
Paying for Green: How CEO Compensation Shapes Environmental Performance in French Firms

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Abstract:

Purpose: This paper aims to investigate the impact of CEO compensation structure on corporate environmental responsibility (CER).

Design/methodology/approach: This study is based on a sample of 171 French firms listed on the SBF 250 shares index (1881 year-firm) from 2012 to 2022.

Findings: Results show a positive relationship between the total CEO compensation and corporate environmental performance. Results also highlight that CEO equity-based compensation is positively associated with CEP. However, they show a positive but not significant association between CEO cash based compensation and CEP, implying that providing more cash incentives to CEOs does not necessarily motivate them to become more engaged in environmental activities.

Practical implications: The results may be of interest to different stakeholders and policy-makers and regulatory bodies interested in improving corporate governance mechanisms to strengthen corporate environmental performance as it suggests that CEOs' compensation components affect differently CEP. Therefore, attention should be paid to CEOs compensation structure when establishing CEP strategy

Originality/value: Our study claims originality insofar as it investigates the association between CEP and the structure of CEO compensation using the intensity of each compensation component. Unlike most prior studies which focus on CEO total compensation, this study went further by examining the impact of each proportion of CEO compensation package providing thus a more in-depth analysis.

Keywords: Corporate environmental performance, CEO compensation, CEO cash-based compensation, CEO equity-based compensation.

JEL codes: M12, G34, Q56, M14, D22.

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1. Introduction

Recently, environmental sustainability has become a central concern for corporations, governments, investors, policymakers, regulators and other stakeholders (Chatterjee *et al.*, 2022; Haque and Ntim, 2020; Dahlmann *et al.*, 2019). Growing awareness of climate change, environmental degradation, and resource scarcity has intensified pressure on companies to adopt more environmentally conscious practices (Barroso *et al.*, 2024; Martínez *et al.*, 2022; Ameer and Khan, 2023) and to disclose their environmental performance transparently (Zhu *et al.*, 2024; Sarkodie, 2021).

As a result, corporate environmental performance has emerged as a critical component of broader environmental, social, and governance (ESG) frameworks used by key stakeholders to evaluate corporate sustainability and long-term value creation (Dyck *et al.*, 2019; Arvidsson, 2022; Cohen *et al.*, 2023). Exploring factors that can drive firms to improve their environmental outcomes has therefore become a crucial topic in both academic research and corporate governance debates.

In this vein, executive compensation- particularly the structure of chief executive officer (CEO) compensation, is cited as one of the governance mechanisms that can influence corporate sustainability strategies and practices (Mahran and Elamer, 2024). CEO compensation schemes represent a key instrument that enables boards of directors to align managerial incentives with company's goals, including environmental performance (Flammer *et al.*, 2019; Lahjie *et al.*, 2023).

The agency theory posits that executive compensation incentives strengthen the alignment of managerial incentives with shareholder value (Widyastuti *et al.*, 2023), thus motivating CEOs to engage in long-term sustainability initiatives (Shabbir *et al.*, 2024) that enhance firm value. Consequently, linking CEO compensation to environmental performance indicators has emerged as a governance mechanism aimed at aligning managerial decision-making with sustainability goals.

Despite the growing integration of sustainability metrics into executive compensation schemes, academic research examining the influence of CEO compensation structures on corporate environmental performance remains relatively scarce and conceptually underexplored. Moreover, the few studies examining the relationship between CEO compensation and environmental performance have yielded mixed results (Zou *et al.*, 2015).

Some empirical studies suggest that compensation incentives can serve as a mechanism to encourage managers to implement environmentally responsible strategies (Nie *et al.*, 2025; Benlemlih *et al.*, 2022; Haque and Ntim, 2020; Amin, *et al.*, 2024; Phung *et al.*, 2023). By examining publicly listed firms in China, Zhu *et al.* (2024) find that executive compensation incentives significantly improve firms' ESG ratings by promoting green innovation, enhancing environmental information

disclosure, and improving financial performance. Similarly, other studies (Luo *et al.*, 2021; Wu and Tham, 2023; Zhu *et al.*, 2023) indicate that long-term incentive schemes encourage executives to adopt more transparent and sustainable practices.

However, other authors argue that the relationship between CEO compensation and environmental performance may not always be positive (Stanwick and Stanwick, 2001; Zou *et al.*, 2015; Shahrouer *et al.*, 2024; Elsayih *et al.*, 2021) and may be non-linear in some cases (Pareek and Sahu, 2024; Adu *et al.*, 2022).

For instance, Haque (2017) shows that while executive compensation incentives can improve ESG performance, their positive effect diminishes when compensation becomes excessive, highlighting the need to set up balanced and effective compensation structures. In a similar vein, Li *et al.* (2024) show that certain CEO compensation structures may increase ESG greenwashing, implying that executives may prioritize symbolic environmental actions rather than real environmental improvements.

Other studies support a more non-linear relationship and emphasize that the effectiveness of compensation structures depends on corporate governance and other contextual factors. For instance, Zhou, Liu, and Luo (2024) find that firms with robust governance characteristics are more successful in aligning compensation structures with sustainability outcomes. Industry characteristics may also influence the relationship between CEO compensation and environmental performance.

Firms in environmentally sensitive industries are subject to stronger regulatory pressures and stakeholder scrutiny, which may strengthen the effectiveness of incentive mechanisms. Therefore, they are more likely to adopt and benefit from environmentally focused incentive structures (Flammer *et al.*, 2019).

Despite the increasing attention given to CEO compensation-environmental performance link, several research limits remain. *First*, while numerous studies have examined the relationship between executive compensation and overall ESG performance, fewer have focused on the environmental pillar of ESG. Corporate environmental performance has recently gained growing attention, particularly given the increasing pressure exerted by the Paris Agreement (2015) on companies to adopt environmentally conscious strategies in order to combat climate change (Zahid *et al.*, 2025).

Second, the structure of CEO compensation has received relatively limited attention in prior studies. While a growing body of literature has examined the association between ESG performance and total executive compensation (Huang *et al.*, 2025; Zhu *et al.*, 2024), fewer studies explicitly analysed how the design or the composition of executive compensation affect environmental outcomes (Nie *et al.*, 2023).

Understanding how different compensation components influence executive behavior is crucial for designing governance mechanisms that effectively enhance environmental performance. Addressing these limits is essential to gain a deeper understanding of how executive incentive schemes can be optimally designed to promote sustainability goals.

This study, therefore, investigates the impact of CEO compensation structure on corporate environmental performance, paying particular attention to the comparative effects of cash-based compensation and equity-based compensation on the level of sustainability performance. Precisely, it seeks to address the following research question:

QR: *How does CEO compensation structure affect corporate environmental performance?*

To answer this research question, we used a panel of 171 French-listed firms during the 2012-2022 period. The French context offers a particularly interesting setting to conduct the present study as it is marked by an increasing trend for higher environmental responsibility engagement by listed companies, mainly after the Paris Agreement (Oussii and Jeriji, 2024).

France was a great defender of the Paris Agreement and played a pivotal role in the negotiations that resulted in its adoption. The French government has launched several policies to boost environmental protection, such as regulations to reduce carbon emissions, encouraging the use of renewable energy and promoting energy efficiency (Yousfi and Loukil, 2024).

The empirical results show a positive relationship between the total CEO compensation and corporate environmental performance. Results also highlight that the structure of compensation packages can significantly influence the corporate environmental engagement.

CEOs equity-based compensation may be a real motivation for them, encouraging them to implement more environmentally friendly initiatives. However, providing more cash incentives to CEOs does not necessarily motivate them to become more engaged in environmental activities.

Our study aims to contribute to the growing literature on executive compensation and corporate sustainability by investigating the impact of CEO compensation structure on corporate environmental performance. In doing so, it seeks to offer a broader and deeper understanding of how compensation incentives influence CEOs' decisions regarding environmental strategies and investments.

Furthermore, this study contributes to the literature on accounting and corporate governance by exploring the role of compensation structure as a device for aligning

executive incentives with long-term sustainability goals. Unlike most prior studies which focused on CEO total compensation (Huang *et al.*, 2025), this study went further by analyzing how the two components of CEO compensation (cash based and equity based) impact the CEO engagement in environmental activities.

The findings of this study are expected to have practical implications for multiple stakeholders. For regulators, a better understanding of how incentive mechanisms influence environmental behavior can support the development of policies aimed at promoting sustainable corporate practices. By providing evidence on the effectiveness of sustainability-linked compensation schemes, our study may be useful for investors to improve assessments of governance quality and sustainability risk.

Finally, our results may be relevant for corporate boards and compensation committees as they provide guidance on the structuring of CEO compensation packages that effectively balance financial performance with environmental outcomes.

The remainder of the paper is structured as follows. Section 2 reviews the literature and formulates our central hypotheses. Section 3 describes the sample, data collection and model specifications followed by discussion of the results in Section 4. Finally, Section 5 concludes the paper and provides policies and implications of the research.

2. Literature Review and Hypothesis Development

The investigation of CEO compensations as a key driver of CEP is motivated by an abundant literature (Bai and Meng, 2025; Zhou *et al.*, 2021; Abu-Ali *et al.*, 2024; Francoeur *et al.*, 2017; Li *et al.*, 2024; Benlemlih *et al.*, 2022). However, the available empirical results remain equivocal.

In this vein, Haque and Ntim (2020) examined the interrelationships among executive's compensation and carbon performance. Their results indicate that executive's compensation has a positive effect on process-oriented carbon performance. Therefore, compensation can be used as an incentive-based mechanism to motivate the executive management to get more involved in the process of reducing carbon emissions (Zhou *et al.*, 2021).

Recently, Amin, *et al.* (2024) examine the link between firms' carbon emissions and their compensation to CEOs and find a positive association. They noted that this association is stronger when firms are better governed and are more likely to be aware of their carbon risk. More particularly, Phung *et al.* (2023) focused on eco-innovation as a proxy of firm's environmental performance and how it may be influenced by top-management compensation. They find that firms with high top-management compensation exhibit higher scores of eco-innovation engagement.

Numerous authors suggest looking at a breakdown of CEO compensation structure to gain a better insight as to why CEOs engage in corporate environmental performance. Generally, they distinguish between two main components of CEO compensation, namely cash-based compensation and equity-based compensation (Karim *et al.*, 2018; Aggarwal and Samwick, 1999, Kharabsheh *et al.*, 2022) which affect CEO behavior differently (Harris *et al.*, 2019).

The equity-based compensation, which is the sum of the value of restricted stocks and the Black-Scholes value of stock-options granted during the fiscal year (Jihene and Moez, 2019), is a variable compensation, which depends on a series of performance measures. Empirical studies on the effects of CEO equity-based compensation on corporate environmental performance yielded to mixed results.

Those who suggested a positive relation between CEO incentive pay and CEP were based on agency theory. Agency theory states that providing equity to executives is an effective way to mitigate agency problems by aligning their interests with those of shareholders. Thus, managers will be more likely to make decisions that are in the best interests of shareholders (Hossain *et al.*, 2023). In this vein, Kang (2017) and Sheikh (2019) find that ownership of a large amount of stock among CEOs is positively related to corporate social performance.

They outlined that incentive-based compensation can enhance sustainable business practices (Adu *et al.*, 2022). If socially responsible activities influence a firm's value, CEOs owners will be motivated to engage in CSR, including environmental activities (Johnson and Greening, 1999).

More recently, Adu *et al.* (2023), who investigated the interrelationships among carbon performance and CEO compensation in a different setting (UK context), reach opposite results. In line with neo-institutional theory, they demonstrate that pay incentives can encourage corporate executives to increase their commitment towards carbon performance which can enhance corporate legitimacy and carbon emission-reduction.

However, another stream of research suggests that CEO equity-based compensation is negatively related to firm's environmental performance (Ongsakul *et al.*, 2019). For instance, Zou *et al.* (2015) find that top executives' equity ownership is negatively associated with the firm's environmental performance. Otherwise, top executives' ownership gives rise to detrimental environmental behaviors (violations or involvement in lawsuits).

They outlined that these results could be explained by the mixed institutional environment in China where the public is increasingly aware of firms' environmental misconduct, but regulators do not apply sufficiently rigorous sanctions for violations, nor do investors reward favorable environmental activities. Thus, executives may be hesitant to engage in environmentally friendly activities as

such investments may require significantly large expenditure despite uncertain financial rewards, at least in the short term. In a different context, USA, Shahrour *et al.* (2024) reached similar results. They examine how CEO ownership can influence corporate carbon commitment in S&P 500 companies. They find that higher CEO ownership is associated with a lower carbon commitment, indicating that CEOs with more significant ownership do not prioritize carbon emissions reduction.

Other studies affirmed the existence of any significant association between equity-based compensation and CEP (Elsayih *et al.*, 2021; Berrone and Gomez-Mejia, 2009). The CEO cash-based compensation, which is the sum of salary and bonus, is independent of the firm performance, less risky, and preferred by managers (Murphy, 1999). From an agency perspective, cash-based compensation can reinforce a short-term focus among executives, thereby reducing their willingness to allocate resources to environmental initiatives that yield benefits only over longer horizons.

In this vein, evidence from Chinese listed firms reported a significant negative correlation between CEO's cash compensation and corporate ESG greenwashing behavior (Li, Lin and Zhu, 2024). Consistent with the agency problem view, these authors find that firms engage in more severe ESG greenwashing behavior under a higher proportion of cash in the CEO compensation structure.

These findings confirm those of Merriman and Gupta (2006) carried out in a different context-U.S. firms. Their empirical evidence suggests that CEO compensation structures emphasizing short-term cash bonuses are negatively associated with corporate social performance, including environmental initiatives, while long-term incentives such as stock-options encourage eco-friendly activities.

Because total CEO compensation combines both short-term cash incentives and long-term equity incentives, its global impact on corporate environmental performance remains theoretically unclear.

Equity-based incentives motivate CEOs to adopt long-term sustainability initiatives, resulting in improved environmental performance since such incentives align managerial interests with shareholder value and promote long-term strategic decision-making. Nevertheless, since cash-based incentives emphasize short-term financial performance, they are more likely to discourage investments in environmental activities that provide long-term benefits.

Considering the above foregoing evidence, we formulate the following hypotheses:

H1: Total CEO compensation is significantly associated with CEP.

H1a: CEO equity-based is positively associated with CEP.

H2b: CEO cash-based compensation is negatively associated with CEP.

3. Research Method

3.1 Sample and Data

The basic sample contains the French listed companies in the SBF 250 from 2012 to 2022. Deletion of financial firms and those with missing data resulted in a final sample of 171 firms, which corresponds to 1881 firm-year observations. The 171 firms vary significantly in terms of size, industry, and financial standing.

To compute financial information, we used the database DataStream. Data concerning environmental performance derives from Thomson Reuters-ASSET 4. We collected CEO compensation data from ExecuComp database. The database includes details of CEO compensation such as salary, bonus, restricted stocks, stock options, pensions, and other annual compensation. Table 1 summarizes the sample selection procedure.

Table 1. Sample selection

Initial sample	250
Financial firms	(32)
Firms with missing data	(47)
Final sample	171
Observation period 2012-2022	11 ans
Number of observations	1881

Source: Own study.

3.2 Variables Measures

3.2.1 Dependent Variable

To measure our dependent variable, corporate environmental performance (CEP), we use the total score of the environmental performance pillar of the Thomson Reuters ASSET4 database. The environmental performance pillar measures a firm's impact on the environment by evaluating how well the firm avoids environmental risks and capitalizes on environmental opportunities on a percentage scale (Souguir *et al.*, 2024; Yarram and Adapa, 2021).

3.2.2 Independent Variables

The CEO total compensation (CEOC): Following Karim *et al.* (2018), and Kharabsheh *et al.* (2022), we calculated CEO total compensation as the sum of salary, bonus, total value of restricted stocks and stock-options, long-term incentive payouts, and all other compensation given for the fiscal year. In this study, we used the natural logarithm of CEO total compensation, consistent with Rekker *et al.* (2014) and Jian and Lee (2015).

The CEO cash-based compensation (CashComp) is measured by the sum of

salaries, bonuses and other cash compensation. This form of payment is independent of the firm's performance.

Equity-based compensation (EquityComp) is variable compensation, which depends of a Serie firm's performance measures. It is measured by the total value of stocks and stock options granted respectively during the fiscal year. This form of compensation provides substantial rewards to executives only if firm performance is outstanding.

Control variables: Based on the literature, we introduce four control variables that may affect corporate environmental performance. First, we control firm-specific characteristics such as firm size (Younis and Sundarakani, 2020), firm leverage (Mensah *et al.*, 2026). Second, because environmental performance can also be explained by a firm's governance (Dohrmann *et al.*, 2024; Alwadani, *et al.*, 2024; Kim *et al.*, 2023), we include the following control variables namely board size (BSIZE) measured as the number of directors in the boards and board independence (BIND) assessed as the proportion of independent directors in the boards. Table 2 provides the definition and measurement of our research variables.

Table 2. *Variables measures*

Variable	Acronym	Definition
<i>Dependent variable</i>		
Corporate environmental performance	CEP	The total score of the environmental performance pillar of the Thomson Reuters ASSET4 database.
<i>Independent variables</i>		
Total CEO compensation	CEOC	The sum of salary, bonus, total value of restricted stocks and stock options, long-term incentive payouts, and all other compensation given for the fiscal year.
Cash based compensation	CashComp	Total CEO Cash-based compensation divided by total CEO compensation
Equity based compensation	EquityComp	Total CEO equity-based compensation divided by total CEO compensation
<i>Control variables</i>		
Firm size	SIZE	Natural log of total assets
Firm leverage	LEV	Total debt divided by total assets
Board independence	BIND	Proportion of independent directors to total number of board directors
Board size	BSIZE	Total number of board of directors

Source: *Own study.*

3.3 Model Specification

We used a panel data regression to investigate the relation CEO compensation structure and CEP. We estimate the following equations:

$$CEP_{it} = \beta_0 + \beta_1 CEOC_{it} + \beta_2 \sum \beta_i Controls_{it} + \epsilon_{it} \quad (\text{Model 1})$$

$$CEP_{it} = \beta_0 + \beta_1 CashComp_{it} + \beta_2 \sum \beta_i Controls_{it} + \epsilon_{it} \quad (\text{Model 1.1})$$

$$CEP_{it} = \beta_0 + \beta_1 EquityComp_{it} + \beta_2 \sum \beta_i Controls_{it} + \epsilon_{it} \quad (\text{Model 1.2})$$

Where CEP: Corporate environmental performance; CEOC: CEO total compensation; CashComp: CEO cash-based compensation; EquityComp: CEO Equity-based compensation.

4. Empirical Results and Discussion

4.1 Descriptive Statistics

Table 3 provides descriptive statistics for the regression variables. The panel presents descriptive statistics for the entire sample, including the mean, minimum, maximum and standard deviation. The dependent variable, CEP, has a mean value of 52.271 and varies between 0 and 96.328, notably close to the study of Burkhardt *et al.* (2020) who reported a mean score of 54 (for a sample of firms from 86 firms from 2006 to 2017).

Regarding the key variable of CEO compensation, on average, CEOs were paid total executive compensation of about 14.771 million Euros. The lowest total compensation amount paid to a CEO is around 12.884 million Euros and the highest gross compensation is 17.341 million Euros, reflecting the big difference between the minimum and the maximum. It may be argued that this documented disparity between the sample executive total compensation may be related to the inherent firm sector specificity.

The average euro amount of equity-based compensation (EquityComp) (8.925 million euro) is much higher than that of cash-based compensation (CashComp) (2.738 million euro). Regarding control variables, Table 3 shows that the board size has an average value of 12.991 and it ranged between 4 and 24 with a standard deviation of 3.855 that shows a wide variety in board size among French firms.

The average of board independence is found to be 0.405 with the minimum and maximum values of 0 and 1, respectively; and the standard deviation is 0.231. Additionally, the meaning of the Firm size of the sample during the period under study was 12.892 with the lowest and highest values of 8.012 and 18.724, respectively.

The standard deviation statistic for the said variable is 2.756, suggesting that firm size among French companies varied. For Firm leverage, the mean value was 0.394 at a standard deviation of 0.891 with the minimum and maximum value of 0 and 19,486 respectively.

Table 3. Descriptive statistics

Variables	Mean	SD	Min	Max
CEP	52.271	29.548	0.000	96.328
CEOC (000€)	14.771	17.183	12.884	17.341
CashComp (000€)	2.738	2.958	4.007	2.899
EquityComp (000€)	8.925	10.260	4.875	10.377
SIZE	12.892	2.756	8.012	18.724
LEV	0.394	0.891	0.000	19.486
BSIZE	12.991	3.855	4	24
BIND	0.405	0.231	0	1

Notes: CEP: Corporate environmental performance; CashComp: Cash-based compensation; EquityComp: Equity-based compensation; SIZE: Firm size; LEV: Firm leverage; BSIZE: Board size; BIND: Board independence.

4.2 Correlation and Heteroscedasticity Analysis

Table 4 reports the correlations among the variables. As a rule of thumb, a correlation of 0.70 or higher in absolute value may cause multicollinearity between variables (Liu *et al.*, 2020). The highest correlation coefficient is 0.421 via the relationship between BSIZE and LEV. Multicollinearity is also checked by calculating the variance inflation factors (VIFs). The variance inflation factor (VIF) factors are weak (≤ 1.7). We can confirm the absence of multicollinearity between variables of our model (Chatterjee and Hadi, 2015).

Table 4. Pearson correlations

	CEOC	CashComp	EquityComp	SIZE	LEV	BSIZE	BIND	VIF
CEOC	1.000							1.3
CashComp	0.0952	1.000						1.7
EquityComp	0.312	0.070	1.000					1.11
SIZE	0.0961	0.026	0.419	1.000				1.24
LEV	-0.298	0.06	-0.078	-0.147	1.000			1.26
BSIZE	0.069	-0.24	0.12	0.356	0.421	1.000		1.25
BIND	0.211	-0.33	0.19	0.397	0.325	0.400	1.000	1.42

Notes: CEOC: CEO total compensation; CashComp: Cash based compensation; EquityComp: Equity based compensation; SIZE: Firm size; LEV: Firm leverage; BSIZE: Board size; BIND: Board independence; VIF is Variance inflation factor.

This study used the Hausman (1978) test to determine which estimation model, whether the fixed or random effects one, best explains our empirical results. The results of the Hausman specification test indicate that the fixed effects model is better than the random-effects model.

As presented in Table 5, the Fisher test proves to be significant at the 1% threshold for both models, confirming the individual fixed effects. To test the heteroscedasticity in our empirical models, the Breusch-Pagan test is conducted. Breusch-Pagan results show a probability lower than the 1% for the two models, attesting that the models are heteroscedastic.

Table 5. Regression results timated by the generalized least squares method (Wooldridge, 2003).

	CEP (Model 1)	CEP (Model 1.1)	CEP (Model 1.2)
Constant	0.312 (0.350) ***	0.232 (0.250) ***	0.445 (3.458) ***
CEOC	0.451 (0.320) ***		
CashComp		0.021 (2.38)	
EquityComp			2.210 (4.52) ***
SIZE	0.020 (0.025)	0.067 (0.125)	0.165 (0.225)
LEV	-0.032 (-0.022)	-0.130 (-0.135)	-0.211 (-0.088)
BSIZE	0.140 (1.58)*	0.08 (2.58)*	0.265 (3.458)*
BIND	0.158 (2.11)**	0.107 (2.28)**	0.223 (2.38)**
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Adj R ²	0.310	0.211	0.435
Fisher test:	15.84 (0.000)***	14.65 (0.000)***	15.23 (0.000)***
Hausman test:	16.4 (0.000)***	12.85 (0.000)***	13.88 (0.000)***
Sepecification test			
Wooldridge :	14.3 (0.000)***	11.67 (0.000)***	13.5 (0.000)***
Autocorrelation test			
BreushPaga test:	18.52 (0.000)***	15.34 (0.000)***	12.89 (0.000)***
Heteroscedastic test			
N-obs	1881	1881	1881

Notes: CEP: Corporate environmental performance; CEOC: CEO total compensation ; CashComp: Cash-based compensation; EquityComp: Equity-based compensation; SIZE: Firm size; LEV: Firm leverage; BSIZE: Board size; BIND: Board independence; ***significant at 1% level; **significant at 5% level; *significant at 10% level.

4.3 Multivariate Analyses

The aim of this study is to investigate the relationship between CEO compensation structure and corporate environmental performance. Table 5 provides evidence on the basic results.

4.3.1 Total CEO Compensation and CEP

Results as given in Table 5 (column 1) show a positive relationship between the total CEO compensation and CEP ($\beta_1 = 0.451$; $Z = 0.320$). This result is significant at the 1% level. In other words, the higher paid managers are more inclined to engage in eco-friendly activities. Otherwise, providing high total compensation can motivate CEOs to meet ambitious, long-term performance objectives including environmental sustainability goals.

This finding is consistent with a significant body of research supporting the view that higher CEO compensation boosts performance, aligns incentives with long-term

value, and encourages environmental investments (Benlemlih *et al.*, 2022; Haque and Ntim, 2020; Amin *et al.*, 2024). These studies revealed that compensation can be used as an incentive-based mechanism to encourage CEOs to be more inclined to undertake environmentally friendly initiatives (Bai and Meng, 2025; Zhou *et al.*, 2021; Abu-Ali *et al.*, 2024; Francoeur *et al.*, 2017; Li *et al.*, 2024; Phung *et al.*, 2023).

4.3.2 CEO Cash-Based Compensation and CEP

Results as reported in Table 5 (column 2) highlight a positive but not significant relationship between CashComp and CEP. This result implies that providing more cash incentives to CEOs does not necessarily motivate them to become more engaged in environmental initiatives.

This finding is in line with those reported previously by numerous authors (Haque, 2017), arguing that environmental criteria are rarely incorporated into compensation contracts (Cordeiro and Sarkis, 2008).

These authors argued that cash compensation (salary and bonus) often reflects short-term financial performance and not long-term ESG outcomes (Karim *et al.*, 2018; Kharabsheh *et al.*, 2022; Lenihan and Brennan, 2023).

4.3.3 CEO Equity-Based Compensation and CEP

As given in Table 5 (column 3), the equity-based compensation is positively and significantly ($\beta_2 = 2.21$; $Z = 4.52$) associated with corporate environmental performance. This result implies that providing equity incentives and compensation to CEOs can motivate them to become more engaged in eco-friendly activities.

These findings supported the agency theory hypothesis which states that providing equity to CEOs can limit agency problems by aligning their interests with those of shareholders (Kim *et al.*, 2023). Thus, CEOs will be more likely to make decisions that are in the best interests of shareholders (Hossain *et al.*, 2023).

This result is in line with those reported previously by numerous studies (Kang, 2017; Sheikh, 2019; Adu *et al.*, 2022; Adu *et al.*, 2023) that demonstrated that equity-based compensation can encourage managers to increase their commitment towards eco-friendly strategies. The equity based compensation aligns the CEOs interests with long-term firm value (Dah *et al.*, 2012; Gan *et al.*, 2020; Khanchel *et al.*, 2023; Lee *et al.*, 2011).

As for control variables, the estimated coefficients on BSIZE are positive and significant at the 10% level for the three models. Board size is positively associated with CEP. Our results contradict therefore with the agency theory orientation and the wide stance of literature, which attested that larger boards often suffer from inefficient decision-making, which is mainly due to coordination, communication and monitoring problems (Jensen, 1994).

By contrast, our findings are in line with resource dependence theory, which suggests that environmental performance is higher in firms that have larger boards (De Villiers *et al.*, 2011).

Large boards are likely to include more experienced and knowledgeable directors who possess better expertise in managing environmental issues. Larger boards are also more likely to be diverse and include directors with different skill sets (Ma *et al.*, 2023; Dalton *et al.*, 1999). As shown in Table 5, board independence is positively and significantly associated with CEP.

These findings are consistent with agency theory, which supports the importance of having outside directors in board composition to detect opportunist management behavior. This result confirms those of prior studies which concluded that a board with higher percentage of independent directors is more likely to objectively direct knowledge and expertise toward monitoring environmental performance and pursuing available environmental opportunities (De Villiers *et al.*, 2011, Johnson and Greening, 1999).

4.4 Additional Analyses

4.4.1 The Endogeneity Problem

Even though the expected relationship between CEO compensation and the CEP is confirmed by theoretical and empirical studies, the inverse relationship cannot be ignored. In the present study, the endogeneity problem arises when the dependent variable is influenced by factors that simultaneously influence the independent variables. We need, therefore, to address the endogeneity test. In our study, the endogeneity problem arises when the dependent variable is affected by factors that simultaneously affect the independent variables.

Following several previous empirical studies (Dakhli and Houcine, 2025), we introduce lagged independent variables to mitigate the potential effect of endogeneity. For this purpose, we re-examine our main analysis by regressing the one-year lagged value of all independent and control variables on the dependent variable (CEP). The results, as reported in Table 6, confirm the main findings. The hypothetical relationships remain significant in the same direction, implying that the reverse causality is not a problem in this study.

4.4.2 The Impact of Paris Climate Agreement Adoption

This study aims to enrich the existing literature by examining whether the adoption of the Paris Climate Agreement (2015) has affected the correlation between environmental performance and tax avoidance. Thus, we re-estimated Model 3 considering the Paris Agreement as a significant event likely to influence the level of tax evasion. To do so, we created two subgroups based on two periods (before and after 2015).

Table 6. Regressions result of the study models using one-year lagged value

	CEP (Model 1)	CEP (Model 1.1)	CEP (Model 1.2)
Constant	0.132 (0.345)***	0.331 (0.320)**	0.246 (3.258)***
CEOC _{t-1}	0.511 (0.230)***		
CashComp _{t-1}		0.251 (3.19)	
EquityComp _{t-1}			2.320 (4.10)***
SIZE _{t-1}	0.125 (0.055)	0.125 (0.435)	0.095 (0.125)
LEV _{t-1}	-0.132 (-0.122)	-0.220 (-0.335)	-0.265 (-0.179)
BSIZE _{t-1}	0.230 (1.32)**	0.095 (2.63)**	0.165 (3.338)**
BIND _{t-1}	0.311 (2.31)*	0.105 (3.18)**	0.225 (3.28)**
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Adj R ²	0.340	0.285	0.425
N-obs	1881	1881	1881

Note: Own study.

The results reported in Table 7 shows that the positive relationships between CEO total compensation, CEO equity-based compensation and corporate environmental performance are stronger after the adoption of the Paris Agreement.

This is because the agreement increased the financial materiality of environmental issues and reinforced stakeholder and regulatory pressures, making sustainability outcomes more closely linked to firm value. CEO equity-based compensation is inherently aligned with long-term firm value and is therefore more conducive to promoting environmental performance (Chen Zhu *et al.*, 2024; Dong Chen *et al.*, 2024).

Moreover, the growing integration of ESG criteria into compensation structures enhances the effectiveness of long-term, equity-based incentives in aligning managerial actions with sustainability objectives (Tengteng Ding *et al.*, 2025), thereby amplifying the impacts of total compensation and equity-based compensation on environmental performance in the post-Paris period.

This is because this agreement has increased the financial weight of environmental issues and intensified stakeholder and regulatory pressure, making sustainability performance more closely linked to firm's value (Chen Zhu *et al.*, 2024; Dong Chen *et al.*, 2024). Furthermore, the growing integration of ESG metrics into compensation structures enhances the effectiveness of equity-based incentives to align executive behavior with sustainability goals (Tengteng Ding *et al.*, 2025), thereby amplifying the effects of total compensation and equity-based compensation on environmental performance in the post-Paris period.

However, the relationship between CEO cash-based compensation and corporate environmental performance remains insignificant. Cash based-compensation is

generally linked to short-term financial performance and accounting-based objectives, which have limited impact on executive behavior (Cohen *et al.*, 2023). Consequently, cash-based compensation remains largely ineffective as an incentive to improve companies' environmental performance.

Table 7. *Pre and post Paris agreement adoption*

	<i>Pre-Paris agreement adoption</i>			<i>Post-Paris agreement adoption</i>		
	CEP Model	CEP Model 2	CEP Model 3	CEP Model 1	CEP Model 2	CEP Model 3
Constant	0.159*** (2.10)	0.331* (0.251)	0.442** (3.322)	0.177*** (2.10)		
CEOC	0.311*** (3.40)			0.482*** (3.10)		
CashComp		0.085 (2.45)			0.185 (3.11)	
EquityComp			2.120*** (4.32)			3.265*** (4.65)
SIZE	0.157 (0.025)	0.055 (0.165)	0.210 (0.335)	0.27 (0.215)	0.125 (0.265)	0.219 (0.55)
LEV	-0.154 (-0.405)	-0.089 (-0.255)	-0.188 (-0.085)	-0.145 (-0.35)	-0.079 (-0.15)	-0.108 (-0.055)
BSIZE	0.135 (1.40) *	0.079 (2.42) *	0.320 (3.255) *	0.225 (2.40) *	0.175 (2.24) *	0.395 (3.365) *
BIND	0.147 (2.01) **	0.205 (3.18)**	0.321 (3.35) **	0.107 (1.01) *	0.36 (3.08)**	0.345 (3.45)**
Adj R2	0.220	0.210	0.395	0.360	0.265	0.455
N-obs	1881	1881	1881	1881	1881	1881

Note: Own study.

5. Conclusion

This study aimed to empirically examine how CEO compensation structure affects corporate environmental performance. To do so, we used a panel of 171 French-listed firms from 2012-2022 period. After controlling firm-level characteristics and board attributes, we find that CEO total compensation is significantly and positively associated with CEP, implying that highest-paid CEOs are more inclined to engage in eco-friendly activities.

Results, also, show that CEO cash-based compensation is not associated with CEP. However, CEO equity-based compensation is positively and significantly associated with firm's environmental performance. These results imply that providing equity-based compensation to CEOs could motivate them to become more engaged in socially and environmental activities.

Our study contributes to the literature discussions in several ways. First, it adds to the previous literature that suggests that CEO compensation may be meaningful

drivers of CEP. A literature that is certainly extensive (Bai and Meng, 2025; Zhou *et al.*, 2021; Abu-Ali *et al.*, 2024, Francoeur *et al.*, 2017; Li *et al.*, 2024; Benlemlih *et al.*, 2022; Haque and Ntim, 2020) but often providing mixed and inconclusive results (Amin *et al.*, 2024).

Hence, this research provides additional evidence in this area. Second, this study examines not only the total CEO compensation but also each of its constituting components, namely cash-based and equity-based compensation. Existing studies in this area focus primarily on the total package, but the effect of different components has been rarely investigated.

By performing the effect of specific CEO compensation components on CEP performance, we provide, thus, a more detailed picture. Our results have also practical implications that may be useful to company policymakers and regulators regarding enhancing engagement in CSR activities.

Our evidence confirm the agency perspective by showing that CEOs' incentives have a significant effect on strategic decisions. It also shed additional light on this line of research by examining the impact on CSR. Therefore, in establishing CSR strategy, attention should be paid to hiring, developing and compensating CEOs since these will affect the level of the firm's social engagement.

Despite these contributions, this study has some limitations that could be addressed in future research studies. One limitation is the specific nature of the sample considered, i.e. companies listed on the SFB 250, leaving the results difficult to generalize.

Thus, future research could extend the population of this study by considering all the French listed firms including the financial companies and make comparisons across sector results. Future research also could look at individual dimensions of CEP (emission reduction, resource reduction and product innovation) in addition to aggregated measures by investigating how the CEO compensation structures impact these dimensions. This could provide a more in-depth understanding of the CEO's compensation-CEP association.

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