Agreement (United Nations Framework Convention on Climate Change, 2015), the European Union (EU) Green Deal (European Commission, 2019) and the "Fit for 55" package (European Commission, 2021) have required companies to reduce greenhouse gas (GHG) emissions, adopt more environmentally sustainable practices, and disclose their environmental-related performance. In this field, the EU has taken robust regulatory action with Directive 2014/95/EU (European Parliament and the Council, 2014), amended by Directive (2022)/2464/EU, known as the Corporate Sustainability Reporting Directive (European Parliament and the Council, 2022), which has made mandatory for large firms and all listed companies to disclose information regarding their environmental, social, and governance (ESG) commitments. In addition, investors now include climate-related risks in their evaluations of investment opportunities, requiring companies to disclose their environmental exposure (Krueger et al., 2020; Yu et al., 2020).

Many companies responded to these compelling demands by placing the environmental issue at the heart of their sustainability discourse and frequently claiming different environmental objectives, including the achievement of carbon neutrality (Kachi et al., 2020).[1] Sustainability plans and nonfinancial declarations, such as sustainability or integrated reports, are the main public documents used by companies to illustrate their commitment to the environment and present their strategies, objectives, and results (Camilleri, 2018). Yet, whether and to what extent environmental claims reported in these documents mirror the actions of the companies or represent a mere form of greenwashing is still an open issue (Montgomery et al., 2023).

Greenwashing is typically defined in terms of the gap between a company's environmental claims and its environmental performance, following the popular performance-based view proposed by Delmas and Burbano (2011). Many studies, in different fields and contexts, provide empirical evidence of the relevance of this phenomenon by comparing companies' claims against their environmental performance and highlighting how companies' actual results often fall short of their

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[1] Carbon neutrality has been defined as "a state in which human activities result in no net effect on the climate system" (Intergovernmental Panel on Climate Change, 2021).

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declarations (Braam et al., 2016; Neumann, 2021; Uyar et al., 2020). However, this approach has recently been questioned. Doan and Sassen (2020) argue that studies relying on the performance-based view tend to overlook the relevance of time in these dynamics, i.e., an environmental objective disclosed today may only lead to better performance in the future due to the time required to produce measurable results (Kachi et al., 2020). This issue is particularly relevant in connection to claims concerning strategies to achieve carbon neutrality, which generally require several years for implementation and target achievement.

Against this background, a more nuanced view of greenwashing is put forth, suggesting the importance of considering whether a company is implementing (or not) actions aligned with its environmental claims. Hence, this paper proposes to analyze greenwashing by examining the gap between a company's environmental claims and the intentionality of its actions toward environmental sustainability. To detect intentionality, we draw on agency theory, which identifies executive compensation systems as a relevant instrument for aligning the interests of principals (shareholders) and agents (managers) through "pay for performance" mechanisms (Jensen and Meckling, 1976). The relevance of this instrument has also been confirmed in the field of environmental management by Guenther et al. (2016), who discuss how the use of environmental indicators for top managers plays a crucial role in aligning corporate actions with the environmental strategy. Accordingly, the definition of specific incentives for the pursuit of environmental objectives in the executive compensation plans – i.e., environmental targets (ETs) – can reveal the actual corporate intentionality to act in line with the company's claims.

Based on these considerations, the paper investigates the relationship between corporate environmental claims and actual corporate intentionality toward sustainability, proxied by the use and weight of ETs in Chief Executive Officer (CEO)'s compensation plans. In particular, the paper aims to address the following research questions:

RQ1) *Do companies that claim to be environmentally committed (EC) make more frequent use of ETs in their executive compensation plans compared to non-EC companies?*

RQ2) *Do EC companies assign higher monetary incentives to the ETs in their executive compensation plans compared to non-EC companies?*

These research questions are explored through the examination of Italian companies listed on the FTSE Italia All-Share Index 2021. This index from Euronext Milan market represents approximately 95% of the domestic market capitalization. We include in the sample all the companies for whom information is available. Data were collected through manual content analysis of sustainability (or integrated) reports, sustainability plans, and official corporate remuneration policy reports issued in 2021, in line with prior literature (e.g., Winschel, 2021; Gebhardt et al., 2022; Khenissi et al., 2022). Then a quantitative analysis was performed to explore the relationship between environmental claims and executive compensation linked to ETs. Using logistic regression and Mann-Whitney U tests, our study reveals that companies that draft sustainability plans and declare carbon neutrality goals tend to include ETs in their executive compensation plans more frequently and with greater weights compared to other companies. Conversely, merely reporting environmental performance in sustainability (or integrated) reports is not associated with the use of ETs in executive compensation plans.

This paper contributes to previous literature in several ways. First, it addresses the limitations of a purely performance-based definition of greenwashing (Doan and Sassen, 2020), proposing to explore the intentionality of corporate action toward environmental sustainability and proxying intentionality by the use and weight of ETs in CEO's compensation plans. Second, the paper integrates the emerging literature that investigates the relationship between sustainability disclosure and sustainability-linked compensation. Unlike previous studies that examine this relationship in a general sense (without distinguishing between social, environmental and governance objectives), the paper specifically focuses on the environmental dimension of sustainability and explicitly considers environmental objectives and indicators. Furthermore, it analyses the compensation structure in detail, considering fixed and variable components as well as short-term and long-term incentives, answering to some calls for assessing the relative weight of each incentive over the total compensation (Grabner et al., 2020; Lambert, 2001; Radu and Smaili, 2022). Finally, this paper extends the scope of country-specific studies on sustainability-linked compensation, which have thus far been concentrated on a few countries (Hartikainen et al., 2021). The case of Italian listed companies is particularly interesting for the international debate thanks to some characteristics of the Italian regulatory context. Italy is subject to the EU regulatory reform in the field of Sustainable Finance and ESG which include the Corporate Sustainability Reporting Directive approved at EU level in 2022 (European Parliament and the Council, 2022) and the Proposal for a Directive on Corporate Sustainability Due Diligence Directive (European Commission, 2022), which is expected to be enacted in 2024. This regulatory reform represents a strong stimulus for corporate environmental disclosure. Furthermore, the new Italian Corporate Governance Code pays specific attention to the issue of sustainability and encourages all the listed companies to pursue long-term sustainability goals and align executive remuneration to these objectives (Italian Corporate Governance Committee, 2020).

From practitioners' and policy perspectives, the study results could be of specific interest for different actors such as responsible investors, regulators scrutinizing the activities of companies, and policymakers designing new regulations on nonfinancial reporting to prevent greenwashing practices. On the one hand, the results of the paper demonstrate the relevance of considering the executive compensation structure as a potential signal of greenwashing. On the other hand, they make evident the importance for administrators to carefully consider executive compensation when shaping their environmental strategy.

The rest of the paper is organized as follows. Section 2 outlines the theoretical background, summarizing the most relevant lines of research on the topics explored in this study and presenting the research hypotheses. Section 3 describes the methodology, including sample selection and variables, while Section 4 presents the empirical results and discussion. The conclusions are reported in Section 5 and the study's limitations and suggestions for future research are discussed in Section 6.

2. Literature review and hypothesis development

This section outlines three main streams of literature that are relevant for formulating our research hypotheses. The first stream deals with the agency theory and how it can be mobilized to explain the role of ETs as a proxy of a company's intentionality toward sustainability (Section 2.1); the second stream deals with sustainability-linked compensation, of which ETs are a specific case (Section 2.2); the third stream deals with the relationship between sustainability disclosure and sustainability-linked compensation (Section 2.3). After providing this background, we present two research hypotheses (Section 2.4).

2.1. Agency theory and executive compensation

According to agency theory, the separation of ownership and control with the delegation of decision-making power to managers leads to a conflict of interest between principals (shareholders) and agents (managers), which can be addressed controlling and orienting the activities of agents through specific incentives to align their interests with those of the company (Jensen and Meckling, 1976; Bonner and Sprinkle, 2002). This theory serves as the foundation for studies on executive compensation, which recognize the design of incentive systems as a relevant tool for ensuring that managers act in line with the corporate strategy (Bonner and Sprinkle, 2002; Guenther et al., 2016). Executive

compensation is the sum of fixed and variable compensation, with the latter consisting of different components known as short-term incentive plans (STIPs) and long-term incentive plans (LTIPs). The articulation and association of each component with different objectives and targets should align with the corporate strategy (Chen and Jermias, 2014; Fabrizi et al., 2014; McGuire et al., 2003; Winschel and Stawinoga, 2019).

Focusing specifically on environmental sustainability, Berrone and Gomez-Mejia (2009) demonstrate how the integration of explicit environmental objectives and targets in executive compensation schemes fosters CEOs' commitment to environmental issues. Similarly, Hong et al. (2016) and Guenther et al. (2016) argue that the use of ETs in executive compensation supports the alignment of decision-making processes and activities with the environmental strategy. Also, Bui and de Villiers (2017) stress that companies committed to sustainability are expected to align their executive compensation plans including ETs. Coherently with agency theory, the insights suggest that companies with an actual intentionality toward environmental sustainability are expected to set specific ETs in their executive incentive plans.

2.2. Sustainability-linked executive compensation

In recent years, multiple authors have addressed the issues of sustainability-linked compensation, identifying the diffusion, determinants, and impacts of this phenomenon (for a structured review, please see Winschel and Stawinoga, 2019).

Moving from the diffusion of sustainability-linked compensation, Hartikainen et al. (2021) report that, at present, the number of companies that adopt incentives related to sustainability targets is still quite low. Most of the prior literature in this field is concentrated on a few countries, such as the US (Callan and Thomas, 2014; Eccles et al., 2014; Flammer et al., 2019; Grabner et al., 2020; Hong et al., 2016; Ikram et al., 2019), the UK (Abdelmotaal and Abdel-Kader, 2016; Adu et al., 2022; Al-Shaer and Zaman, 2019; Haque, 2017), and there are also some studies carried out in cross-countries settings (Aresu et al., 2022; Bhuiyan et al., 2021; Cohen et al., 2023; Derchi et al., 2023; Haque and Ntim, 2020; Maas and Rosendaal, 2016). Furthermore, a large part of these works deals with sustainability without disentangling between its social and environmental dimensions, also because ETs are less used than social targets, especially long-term ones (Maas and Rosendaal, 2016).

Analyzing the determinants of sustainability-linked compensation, different studies show a connection between this instrument and the use of corporate sustainability practices, such as the introduction of resource efficiency policies (Abdelmotaal and Abdel-Kader, 2016), and the establishment of board-level sustainability committees (Abdelmotaal and Abdel-Kader, 2016; Al-Shaer and Zaman, 2019). In general, the use of sustainability-linked compensation is more common in larger companies (Al-Shaer and Zaman, 2019; Cohen et al., 2023; Derchi et al., 2023; Grabner et al., 2020; Hong et al., 2016; Ikram et al., 2019),[2] in companies competing in industries subject to major environmental issues and pressures (Cohen et al., 2023; Grabner et al., 2020; Ikram et al., 2019) and in companies competing in countries with more demanding environmental and social regulations (Aresu et al., 2022), suggesting that both sectoral and country-level factors may influence the adoption of ETs in executive compensation systems.

Finally, conflicting results emerge analyzing the impact of sustainability-linked compensation. Some empirical studies suggest that this instrument has a significant and positive impact on environmental performance in general (Derchi et al., 2021; Velte, 2016), carbon-reduction initiatives (Adu et al., 2022; Haque, 2017; Haque and Ntim, 2020) and environmental investments (Bhuiyan et al., 2021). However, when focusing on actual results, findings are mixed. In the Italian context, Almici (2023) shows that sustainability-linked compensation has a positive effect on the average corporate performance in terms of ESG. According to Haque (2017) and Haque and Ntim (2020) sustainability-linked compensation is not significantly associated with actual emissions reduction, suggesting the existence of a temporal lag between the definition of sustainability targets within executive compensation and the improvement of actual environmental performance.

2.3. Sustainability-linked executive compensation and sustainability disclosure

The last stream of literature, which is also the most recent one, investigates the connection between the adoption of sustainability-linked compensation and sustainability disclosure. In this field, Grabner et al. (2020) analyze 343 US companies listed on the S&P500 in 2013, merging data from different datasets and corporate public documents. They conclude that the combination of sustainability-linked incentives in executive compensation and sustainability disclosure is a sign of a strong commitment of the company toward sustainability, but they do not investigate causal relationships between these factors. Focusing on carbon reduction, Winschel (2021) observes the link between companies' carbon reduction strategies disclosed in nonfinancial reports and carbon-related CEO's compensation plans. She analyses a sample of 65 firms from 11 European countries and shows that the use of this kind of incentives is still uncommon but occurs only when the company defines carbon targets.

More aligned with the objective of this paper, Cohen et al. (2023) present a quantitative analysis of the relationship between environmental disclosure and sustainability-linked compensation plans. Using a cross-country sample covering more than 4.000 listed companies in the period 2011–2020, they evidence that companies pledging carbon emission reductions are more likely to link executive compensation to sustainability. In particular, they measure sustainability-linked compensation based on an ESG Pay Indicator that is equal to one if the company incorporates any ESG criterion in executive compensation contracts for that year, and zero otherwise. Similarly, Derchi et al. (2023) analyze 531 companies from different countries in the period 2007–2013, utilizing the Thomson Reuters Refinitiv database, and conclude that the existence of a carbon emission reduction policy does not have a significant impact on the adoption of ETs.

In general, all the aforementioned studies overlook the composition of executive compensation, disregarding the distinction between STIPs and LTIPs (McGuire et al., 2003; Winschel and Stawinoga, 2019). Secondly, these studies do not examine the relative weight of the monetary incentives linked to ETs over the total executive compensation, due to the lack of specific data. This is in contrast with Lambert (2001), who emphasizes the relevance of considering the relative weight of each incentive over the total compensation in the design of executive compensation plans. Consistent with the agency theory, the higher the relative weight is, the higher the stimulus given to executives in achieving the corresponding target. In our case, the higher the weights of monetary incentives linked to ETs are, the higher the strategic intentionality toward environmental issues is.

2.4. Hypothesis development

Finally, we develop two hypotheses to study the relationship between corporate environmental claims and the inclusion of ETs in executive compensation plans.

First, in line with the agency theory perspective adopted by the literature on sustainability-linked compensation and in the spirit of Bui and de Villiers (2017), we expect that companies with an actual strategic intentionality toward environmental sustainability will set specific ETs in their CEOs' incentive plans. Specifically, we expect that EC companies

[2] Recently, Aresu et al. (2022) observe a not significative relationship between these aspects.

will adopt ETs in executive compensation plans more frequently than companies that do not claim such commitments. Our first hypothesis, H1, is formulated as follows:

H1). *EC companies make more frequent use of ETs in executive compensation plans compared to non-EC companies.*

We assume that companies may put forth environmental claims in different forms, such as environmental performance reporting, sustainability plan drafting, and carbon neutrality pledging. To account for these forms of environmental claims, we formulate H1.a, H1.b, and H1.c, respectively.

H1.a). *Companies reporting environmental performance make more frequent use of ETs in executive compensation plans compared to other companies.*

H1.b). *Companies drafting a sustainability plan including environmental objectives make more frequent use of ETs in executive compensation plans compared to other companies.*

H1.c). *Companies that pledge to reach carbon neutrality make more frequent use of ETs in executive compensation plans compared to other companies.*

Specifically, we expect H1 to be confirmed in STIPs, LTIPs, and in both compensation plans simultaneously, signaling the intentionality of EC companies to act more sustainably compared with other firms. To explore H1 and gain initial insights into the adoption of ETs in the Italian context, we follow the empirical works on sustainability-linked executive compensation, observing the presence or absence of incentives linked to ETs in executive compensation schemes (Al-Shaer and Zaman, 2019; Baraibar-Diez et al., 2019; Cohen et al., 2023; Haque, 2017), without considering their relative weights on total compensation.

Then, we develop our second hypothesis following the recommendation of Lambert (2001), who requires analyzing the design of compensation plans considering the relative weight of each incentive over the total compensation. In particular, we analyze CEO's variable compensation using the relative weights of the monetary incentives related to ETs over total compensation to evaluate to what extent CEO's pay is linked to the achievement of ETs, and therefore to what extent ETs are relevant to direct managers' actions toward sustainability. Consistent with the agency theory, we expect that companies with an actual strategic intentionality toward environmental sustainability – in line with the strategy disclosed in public documents – will set higher incentives related to ETs in their CEO's compensation plans. That is, we expect that companies making environmental claims will more rigorously link executive variable compensation to ETs compared to other companies, resulting in a higher share of CEOs' compensation being linked to ETs. Our second hypothesis, H2, is formulated as follows:

H2). *EC companies provide for a higher executive compensation share linked to the achievement of ETs compared to non-EC companies.*

Similar to H1, we formulated H2.a, H2.b, and H2.c to test environmental performance reporting, environmental sustainability plan drafting, and carbon neutrality pledging as environmental commitments, respectively.

H2.a). *Companies reporting environmental performance provide for a higher executive compensation share linked to the achievement of ETs compared to other companies.*

H2.b). *Companies drafting a sustainability plan including environmental objectives provide for a higher executive compensation share linked to the achievement of ETs compared to other companies.*

H2.c). *Companies pledging a carbon neutrality goal provide for a higher executive compensation share linked to the achievement of ETs compared to other companies.*

In line with H1, we expect that H2 will be confirmed in STIPs, LTIPs, and in both compensation plans simultaneously, increasing the explanatory power of the results obtained for H1.

3. Data and methodology

This section outlines the research method adopted for the study. Specifically, the sample selection and data collection are presented in Section 3.1; the measurements are presented in Section 3.2; the methodology for data analysis is described in Section 3.3.

3.1. Sample selection and data collection

The initial sample consisted of the FTSE Italia All-Share Index as of December 31, 2021. This stock exchange index comprises 220 Italian listed companies on the Euronext Milan market in 2021, representing approximately 95% of the domestic market capitalization.[3] Subsequently, 36 financial firms were excluded from the sample due to their special regulations on both reporting and board compensation, coherently with prior literature. Among the remaining companies, 26 did not provide information about the CEO's variable compensation plans, resulting in a final sample of 158 firms that was used for testing H1. The final sample industry composition, based on the Industry Classification Benchmark (ICB)[4] and its distribution among Italian stock exchange indexes is reported in Table 1.

To test H2, the number of companies in the sample is further reduced as 100 companies did not disclose the specific values of weights associated with ETs in their CEOs' compensation plans. Consequently, the final sample for testing H2 consists of 58 companies. This means that the companies disclosing the exact weight values linked to ETs in their incentive plans represent less than 40% of the sample obtained for testing H1, which points out a limited transparency regarding this information, as previously highlighted in empirical studies (Cohen et al., 2023). Table 2 provides the final sample for testing H2, including industry composition and distribution across Italian stock exchange

Table 1
Final sample composition by industry and FTSE italia indexes for H1 test.

Industry (ICB Sector)	Number of Firms	Percent (%)
Consumer Discretionary	49	31.01%
Industrials	43	27.22%
Technology	12	7.59%
Utilities	11	6.96%
Consumer Staples	9	5.70%
Basic Materials	8	5.06%
Energy	8	5.06%
Healthcare	8	5.06%
Real Estate	5	3.16%
Telecommunications	5	3.16%
Italian Stock Exchange Index	**Number of Firms**	**Percent (%)**
FTSE MIB	28	17.72%
FTSE Mid Cap	45	28.48%
FTSE Small Cap	85	53.80%
Total	**158**	**100.00%**

[3] Specifically, FTSE Italia All-Share encompasses three major Italian stock exchange indexes by firm capitalization FTSE MIB, FTSE Italia Mid Cap and FTSE Italia Small Cap Indices. The FTSE MIB Index consists of the 40 most liquid and capitalized shares listed on the Italian Stock Exchange. The FTSE Italia Mid Cap Index consists of the 60 most capitalized shares after the 40 included in the FTSE MIB. The FTSE Italia Small Cap Index consists of the 120 most capitalized shares after the ones included in the FTSE MIB and the FTSE Italia Mid Cap.

[4] The Industry Classification Benchmark is the specific industry classification used by the different FTSE group stock exchange indexes.

Table 2
Final sample composition by industry and FTSE italia indexes for H2 test.

Industry (ICB Sector)	Number of Firms	Percent (%)
ds	17	29.31%
Consumer Discretionary	15	25.86%
Utilities	8	13.79%
Energy	5	8.62%
Consumer Staples	4	6.90%
Telecommunications	3	5.17%
Healthcare	2	3.45%
Technology	2	3.45%
Basic Materials	1	1.72%
Real Estate	1	1.72%
Italian Stock Exchange Index	**Number of Firms**	**Percent (%)**
FTSE MIB	17	29.31%
FTSE Mid Cap	23	39.66%
FTSE Small Cap	18	31.03%
Total	**58**	**100.00%**

indexes.

In accordance with the empirical literature on corporate sustainability reporting (Al-Shaer and Zaman, 2018; Caputo et al., 2021; Gebhardt et al., 2022), one-year data were collected by means of a manual content analysis of corporate documents issued in 2021. Specifically, information related to the company's environmental claims and characteristics (i.e., sustainability committee) was extracted from sustainability plans, corporate sustainability reports or integrated reports. Information about the use of ETs (in STIPs and in LTIPs) and their corresponding incentive weights were derived from the approved compensation policies for 2021, ensuring a temporal alignment between environmental claims and strategic intentionality toward environmental issues proxied by ETs in the CEO's compensation plans. Finally, corporate financial information was obtained through the Bureau van Dijk Aida database.[5]

3.2. Variable definitions

The variables measuring executive compensation linked to ETs and environmental claims, together with control factors, are described in the following sections and summarized in Table 3.

3.2.1. Environmental targets in executive compensation plans

To investigate RQ1 and test H1, the dependent variable is the presence of ETs in CEO's variable compensation plans (denoted as ET_COMP). It is measured as a Boolean variable, with a 1 indicating if the plan includes ETs, and a 0 otherwise, in line with most of the empirical literature on sustainability-linked executive compensation (Al-Shaer and Zaman, 2019; Baraibar-Diez et al., 2019; Haque, 2017). ET_COMP aims to observe different levels of integration of ETs in compensation plans, examining whether the inclusion of ETs in variable CEO's compensation plans occurs in at least one of the variable compensation plans (ET_COMP(STIPorLTIP)), the STIP (ET_COMP (STIP)), the LTIP (ET_COMP(LTIP)) and in both plans (ET_COMP (STIP&LTIP)).

To investigate RQ2 and test H2, we look at the share of the total CEO's compensation plan that is contingent on the achievement of ETs. It is measured as a percentage of a CEO's total compensation and taking into account the share of variable compensation associated with the achievement of ETs and the weight of variable compensation in the CEO's total compensation, which includes both fixed and variable

[5] Aida is a dataset published by Bureau van Dijk that contains comprehensive information on companies in Italy, with up to ten years of history. Additional information is available at https://www.bvdinfo.com/en-gb/our-products/data/national/aida.

Table 3
Variable definitions, names, and sources.

Variable Name	Variable Symbol	Variable Description	Data Source
Environmental Targets in Executive Compensation			
Environmental targets in CEO's variable compensation plans	ET_COMP (STIPorLTIP)	Boolean variable equals 1 if at least one of the CEO's variable compensation plans (STIP or LTIP) includes targets related to environmental sustainability, and 0 otherwise.	Corporate remuneration report
Environmental targets in CEO's variable short-term compensation plans	ET_COMP (STIP)	Boolean variable equals 1 if the CEO's variable short-term compensation plan (STIP) includes targets related to environmental sustainability, and 0 otherwise.	Corporate remuneration report
Environmental targets in CEO's variable long-term compensation plans	ET_COMP (LTIP)	Boolean variable equals 1 if the CEO's variable long-term compensation plan (LTIP) includes targets related to environmental sustainability, and 0 otherwise.	Corporate remuneration report
Environmental targets in both CEO's variable compensation plans	ET_COMP (STIP&LTIP)	Boolean variable equals 1 if both CEO's variable compensation plans (STIP and LTIP) include targets related to environmental sustainability, and 0 otherwise.	Corporate remuneration report
Relevance of environmental targets on the CEO's total pay	ET_COMP%	The percentage value equals the relative weight of CEO's total pay attached to the achievement of ETs defined in the variable compensation.	Corporate remuneration report
Relevance of STIP environmental targets on the CEO's total pay	ET_COMP% (STIP)	The percentage value equals the relative weight of CEO's total pay attached to the achievement of ETs defined in the short-term variable compensation.	Corporate remuneration report
Relevance of LTIP environmental targets on the CEO's total pay	ET_COMP% (LTIP)	The percentage value equals the relative weight of CEO's total pay attached to the achievement of ETs defined in the long-term variable compensation.	Corporate remuneration report
Environmental Claims			
Presence of a nonfinancial report disclosing environmental performance	NFD	Boolean variable equals 1 if the company issued a nonfinancial report including environmental	Corporate sustainability report/ Integrated report

(continued on next page)

Table 3 (*continued*)

Variable Name	Variable Symbol	Variable Description	Data Source
		performance, and 0 otherwise.	
Presence of a sustainability plan for environmental performance	SUSPLAN	Boolean variable equals 1 if the company has a sustainability plan for environmental performance, and 0 otherwise.	Corporate sustainability report/ Integrated report/ Sustainability plan
Claimed carbon neutrality goal	CN	Boolean variable equals 1 if the company reports a corporate carbon neutrality goal and a target-related year, and 0 otherwise.	Corporate sustainability report/ Integrated report/ Sustainability plan
Control Variables			
Company size	SIZE	Continuous variable equal to natural logarithm of revenues.	Aida database/ Financial reports 2020
Economic performance	ROE	Continuous variable calculated as return on equity (ROE).	Aida database/ Financial reports 2020
Leverage	LEV	Continuous variable calculated as debt-to-equity ratio.	Aida database/ Financial reports 2020
Presence of a sustainability committee	SUSCOM	Boolean variable equals 1 if a board-level sustainability committee exists, and 0 otherwise.	Corporate sustainability report/ Integrated report
Environmentally sensitive industry	ESI	Boolean variable equals 1 if the company operates in environmentally sensitive industries such as Basic resources, Chemicals, Construction & materials, Energy, Utilities.	Elaboration based on ICB sector & Winschel (2021)

components. To the best of our knowledge, this study is the first to comprehensively capture the relevance of CEO's pay linked to ETs, overcoming the limitations of prior studies. A higher share indicates greater relevance of ETs in executive compensation plans and reflects stronger corporate intentionality toward environmental issues. This variable distinguishes between the weight attributed to ETs, considering both STIPs and LTIPs (ET_COMP%), the weight attributed to ETs in STIPs (ET_COMP%(STIP)), and the weight attributed to ETs in LTIPs (ET_COMP%(LTIP)).

3.2.2. Environmental claims

Corporate environmental claims are measured using three distinct constructs: the presence of a nonfinancial report addressing environmental performance (NFD), the presence of a sustainability plan that includes environmental objectives (SUSPLAN), and the presence of corporate claims to achieve carbon neutrality by a specified target year (CN). The NFD is a Boolean variable that equals 1 if the company issued a nonfinancial report disclosing environmental performance, and 0 otherwise. SUSPLAN is also a Boolean variable, taking a value of 1 if the company discloses a sustainability plan that addresses environmental aspects, and 0 otherwise. CN is a Boolean variable that indicates whether a company reports a carbon neutrality goal to be achieved by a specific target year (value = 1) or not (value = 0); this ensures that only companies setting clear carbon neutrality objectives are considered, rather than those expressing generic "aspirational goals" of carbon neutrality.

3.2.3. Control variables

Following the literature, we control for selected firm-level factors. Company size is measured by the natural log of total sales (SIZE) (Al-Shaer and Zaman, 2019; Deckop et al., 2006). Economic performance and financial leverage are measured as return on equity (ROE) (Al-Shaer and Zaman, 2019) and debt-to-equity ratio (Grabner et al., 2020; Mahoney et al., 2013), respectively.

Moreover, we control for the presence of a board-level sustainability committee with a dummy variable (SUSCOM) equal to 1 if the firm has a board-level committee, and 0 otherwise. In line with previous literature, which reports that sustainability committee is positively associated with sustainability-linked compensation (Abdelmotaal and Abdel-Kader, 2016; Al-Shaer and Zaman, 2019; Gebhardt et al., 2022), we expect a positive correlation between ETs and SUSCOM.

Finally, we control for the presence of environmentally sensitive industry (ESI) by constructing a dummy variable, which equals 1 if the firm operates within industries highly sensitive to environmental issues, such as Basic Resources, Chemicals, Construction & Materials, Energy, and Utilities, following the list used by Winschel (2021). We expect a positive correlation between ETs and ESI, in line with evidence provided for general sustainability targets or ESG metrics (Cohen et al., 2023; Grabner et al., 2020; Ikram et al., 2019).

3.3. Models

To test H1, we conduct a logistic regression analysis to examine whether there is a statistically significant association between company's environmental claims (NFD, SUSPLAN, CN) and the presence of ETs in their CEO's compensation plans (ET_COMP). The analysis is run considering as dependent variable the presence of ETs in at least one of the compensation plan levels (ET_COMP(STIPorLTIP)) (Model 1), in STIP (ET_COMP(STIP)) (Model 2), in LTIP (ET_COMP(LTIP)) (Model 3), and in both STIP and LTIP (ET_COMP(STIP&LTIP)) (Model 4).

All four models use the same set of independent and control variables, as shown in Eq. (1), which is applicable to the general ET_COMP variable.

$$ET_{COMP} = \alpha + \beta_1 NFD + \beta_2 SUSPLAN + \beta_3 CN + \beta_4 SIZE + \beta_5 ROE + \beta_6 LEV + \beta_7 SUSCOM + \beta_8 ESI + \varepsilon \quad (1)$$

Specifically, α represents the constant, β_1 to β_8 are the regression coefficients, while ε denotes the vector of the stochastic error term.

The limited sample size for H2 does not allow for a regression analysis. Therefore, two-tailed Mann-Whitney U tests are conducted to examine statistically significant mean differences in the share of ETs in a CEO's total compensation plan, considering the presence of each environmental claim. Indeed, the share of a CEO's compensation plan associated with the achievement of ETs (ET_COMP%) is used as a proxy for the actual corporate strategic intentionality to pursue sustainability. The analysis is performed separately for STIPs, LTIPs, and the combined sum of STIPs and LTIPs to check for the share of the total CEOs' compensation plan associated with the achievement of ETs. When interpreting the test results, significance levels of 5% and 10% are applied.

4. Results and discussion

The results of the analysis are presented and discussed in the following sections.

4.1. Descriptive statistics

Some preliminary insights emerge from the descriptive statistics of the variables summarized in Table 4.

Examining the independent variables, the presence of nonfinancial reports disclosing environmental performance (NFD) is a widespread characteristic among Italian listed companies (occurring in approximately 82% of non-financial firms), in compliance with regulations. However, sustainability plans (SUSPLAN) are adopted by only 40% of companies to disclose their environmental strategies, and the number of firms reporting a carbon neutrality goal to be achieved by a specific target year (CN) is even lower (14%).

The use of ETs in CEOs' compensation is a practice that has been adopted by 44% of the sample. Specifically, ETs are more commonly associated with STIPs (occurring in 35% of cases) than with LTIPs (occurring in 30% of cases). Only 20% of our sample associates ETs with both STIPs and LTIPs. These results are consistent with Italian National Commission for the Listed Companies and Stock Exchange (2021), and with the European average reported by Winschel (2021) for 2019, who reports that one third of European listed companies provide for carbon-reduction targets.

Regarding the weight of monetary incentives based on ETs in executive compensation, Table 4 shows that when included, ETs cover a small share of the total compensation, averaging 7.6% (ET_COMP%). This suggests that the environment is not a primary driver for executives' action since the failure to achieve the ETs does not significantly impact the final amount of compensation received.

Table 5 shows the correlation analysis for all independent and control variables, indicating that, in general, environmental claims (NFD, SUSPLAN, CN) are positively correlated with each other and with the company size, consistent with prior studies (Amran et al., 2014; Dienes et al., 2016). Additionally, Table 5 reports the variance inflation factor (VIF) for each independent variable included in the regression analysis. The VIF values range from 1.08 to 1.89, with an average VIF value equal to 1.36. These results suggest the absence of multicollinearity.

4.2. The presence of ETs in executive compensation

Table 6 through 9 report the results of the tests for H1, which examine the relationship between environmental claims and the presence of ETs in executive compensation plans. Firstly, we discuss the signs and magnitudes associated with NFD, SUSPLAN, and CN in Models 1–4, followed by the presentation of results for the control variables.

Table 6 shows the regression results for Model 1. In Model 1.4, which includes all the independent variables simultaneously, the results show that the presence of a sustainability plan ($\beta = 0.994$, $p = 0.040$) and a carbon neutrality pledge ($\beta = 1.545$, $p = 0.034$) are positively and significantly associated with the use of ETs within CEOs' compensation plans, whether in STIPs or LTIPs. Conversely, companies that publish nonfinancial reports on environmental performance do not exhibit different behavior regarding ETs in incentive plans.

The regression results for Model 2 are reported in Table 7. In Model 2.4, which includes all the independent variables simultaneously, the presence of a sustainability plan is positively and significantly associated with the inclusion of ETs in STIPs.

Table 8 shows the regression results for Model 3. When companies include ETs in the LTIPs, carbon neutrality claims are positively and significantly associated ($\beta = 1.482$, $p = 0.013$).

Table 9 shows the regression results for Model 4. These results highlight that the presence of a sustainability plan ($\beta = 1.748$, $p = 0.018$) and a carbon neutrality pledge ($\beta = 1.105$, $p = 0.064$) are positively and significantly associated with the inclusion of ETs in both STIPs and LTIPs.

In summary, the presence of nonfinancial reporting on environmental performance (NFD) does not represent a significant driver for the inclusion of ETs in executive compensation. This finding neither confirms nor rejects hypothesis H1.a. Although Grabner et al. (2020) argue that sustainability reporting and incentives in executive compensation are both relevant factors of a company's commitment to the environment, our results suggest that in the current competitive context, the disclosure of environmental claims in nonfinancial reports primarily complies with regulatory frameworks rather than reflecting clear corporate intentionality toward environmental issues.

On the contrary, our results support both H1.b and H1.c, indicating that companies with sustainability plans and those claiming carbon neutrality goals have CEO's compensation systems in place that more frequently utilize ETs compared to other companies. This evidence suggests that the analyzed companies align CEO's incentives with their environmental claims, implying that there is no evidence of greenwashing in the analyzed sample.

Regarding specifically CN, our results emphasize the long-term nature of carbon neutrality goals, since the hypothesis is significant only when considering LTIPs (Model 1, 3, 4). This result contributes to previous cross-country analyses based on average ESG targets (Cohen et al., 2023). Moreover, in line with previous literature (Cohen et al., 2023; Grabner et al., 2020; Ikram et al., 2019), our analysis suggests that companies operating in environmentally sensitive industries (ESIs) tend to include ETs more frequently than other companies ($\beta = 1.119$, $p = 0.022$), particularly when ETs are linked to LTIPs (Model 3). This result suggests a strong alignment between CN claim and the time frame of incentives associated with ETs, reflecting a strategic intentionality toward environmental issues. It also highlights a general awareness that emissions reduction is a strategic objective requiring a long-term transition path (Kachi et al., 2020).

Moving to other control variables, the regression results from all models show that the existence of a board-level sustainability committee

Table 4
Descriptive statistics of the adopted variables.

Variable Name	No. Obs	Min	Max	Mean	SD	Median
ET_COMP(STIPorLTIP)	158	0.0000	1.0000	0.4367	0.4976	0.0000
ET_COMP(STIP)	155	0.0000	1.0000	0.3548	0.4800	0.0000
ET_COMP(LTIP)	145	0.0000	1.0000	0.2966	0.4583	0.0000
ET_COMP(STIP&LTIP)	142	0.0000	1.0000	0.2042	0.4046	0.0000
ET_COMP%	58	0.0120	0.2730	0.0758	0.0525	0.0673
ET_COMP%(STIP)	47	0.0110	0.1350	0.0414	0.0270	0.0364
ET_COMP%(LTIP)	37	0.0150	0.1800	0.0659	0.0400	0.0600
NFD	158	0.0000	1.0000	0.8228	0.3831	1.0000
CN	158	0.0000	1.0000	0.1392	0.3473	0.0000
SUSPLAN	158	0.0000	1.0000	0.3671	0.4835	0.0000
SIZE	158	6.4620	17.6795	11.6873	2.2099	11.5741
ROE	158	−0.8260	0.5687	0.0600	0.1571	0.0575
LEV	158	−2.3333	10.9000	0.8917	1.3826	0.5250
SUSCOM	158	0.0000	1.0000	0.5696	0.4967	1.0000
ESI	158	0.0000	1.0000	0.2405	0.4287	0.0000

Table 5
Correlation table.

	VIF	NFD	SUSPLAN	CN	SIZE	ROE	LEV	SUSCOM	ESI
NFD	1.3200	1.0000							
SUSPLAN	1.8900	0.3534	1.0000						
CN	1.2300	0.1867	0.4143	1.0000					
SIZE	1.3600	0.3886	0.3563	0.1458	1.0000				
ROE	1.1200	0.1363	0.1865	0.1306	0.2329	1.0000			
LEV	1.0800	−0.0272	0.0207	0.0427	0.1068	−0.1607	1.0000		
SUSCOM	1.7500	0.4000	0.6089	0.3127	0.3796	0.1807	0.0059	1.0000	
ESI	1.1100	0.1448	0.2781	0.1159	0.0668	0.0625	−0.1339	0.1901	1.0000

Table 6
Logistic regression results for model 1.

Dep. Variable	Model 1.1	Model 1.2	Model 1.3	Model 1.4
	ET_COMP (STIPorLTIP)	ET_COMP (STIPorLTIP)	ET_COMP (STIPorLTIP)	ET_COMP (STIPorLTIP)
Ind. Variable				
NFD	0.380			0.0889
	(0.620)			(0.619)
SUSPLAN		1.276***		0.994**
		(0.462)		(0.483)
CN			1.846***	1.545**
			(0.706)	(0.727)
SIZE	0.380	0.291	0.507	0.346
	(0.446)	(0.453)	(0.455)	(0.488)
ROE	0.0610	−0.0122	−0.0339	−0.0705
	(0.311)	(0.318)	(0.316)	(0.321)
LEV	−0.188	−0.228	−0.272	−0.289
	(0.202)	(0.203)	(0.208)	(0.210)
SUSCOM	1.806***	1.286***	1.620***	1.187**
	(0.425)	(0.466)	(0.426)	(0.481)
ESI	0.536	0.309	0.502	0.318
	(0.431)	(0.460)	(0.447)	(0.470)
Constant	−2.024***	−1.743***	−1.833***	−1.845***
	(0.543)	(0.358)	(0.363)	(0.527)
N	158	158	158	158
Adj. R^2	0.1822	0.2164	0.2217	0.2421

Notes: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

Table 7
Logistic regression results for model 2.

Dep. Variable	Model 2.1	Model 2.2	Model 2.3	Model 2.4
	ET_COMP (STIP)	ET_COMP (STIP)	ET_COMP (STIP)	ET_COMP (STIP)
Ind. Variable				
NFD	0.561			0.173
	(0.748)			(0.751)
SUSPLAN		1.689***		1.516***
		(0.490)		(0.509)
CN			1.196**	0.792
			(0.560)	(0.592)
SIZE	−0.0109	−0.179	0.0725	−0.175
	(0.452)	(0.479)	(0.456)	(0.499)
ROE	0.218	0.131	0.156	0.104
	(0.338)	(0.359)	(0.342)	(0.360)
LEV	−0.233	−0.291	−0.259	−0.310
	(0.243)	(0.246)	(0.224)	(0.235)
SUSCOM	2.123***	1.440***	2.038***	1.344**
	(0.498)	(0.548)	(0.495)	(0.568)
ESI	0.315	−0.112	0.260	−0.125
	(0.434)	(0.488)	(0.449)	(0.495)
Constant	−2.636***	−2.214***	−2.284***	−2.336***
	(0.685)	(0.434)	(0.433)	(0.649)
N	155	155	155	155
Adj. R^2	0.1909	0.2512	0.2128	0.2608

Notes: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

(SUSCOM) is significantly and positively associated with executive compensation plans linked to ETs, in line with previous empirical evidence (Al-Shaer and Zaman, 2019). Finally, our findings align with recent empirical studies that do not identify economic profitability and financial leverage as significant factors explaining the inclusion of ETs in executive compensation (Aresu et al., 2022; Cohen et al., 2023). However, in contrast with previous evidence and consistent with Aresu et al. (2022), our results demonstrate that the use of ETs in executive compensation does not correlate with firm-specific control variables such as SIZE. Among the analyzed sample, larger firms do not adopt monetary incentives linked to ETs more frequently than smaller firms.

4.3. The relevance of ETs in executive compensation

The average weight of monetary incentives linked to the achievement of ETs across different groups of companies based on their environmental claims (NFD, SUSPLAN and CN) is reported in Fig. 1, Figs. 2 and 3. Fig. 1 considers the weights of ETs in both STIPs and LTIPs (ET_COMP%), Fig. 2 focuses on ETs in STIPs only (ET_COMP%(STIP)) and Fig. 3 focuses on ETs in LTIPs only (ET_COMP%(LTIP)).

Table 10 reports the results of the Mann-Whitney U tests, examining the relationship between the share of CEO's compensation linked to ETs and the presence of environmental claims. The analysis reveals that the amount of CEO's pay linked to the achievement of ETs (ET_COMP%) considering both STIPs and LTIPs, is significantly higher for companies with a sustainability plan (average = 0.0860, p = 0.0777) and for those declaring a carbon neutrality goal (average = 0.1050, p = 0.0345), compared to other firms. These findings support H2.b and H2.c. Differently, our results neither accept nor reject H2.a.

When focusing on LTIPs, only H2.c is supported: the share of executive compensation plans linked to ETs (ET_COMP%(LTIP)) is equal to 8.23% for companies declaring a carbon neutrality goal, and the difference in mean values with the other group of firms is statistically significant (p = 0.0746).

Conversely, no statistical difference is found in the share of CEO's pay linked to ETs in short-term incentives (ET_COMP%(STIP)). These findings align with the results obtained for H1 and STIPs, suggesting that among the analyzed companies, the inclusion of ETs in short-term incentives is a dominant practice widely used by firms. No differences emerge between EC companies and other companies, in terms of presence (H1) or relevance (H2).

Overall, EC companies that draft a sustainability plan or pledge a carbon neutrality goal demonstrate their strategic intentionality to act accordingly by assigning higher shares of CEOs' compensation to the achievement of ETs. This analysis provides further support for the results obtained for H1, indicating that the weight of incentives in the total compensation aligns with corporate strategic objectives, in line with agency theory (Lambert, 2001). Therefore, there is no evidence of

Table 8
Logistic regression results for model 3.

	Model 3.1	Model 3.2	Model 3.3	Model 3.4
Dep. Variable	ET_COMP (LTIP)	ET_COMP (LTIP)	ET_COMP (LTIP)	ET_COMP (LTIP)
Ind. Variable				
NFD	0.138			−0.122
	(0.783)			(0.784)
SUSPLAN		0.970*		0.640
		(0.502)		(0.539)
CN			1.652***	1.482**
			(0.577)	(0.597)
SIZE	−0.0523	−0.167	−0.107	−0.171
	(0.478)	(0.482)	(0.486)	(0.513)
ROE	0.120	0.0709	0.0310	0.00910
	(0.329)	(0.333)	(0.340)	(0.342)
LEV	0.121	0.0951	0.0943	0.0788
	(0.199)	(0.202)	(0.220)	(0.220)
SUSCOM	1.863***	1.360**	1.586***	1.292**
	(0.541)	(0.589)	(0.534)	(0.620)
ESI	1.215***	1.023**	1.250***	1.119**
	(0.453)	(0.471)	(0.473)	(0.488)
Constant	−2.588***	−2.436***	−2.521***	−2.395***
	(0.698)	(0,473)	(0.479)	(0.678)
N	145	145	145	145
Adj. R^2	0.1718	0.1933	0.2228	0.2308

Notes: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

Table 9
Logistic regression results for model 4.

Dep. Variable	Model 4.1	Model 4.2	Model 4.3	Model 4.4
	ET_COMP (STIP&LTIP)	ET_COMP (STIP&LTIP)	ET_COMP (STIP&LTIP)	ET_COMP (STIP&LTIP)
Ind. Variables				
NFD	0.252			−0.759
	(1.286)			(1.369)
SUSPLAN		1.914***		1.748**
		(0.680)		(0.737)
CN			1.454**	1.105*
			(0.567)	(0.597)
SIZE	−0.543	−0.774	−0.646	−0.804
	(0.544)	(0.578)	(0.559)	(0.592)
ROE	0.333	0.251	0.282	0.205
	(0.415)	(0.443)	(0.442)	(0.460)
LEV	0.171	0.103	0.130	0.0783
	(0.233)	(0.237)	(0.240)	(0.240)
SUSCOM	3.403***	2.287**	3.169***	2.443*
	(1.109)	(1.151)	(1.072)	(1.281)
ESI	1.223**	0.772	1.210**	0.788
	(0.516)	(0.554)	(0.537)	(0.571)
Constant	−4.447***	−4.160***	−4.282***	−3.735***
	(1.371)	(1.032)	(1.038)	(1.215)
N	142	142	142	142
Adj. R^2	0.2507	0.3182	0.2977	0.3445

Notes: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

greenwashing among the analyzed companies when they state environmental objectives in their sustainability plans and define carbon neutrality goals.

Nonetheless, it is important to note that the average share of CEO's compensation linked to the achievement of ETs in EC companies is limited, with a maximum value of 10.5%. At first glance, this evidence could raise some doubt about the strength of the incentive. However, this finding aligns with agency theory and the work of Banker and Datar (1989), who argue that targets influenced by exogenous factors, such as ETs, should receive less weight.

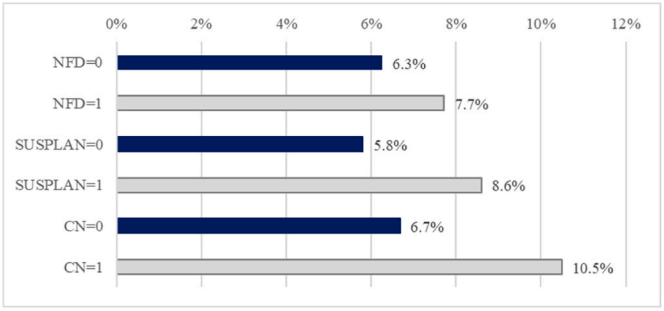

Fig. 1. CEO's pay share linked to the achievement of ETs (ET_COMP%) across different groups of firms based on their environmental claims (NFD, SUSPLAN, and CN).

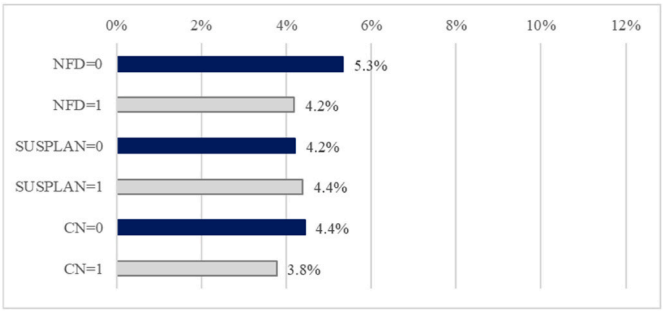

Fig. 2. CEO's pay share linked to the achievement of short-term ETs (ET_COMP %(STIP)) across different groups of firms based on their environmental claims (NFD, SUSPLAN, and CN).

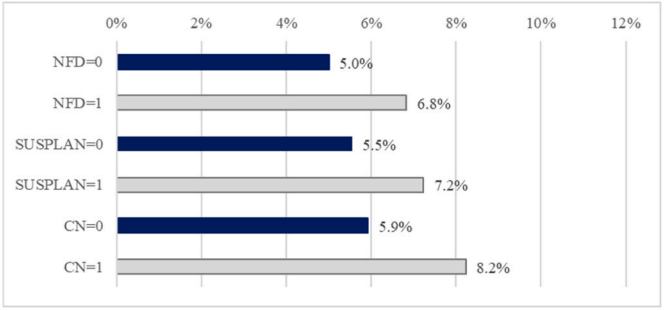

Fig. 3. CEO's pay share linked to the achievement of long-term ETs (ET_COMP %(LTIP)) across different groups of firms based on their environmental claims (NFD, SUSPLAN, and CN).

5. Conclusions

This paper presents an analysis of the relationship between a company's claims of environmental responsibility and its strategic intentionality toward environmental sustainability, proxied by the use and weight of monetary incentives linked to ETs in executive compensation plans. In doing so, this work offers a more nuanced perspective on greenwashing, emphasizing the relevance of a company's strategic intentionality toward environmental sustainability, rather than solely focusing on performance.

Based on this perspective, our results evidence that nonfinancial reporting is not associated with environmental strategic intentionality, suggesting the potential existence of greenwashing. Conversely, our

Table 10
Mann-whitney *U* test results.

Variables		ET_COMP%			ET_COMP%(STIP)			ET_COMP%(LTIP)		
	Groups	Mean	Difference	P-value	Mean	Difference	P-value	Mean	Difference	P-value
NFD	NFD = 0	0.0625	0.0147	0.5218	0.0533	−0.0115	0.3166	0.0500	0.0183	0.4597
	NFD = 1	0.0772			0.0418			0.0683		
SUSPLAN	SUSPLAN = 0	0.0580	0.0280	0.0777	0.0421	0.0018	0.2634	0.0555	0.0169	0.1435
	SUSPLAN = 1	0.0860			0.0439			0.0723		
CN	CN = 0	0.0667	0.0383	0.0345	0.0444	−0.0067	0.4050	0.0592	0.0231	0.0746
	CN = 1	0.1050			0.0377			0.0823		

results indicate that companies that include environmental objectives in their sustainability plan and define carbon neutrality goals are more likely to incorporate ETs in their executive compensation plans, in both STIPs and LTIPs. Furthermore, these companies link higher incentives to ETs compared to other companies, considering both overall and long-term compensation. However, it is important to note that the average share of environmental-linked compensation for CEOs is limited, with a maximum value of 10.5%. Hence, it is not a primary driver of incentives. All these findings align with the recommendations derived by agency theory regarding the use of executive compensation to support strategy implementation.

5.1. Implications for theory and practice

The paper offers an original contribution to the debate about greenwashing, proposing a new perspective that could be embraced in future research to complement the performance-based view. Specifically, the paper addresses the limitations of the traditional performance-based view, by focusing on the strategic intentionality toward environmental sustainability, as proxied by the use and weight of ETs in CEO's compensation plans.

Furthermore, this work comprehensively examines the weight of monetary incentives linked to ETs in total executive compensation, addressing a gap in the prior literature that primarily investigates the relationship between sustainability disclosure and sustainability-linked compensation. To do this, the paper relies on manual data collection from public sources, to reconstruct the compensation structure in terms of fixed and variable components, short-term and long-term incentives, and their weights (this information is often not available in popular databases used in prior research).

In terms of policy implications, the findings suggest the relevance of introducing common provisions for standardized and transparent corporate disclosure regarding compensation systems, including targets, weights, and metrics. At the EU level, the recent Proposal for a Directive on Corporate Sustainability Due Diligence recommends the implementation of decarbonization plans in monetary executive compensation schemes, which represents a promising improvement.

Finally, the findings of this paper could be of interest for practitioners. From the perspective of responsible investors, they highlight the importance of considering the presence of ETs in executive compensation systems when making investment decisions. Investors themselves can indirectly promote a more transparent implementation of sustainability-linked executive compensations through their "say on pay" decisions. From a managerial perspective, our findings confirm the importance of aligning incentive systems to support the implementation of the environmental strategy.

6. Limitations and future research

We acknowledge that this study has limitations that could motivate future research.

First, the analysis examines the existence of certain environmental claims (such as carbon neutrality claims) but does not differentiate between additional characteristics of such claims (e.g., timeframe to achieve carbon neutrality, scope of carbon emissions covered). Future research could expand the analysis of claims, by considering their specific contents.

Second, the analysis of the weights of CEO's pay linked to ETs relies on a limited number of observations due to the lack of disclosed information in corporate remuneration reports, which reduces the generalizability of these results. Increasing data availability is therefore crucial for advancing our understanding of corporate sustainability.

Last, while this paper primarily focuses on environmental sustainability, future research could undertake a broader analysis of how companies manage trade-offs between the three dimensions of sustainability – economic, social and environmental – by carefully balancing the weight associated with different executive compensation targets. This broader analysis could shed light on the understanding of the greenwashing phenomenon and, more generally, corporate sustainability.

CRediT authorship contribution statement

Sara Ratti: Conceptualization, Methodology, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Marika Arena:** Supervision, Conceptualization, Writing – original draft, Writing – review & editing. **Giovanni Azzone:** Supervision, Conceptualization, Writing – original draft. **Laura Dell'Agostino:** Supervision, Conceptualization, Writing – original draft, Writing – review & editing.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used OpenAI ChatGPT in order to perform proofreading on the written manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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