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ORIGINAL ARTICLE

Do CEO characteristics influence corporate carbon disclosure and performance? A status quo of prior studies and research recommendations

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Abstract
The aim of our study was to analyze the impact of CEO characteristics on corporate carbon disclosure and performance. A structured literature review of empirical quantitative studies on how CEOs impact carbon disclosure and performance was conducted. Based on the upper echelons theory, three dimensions (demographic, psychological, and incentives) were identified. CEO demographic characteristics, with a focus on CEO duality, have primarily been used in previous studies. Research results regarding CEO attributes to stress major tendencies are inconclusive. Based on the literature review, we highlight the major research gaps and useful recommendations for future research, such as including CEO climate skills and board-related moderator analyses. Moreover, we emphasize the need to recognize climate-related compensation schemes as CEO incentives. Automated textual analyses of corporate governance and climate disclosure can increase the validity of future research. This paper presents the first literature review on the link between CEOs and carbon outputs. The different variables used in previous research, major research gaps, and useful recommendations for future research, business practice, and regulators are outlined.

Keywords CEO · Carbon performance · Carbon disclosure · Corporate governance · Upper echelons theory · CEO duality

Introduction

Research into the impact of top management attributes on sustainability disclosure and performance has increased in recent years (e.g., Bhaskar et al. 2023; Setiawan et al. 2024), with a particular focus on how chief executive officers (CEOs) affect corporate sustainability efforts, strategies and processes (Mahran and Elamer 2024). In this paper, we differentiate between three major categories of CEO characteristics based on prior studies (e.g., Mahran and Elamer 2024): *demographic* dimensions, such as gender and tenure, *psychological* attributes, such as overconfidence, and CEO *incentives*, such as compensation.

Since the financial crisis of 2008–2009, the impact of CEO attributes on corporate environmental outputs with heterogenous results has been increasingly researched, with heterogeneous results (e.g., Chen et al. 2024; Khuong et al. 2024). We focused on *carbon disclosure and performance* in our study, as these are the most prominent environmental subpillars from a global perspective (Velte et al. 2020). Carbon performance indicates the quantitative emissions of climate-changing greenhouse gases in the air and measures and processes in place for emission reduction (Hoffmann and Busch, 2008). Carbon disclosure refers to the provision of regular information on carbon performance, strategies, and outlooks to internal and external stakeholders. Carbon disclosure is usually a part of environmental or CSR reports (Velte et al. 2020). It may be mandatory because of climate regulations, or voluntary. For instance, firms may participate in the Carbon Disclosure Project (CDP) and thereby disclose key information about their carbon issues to attract stakeholders. Recent years have seen a shift from voluntary to mandatory carbon disclosure due to increased regulatory

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initiatives, by the International Sustainability Standards Board (ISSB), the US-American Securities and Exchange Commission (SEC), and the EU-Commission.

Studies on how CEOs influence climate issues have rapidly grown in recent years, stressing the need for a literature review. Accordingly, we identified one meta-analysis on CEOs' impact on CSR (Bhaskar et al. 2023) and four literature reviews on the relationship between CEOs and CSR (Velte, 2020), environmental issues (Mahran and Elamer 2024), and the link between CEO psychological aspects and CSR (Aguirre-Pérez and Garcia-Sanchez 2025; Garcia-Sanchez et al. 2025). We describe their major results and justify the approach and novelty of our review. Bhaskar et al. (2023) found that firms may enhance their CSR practices through CEO compensation, demographics and cognitive characteristics. Since meta-analyses and literature reviews are different research methods, with rather low comparability, we focused only on the results of prior literature reviews. Velte (2020) stressed the focus on prior empirical research on the link between CEO incentives and CSR, especially CSR performance. According to Mahran and Elamer (2024), most studies have addressed the influence of CEO demographic attributes on environmental performance but have neglected CEO psychological traits. Aguirre-Pérez and Garcia-Sanchez (2025) and Garcia-Sanchez et al. (2025) looked into the impact of socio-psychological CEO attributes on CSR and highlighted an increased recognition of CEO narcissism. However, the impact of CEO narcissism on CSR remains inconclusive.

We contribute to prior literature reviews as follows: CSR practices are heterogeneous in nature, leading to low comparability between them. This relates to the differentiation between social and environmental aspects and specific subpillars of corporate environmental and social practices. Studies have largely neglected the impact of CEOs on the social pillar of CSR, and environmental research has focused on climate activities due to the increased stakeholder and regulatory pressure (Amran et al. 2014). Although the climate dimension of corporate sustainability is relevant, the different CSR attributes (Velte, 2020; Aguirre-Pérez and Garcia-Sanchez 2025; Garcia-Sanchez et al. 2025) and specific environmental subpillars (Mahran and Elamer 2024) have not been distinguished in prior reviews. Thus, our literature review was aimed at extending prior research and guiding researchers toward understanding the link between CEOs and carbon outputs. Our study was based on the upper echelons theory (Hambrick and Mason 1984), the most important theoretical framework in CEO research (Bhaskar et al. 2023; Velte, 2020; Mahran and Elamer 2024), according to which CEOs may positively or negatively contribute to the extent of carbon disclosure and performance. We specifically focused on CEO attributes and corporate carbon variables in our literature review, considering their broad variety. Our results thus provide novel insights into whether certain CEO attributes affect corporate decisions. Based on previous research (Mahran and Elamer 2024) we differentiated between CEOs' demographic, psychological, and incentive-based characteristics and formulated the following research questions (RQs):

RQ 1 Which demographic characteristics of CEOs (e.g., gender, duality, and tenure) impact corporate carbon disclosure and performance?

RQ 2 Which psychological characteristics of CEOs (e.g., overconfidence and ethical values) influence corporate carbon outputs?

RQ 3 Do CEOs' incentives (e.g., power and compensation) impact corporate carbon disclosure and performance?

Our structured literature review revealed that most studies have recognized *demographic* CEO attributes, specifically CEO duality (RQ 1), but the impact of CEO duality on corporate carbon outputs is inconclusive, indicating a potential symbolic or substantive use of carbon issues; this is in line with the upper echelons theory and is a major highlight of our review. The findings also showed that the potential for powerful CEOs to exert increased influence on corporate strategies and processes can lead to increased or decreased carbon outputs, depending on their individual motivation for climate transformation. In sum, the validity of demographic CEO factors is limited, and psychological attributes and incentives are of major importance in this context (see Mahran and Elamer 2024; based on environmental dimensions). However, the number of prior studies on psychological characteristics (RQ 2) and incentives (RQ 3) is low, so we could not clearly identify the tendencies of relevant drivers of carbon outputs. We identified significant research gaps and restrictions in prior studies, based on which we provide recommendations for future research into CEOs' influence on carbon performance and disclosure. Among others, researchers should analyze, in detail, the interplay between CEO characteristics and other board attributes in relation to climate efforts. Psychological characteristics should be included further to determine which behavioral attributes may promote successful corporate carbon transformation and reduce the risk of "business as usual" strategies.

Summary of prior literature reviews on the upper echelons theory and CEO characteristics

Upper echelons theory

The upper echelons theory is the most prominent theoretical framework in empirical research on CEOs (Hambrick and Mason 1984). Prior literature reviews have recognized several aspects, such as social, behavioral, and cognitive influences on upper echelons during strategy processes (Bromiley and Rau 2016), the external environment in upper echelons theory (Yamak et al. 2014), antecedents, elements, and consequences of top management team composition in the upper echelons context (Carpenter et al., 2006), finance managers in family firms (Hiebl 2017), the use of upper echelons theory in management accounting and control research (Hiebl 2014), the integration of stakeholders in upper echelons theory (Recendes et al. 2024), a bibliometric analysis (White and Borgholthaus 2022) and metacritiques of the upper echelons theory (Neely et al. 2020). The upper echelons theory is explained in detail in the next section.

CEO characteristics

Multiple attributes and economic relationships identified in empirical CEO research have been summarized in previous literature reviews. These have focused on CEO duality (Krause et al. 2014), CEO succession (Berns and Klarner 2017), CEO religiosity (Heubeck 2024), CEO activism (Rumstadt and Kanbach 2022), CEO wrongdoing (Schnatterly et al. 2018), sustainable CEO compensation (Winschel and Stawinoga 2019), the configurational perspective on CEOs (Busenbark et al. 2016), the impact of CEOs on corporate decision-making (Bonsu et al. 2024), banks' risk-taking (Hertrampf et al. 2025), and financial misconduct (Pandeny et al., 2025), and the link between CEO power and corporate strategies (Brahma and Economou 2024).

More related to our research question, in line with the mentioned literature reviews on the relationship between CEOs and CSR (Velte, 2020), environmental issues (Mahran and Elamer 2024), and the link between CEO psychological aspects and CSR (Aguirre-Pérez and Garcia-Sanchez 2025; Garcia-Sanchez et al. 2025), prior work addressed the impact of the CEO/CFO on financial reporting (quality) (Habib and Hossain 2013; Plöckinger et al. 2016) and financial performance (Shen 2021), and the link between CEO duality and firm performance (Yu 2023). Habib and Hossain (2013) focused on the effects of CEO/CFO turnover, managerial overconfidence and gender on reporting outcomes. Plöckinger et al. (2016) stressed that CEOs exert significance influence on financial reporting decisions, particularly disclosure quality. However, the findings related to the influence of demographic attributes are contradictory. Yu (2023) reported that the mixed findings on the relationship between CEO duality and firm performance are because of differences in firm performance measures, research designs, sampling practices and approaches to dealing with endogeneity issues.

Upper echelons theory

As already stated, the upper echelons theory (Hambrick and Mason 1984) has been dominantly used in empirical CEO research. Consequently, we relied on this theory for our literature review. The upper echelons theory assumes that corporate carbon strategies and performance reflect the powerful values and cognitive biases of top management teams (Hambrick and Mason 1984). The CEO is usually the most powerful actor within an organization and, due to the complexity of a company's situation and corresponding strategic decisions, the behavior of the CEO may be characterized as bounded rational. The upper echelons theory assumes that the upper echelons characteristics of the CEO reflect the situation that the organization is facing (Hambrick and Mason 1984). Psychological factors, such as cognitive values, as well as demographic characteristics, such as age, education and gender (Hambrick and Mason 1984) and changing executive job demands (Hambrick 2007) are crucial. These upper echelon attributes act as major drivers of strategic choices and achievements in carbon management (Hambrick and Mason 1984).

Based on the upper echelons theory, we assumed that the influence of CEOs within top management teams and firms on carbon disclosure and performance is intensive. We also assumed that not group-related determinants within the board of directors, but the central role of a CEO is a crucial factor in corporate carbon management changes (Hambrick 2007). However, the upper echelons theory does not provide a specific direction for the link between CEOs and carbon outputs. On the one hand, CEOs may neglect carbon activities or only include carbon aspects symbolically for self-impression management because of their traditional focus on financial performance (Velte 2025). CEOs' experience with climate issues tends to be rather low compared to financial topics (Caby et al. 2024; Bedi and Singh 2024). This leads to non-positive impacts of CEO attributes on carbon disclosure and performance. To overcome these negative CEO influences, the voluntary inclusion of a chief sustainability officer (CSO) has gained importance in business practice and research (e.g., Velte et al. 2020). CSOs tend to contribute positively to CSR performance and disclosure (Velte et al. 2020).), which also relates to their

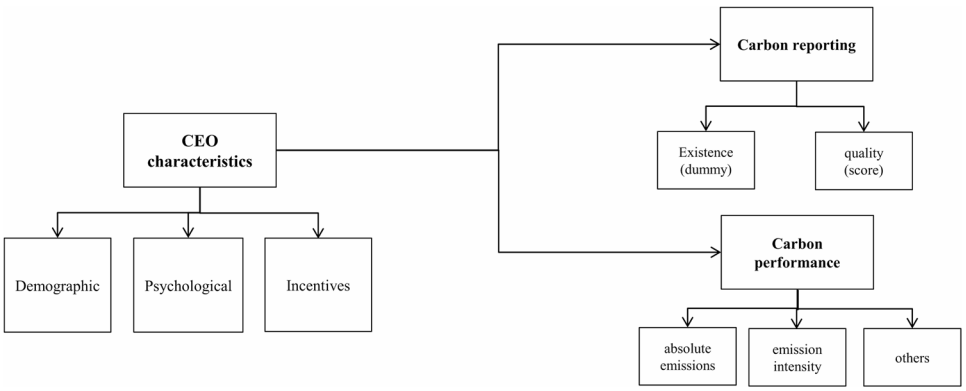

Fig. 1 Research framework on the impact of CEOs on carbon performance & reporting

Table 1 Overview of CEO and carbon proxies

CEO variables (independent variables)	Carbon disclosure & performance measures (dependent variables)
(1) CEO demographic characteristics	(1) Carbon performance
• Appointment of a CEO parenting a daughter who replaces a CEO parenting only sons	• emissions scope 1 and 2
• CSR responsibility	• emissions scope 1–3
• Duality	• emissions scope 1, 2, or 3
• Education	• total emissions
• Exposure to global warming	• total emission intensity
• Family member	• scope 1,2 emission intensity
• Foreign	• reduction initiatives as symbolic use; total emissions as substantive use
• Gender	• Symbolic as process-oriented level of engagement in climate protection initiatives versus substantive as actual total emissions
• General ability	
• Social network centrality	
• Tenure	
(2) CEO psychological characteristics	(2) Carbon disclosure
• Ethical orientation	• CDP participation (dummy)
• Overconfidence	• CDP quality score
• Prevention focus	• Disclosure on emission scope 1, 2, or total (dummy)
(3) CEO incentives	• Disclosure on emission reduction target (dummy)
• Compensation (total; salary; long-term; climate-related; ownership)	• Disclosure on SDG 13 climate action reliance (dummy)
• Insider debt holding	• Self-created quality score
• Power	• Bloomberg quality score

impact on environmental issues (Toukabri 2024). On the other hand, CEOs are increasingly sensitive to climate strategies and management processes because of regulatory and stakeholder pressure. Considering the significant impact on corporate strategies, CEOs may include climate issues for substantive carbon transformation processes, which would, in turn, lead to increased levels of carbon disclosure and performance.

Research framework

Figure 1 summarizes the research framework, and Table 1 presents a list of CEO and carbon variables. We categorized the CEO characteristics as demographic, psychological and incentive-based factors, in line with prior reviews (Mahran and Elamer 2024). The demographic characteristics included gender, nationality, education, duality, and tenure. The psychological characteristics covered CEO values, such as ethical orientation or overconfidence levels. The CEO incentives compromised compensation schemes and other financial interests. We also included CEO power in this category, because it is often measured using compensation attributes.

Carbon outputs were distinguished as carbon performance or carbon disclosure, in line with prior studies (e.g., Velte et al. 2020). Carbon performance mainly involved absolute and relative emissions (intensity) (Haque and Ntim 2018), and a heterogenous range of carbon performance measures, such as scope 1, 2, and/or 3 carbon emissions, is used. Carbon disclosure was determined based on the existence (dummy variable) and quality (score) of carbon information (Khuong et al. 2024). Most of the studies included in this literature review relied on the CDP database and paid heed to whether firms voluntarily participated in the CDP (e.g., Caby et al. 2024). The quality scores given in the CDP database were often used (e.g., Mardini and Lahyani 2024). A few researchers also created individual disclosure scores, based on content analyses of carbon disclosure (e.g., Abbas et al. 2023) or used other external databases (e.g., Bloomberg). Analyses of topics, such as Sustainable Development Goal (SDG) 13 or emission reduction targets were also found (e.g., Taglialatela et al. 2023).

Content analysis

Empirical research on CEOs' influence on carbon outputs has involved various datasets, study designs, theoretical foundations, and analytical models. To add to this research area, we identified heterogenous variables and performed a narrative analysis. In contrast to meta-analyses of CEO studies (Bhaskar et al. 2023), we focused on the restrictions of previous archival research. Our study guides researchers, as we include explicit recommendations for future studies on that topic. The CEO variables included in this review were too heterogeneous for a meta-analysis, which is only useful for addressing a specific econometric relationship, such as the impact of CEO duality on carbon outputs. Bhaskar et al. (2023) presented a meta-analysis on the impact of CEOs on total CSR measures. We also identified two literature reviews with a similar approach. Velte (2020) studied the impact of CEOs on CSR and Mahran and Elamer (2024) concentrated on the link between CEOs and environmental issues. However, prior research has not involved a clear focus on carbon aspects. Considering the non-comparability of social and environmental attributes and specific environmental subpillars, we deemed it necessary to focus on climate disclosure and performance in this literature review.

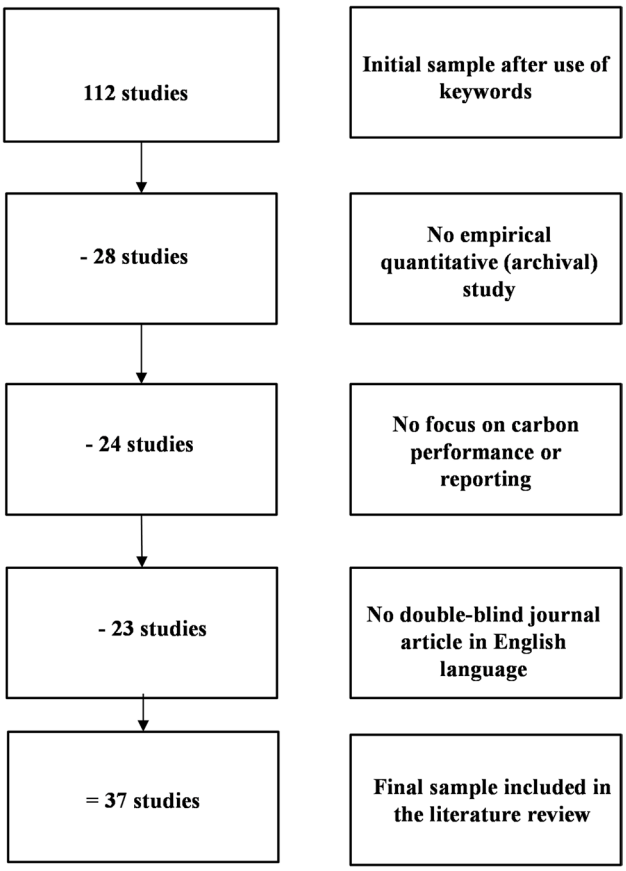

Fig. 2 Flowchart of the sample selection process

This literature review was based on established processes (Denyer and Transfield, 2009). In developing our research objective, we focused on the impact of CEOs on carbon performance and disclosure, with an emphasis on the significant research gaps and limitations in prior studies. We then identified the main theories and specific terms for a literature search on two prominent databases: EBSCO Business Source Complete and the Web of Science. We used asterisks to capture related terms and included relevant keywords in our search string ("CEO" in connection with "carbon performance," "carbon emissions," carbon disclosure," "carbon disclosure," "climate disclosure," "climate disclosure," and related terms). We then established the exclusion and inclusion criteria. Our initial sample consisted of 112 studies, focusing on archival research as the most prominent research method. This allowed for a high level of comparability between the studies included. We excluded 28 analytical, experimental, qualitative, and conceptual papers as well as 24 studies unrelated to carbon performance and disclosure. We did not set a temporal limit. For quality reasons, we focused on studies published in double-blind reviewed international journals in the English language. This resulted in the exclusion of 23 studies and a final sample of 37 studies. While the sample selection process was conducted by one researcher, the process was double-checked by another researcher from the team to increase validity. Figure 2 illustrates the selection process for the included studies.

We then performed a precursory analysis. The titles of the articles were scanned to determine which abstracts to read. We did not further consider any articles that matched our exclusion criteria. The theory and methodology sections of the remaining articles were scanned.

The final studies were coded according to the selected CEO categories and whether they involved carbon performance or disclosure, based on our research framework. Significant findings and their indicators were counted based on the vote counting technique (Light and Smith 1971), and the positive coefficients (+), significant negative coefficients (-), and insignificant results (+/-) were recorded. Table 2 presents the year of publication (Panel A), region (Panel B), journal (Panel C), carbon variables (Panel D), and endogeneity checks (Panel E) for the studies included in the review. The relationship between CEOs and carbon outputs constitutes a rather young field of research, with the first study published in 2010. The number of studies grew significantly in 2023 and 2024, with 9 and 12 studies, respectively (Panel A). Both developed and developing countries have been included, and cross-country settings are common (16 studies; Panel B). Panel C highlights the diverse journal publication outlets in accounting, finance, corporate governance, management, and sustainability journals. *Business Strategy and the Environment* (7 studies) was

Table 2 Count of cited published papers

Panel A: by publication year	
Total: 37	• 2024: 12 • 2023: 9 • 2022: 4 • 2021: 2 • 2020: 2 • 2018: 2 • 2017: 2 • 2014: 3 • 2010: 1
Panel B: by region	
Total: 37	• Cross-country: 16 • Australia: 1 • China: 3 • France: 1 • Germany: 1 • India: 2 • Indonesia: 1 • South Korea: 1 • Taiwan: 1 • UK: 4 • USA: 5 • Vietnam: 1
Panel C: by journal	
Total: 37	Finance & Accounting Journals (9): • Cogent Economics & Finance: 1 • Economics Letters: 1 • International Review of Economics and Finance: 2 • Journal of Banking & Finance: 1 • Journal of Economic Behavior and Organization: 1 • Journal of International Financial Markets, Institutions & Money: 1 • North American Journal of Economics and Finance: 1 • Studies in Economics and Finance: 1 Management, economics, and sustainability journals (28): • Business Ethics, the Environment & Responsibility: 1 • Business Strategy and the Environment: 7 • Corporate Governance: 2 • Corporate Social Responsibility and Environmental Management: 3 • International Journal of Disclosure and Governance: 1 • International Journal of Law and Management: 1 • Journal of Business Ethics: 4 • Journal of Cleaner Production: 1 • Journal of Environmental Management: 2 • Social Responsibility Journal: 2 • Strategic Management Journal: 1 • Sustainable Development: 1 • Technological Forecasting & Social Change: 2
Panel D: by carbon variable	
Total: 41*	• disclosure: 21 • performance: 19
Panel E: by endogeneity checks (e.g., propensity score matching (PSM), difference-in-difference-approach, generalized method of moments (GMM))	
Total: 37	• Yes: 19 • No: 18

*many studies include more than one variable

the most prominent journal included. There was a rather balanced inclusion of carbon performance (19 studies) and carbon disclosure studies (21 studies; Panel D). Panel E presents the regression models used in the studies. The link between CEOs and carbon outputs was related to massive endogeneity concerns based on omitted variable bias and reverse causality. Without properly addressing endogeneity concerns, researchers have only measured correlations instead of causality. Advanced regression methods should be used to decrease the risk of endogeneity, such as the two-stage least squares method in using instrumental variables (2SLS/IV), the generalized method of moments (GMM), propensity score matching (PSM), the Heckman two-stage approach, and structural equation modeling or three-stage least squares (3SLS). The validity of some research results is questionable, as 18 studies did not include even one of these proper endogeneity checks.

Results

CEOs' demographic characteristics

Most of the studies in this literature review analyzed the influence of CEOs' demographic characteristics on corporate carbon outputs. *CEO duality* was the most prominent dimension, and the results were heterogenous. Some studies showed that CEO duality increases carbon *performance* (Oyewo 2023; Haque and Ntim 2018), and negative relationships (Goud 2022; Lu and Wang 2021) and non-significant results (Cordova et al. 2021; Garcia Martin and Herrero 2020) were also stated. Carbon-intensive industries were not found to have a moderator effect (Oyewo 2023). Haque and Ntim (2018) found a positive impact of CEO duality on carbon reduction initiatives (symbolic measures) and no impact on total emissions (substantive measures). The UK's climate change act was shown to positively moderate this relationship.

Other studies relied on carbon *disclosure* (quality), with the results showing a positive (Prado-Lorenzo and Garcia-Sanchez 2010), a negative (Khuong et al. 2024; Abbas et al. 2023; Amran et al. 2014) or an insignificant influence of CEO duality (Bedi and Singh 2024; Mardini and Lahyani 2024; Gold and Taib 2023; Taglialatela et al. 2023; Cordova et al. 2021; Hossain et al. 2017; Jizi 2017). Moderator analyses showed that earnings management strengthens the negative impact of CEO duality on carbon disclosure quality (Khuong et al. 2024). Further, it was found that firm innovation does not moderate the link between CEO duality and carbon disclosure quality (Mardini and Lahyani 2024).

The relationship between *CEO gender* and carbon disclosure was inconclusive, as positive (Caby et al. 2024) and insignificant links (Caby et al. 2020) were found in the studies reviewed. A *family CEO* does not significantly impact carbon performance (Qosasi et al. 2022) and carbon disclosure (Terlaak et al. 2018). Other studies have shown that *CEO tenure* (Lewis et al. 2014), an *MBA education* (Lewis et al. 2014) and a *CSO position* (Peters and Romi, 2014) have positive impacts on carbon disclosure, whereas *foreign CEOs* (Setiawan et al. 2024) and CEOs with CSR responsibility (Gebhardt and Schneider 2024) have no impact. Finally, some findings indicate that *social network centrality* (Li et al. 2023), *exposure to global warming* (Garel and Petit-Romec 2022), and *CEO appointment parenting a daughter* who replaces a CEO parenting only sons (Homroy 2023) can improve carbon performance. Negative media coverage has been shown to strengthen the positive impact of CEOs' social networks on carbon performance (Li et al. 2023). However, *CEOs' general ability* and carbon performance have been found to be negatively related (Hossain et al. 2023b), with poor environmental disclosure, market competition, and short-term institutional ownership positively moderating this relationship.

CEO psychological characteristics

Only four studies have addressed the impact of CEOs' *psychological* characteristics on carbon outputs. According to Chen et al. (2024), the *ethical orientation* of a CEO improves carbon performance but has an insignificant impact on carbon disclosure, and this link is moderated by membership in the financial industry. Furthermore, *overconfidence* may increase (Kwabi et al. 2024) or decrease (Guo et al. 2024) carbon performance. The findings showed that financial leverage does not moderate this link (Guo et al. 2024), while board gender diversity strengthens the positive link between CEO overconfidence and carbon performance (Kwabi et al. 2024). The *prevention focus* of a CEO leads to increased carbon performance levels, whereas industry volatility weakens this link (Wagner and Fischer-Kreer 2024).

CEO incentives

We know little about the impact of CEO *incentives* on carbon outputs (6 studies). However, *CEO power* (Luong et al. 2024), *long-term*, *salary*, *and total compensation* (Adu et al., 2022; Bose et al. 2023) were found to be positively related to carbon performance. Internal control systems strengthen the positive impact of CEO power on carbon performance, whereas carbon-intensive industries and extreme weather situations are unrelated (Luong et al. 2024). Bose et al. (2023) reported that total compensation has a positive impact on carbon disclosure. Individual and societal culture, countries with emission trading schemes, and firms based

in the US strengthen this relationship, but environmentally sensitive industries do not (Bose et al. 2023). In contrast, *CEO ownership* (Shahrour et al. 2024), *insider debt holding* (Hossain et al. 2023a), and the degree of *pensions* (Adu et al., 2022) decrease carbon performance. Shahrour et al. (2024) reported a u-shaped link, assuming an optimal level of CEO ownership in promoting carbon efforts. Further, CSR performance, CEO power, agency intensity and competitive markets were found to positively moderate the negative impact of CEO risk aversion on carbon performance (Hossain et al. 2023a).

Summary of results

Table 3 summarizes the positive, negative, and insignificant links between CEO characteristics (demographic, psychological, and incentives), carbon performance and carbon disclosure.

Most studies have focused on the *demographic* variables of CEOs, especially *CEO duality*, but with a balanced recognition of carbon performance and carbon reporting. Prior studies on specific CEO demographic dimensions have come to inconclusive results (such as CEO duality; RQ 1) or the number of studies on psychological CEO attributes and CEO incentives is too low to identify any clear trends (RQ 2 and 3). These inconclusive results are in line with the upper echelons theory, according to which CEOs may have a positive or negative impact on corporate carbon outputs. The influence of CEOs on business strategies was determined to be high, but board characteristics did not serve as a moderator, with a few exceptions (Kwabi et al. 2024). We assume that the interplay between CEOs and other board dimensions has a significant impact on carbon performance and reporting.

Table 4 includes a list of all the studies included in the literature review.

In the following section, we present the major gaps in prior research, along with some recommendations for future research.

Limitations and research recommendations

While we stress an increased awareness of empirical research on the impact of CEOs on carbon outputs, there are many research gaps to consider. Regarding *demographic characteristics* (RQ 1), most of the studies included in the literature review recognized *CEO duality*. CEO duality is a rather vague proxy for the analysis of CEOs' potential carbon-related motivations. There needs to be more emphasis on environmental education and CEOs' expertise to directly connect climate skills and climate outputs (Lewis et al. 2014). More specifically, future studies should involve content analyses of the CVs of CEOs to measure the degree of their environmental skills with a focus on climate knowledge. As the traditional education profile of a CEO is related to business and management studies, future research on CEOs' educational level could consider whether any climate-related topics were present in their former studies (Lewis et al. 2014). Analyses at the level of practical environmental expertise may look into whether CEOs had prior experiences with climate-related management positions or at least positions in carbon-intensive industries. Research on foreign CEOs should take into consideration the cultural and environmental issues in their specific hometowns to gain an in-depth understanding of the CEOs' climate orientations. The World Values Survey (WVS) or country-related environmental performance ratings may be used to gain knowledge of country-related impacts on CEOs' behaviors toward climate change.

Regarding *psychological characteristics* (RQ 2), we know very little about the relationship between CEO overconfidence and narcissism on environmental outputs (Mahran and Elamer 2024). The inconclusive results on broader CSR measures indicate that future studies should look into a potential non-linear relationship between behavioral CEO aspects and climate outputs (Shahrour et al. 2024). It is possible that an optimal level of CEO overconfidence and narcissism may lead to a positive impact on carbon disclosure and performance.

We also identified major research gaps in relation to *CEO incentives* (RQ 3). Based on the findings, we encourage researchers to study the impact of *climate-related CEO compensation* on corporate carbon outputs. While we highlighted the presence of increased research activity on the impact of sustainability-related management on CSR outputs (Winschel and Stawinoga 2019), a focus on climate-related targets in compensation schemes and their impact on carbon disclosure and performance is needed. In line with the pay-for-performance-sensitivity assumption, CEOs should at least be extrinsically motivated to promote climate issues in a substantive way. Future studies should involve content analyses of CEO compensation and sustainability reports on climate-related incentives (Winschel 2022). Moreover, the climate goals in compensation contracts should be compared with overall corporate climate strategies to verify the potential occurrence of greenwashing. To recognize a critical mass of climate targets, researchers should compare the ratio between sustainability and classical financial goals in compensation contracts and their potential conflicts of interest.

In the following, we present additional research recommendations linked to all CEO characteristics. Assuming that CEOs can mainly impact corporate carbon decisions, the

Table 3 Overview of included studies

Year of publication	Author(s)	Journal	Regime time frame sample size regression method	Carbon disclosure or performance (dependent variable(s))	Corporate governance (independent variable(s))
2024	Bedi and Singh	International Journal of Law and Management	India 2016-22 1,944 firm-year observations Panel	Carbon disclosure quality (self-created score)	• CEO duality (+/−)
2024	Caby et al.	Technological Forecasting & Social Change	International 2014–2020 138 firms Logit; panel	Carbon disclosure (CDP participation as dummy; CDP score)	• female CEO (+)
2024	Chen et al.	North American Journal of Economics and Finance	Taiwan 2016-20 232 firm-year observations OLS	Carbon performance (inverse: total emissions) Carbon disclosure quality (self-created score; automated textual analyses)	• CEO ethical orientation (utilitarian) (+; +/−) • Moderator: financial industry (+; +/−)
2024	Gebhardt et al.	Business Strategy and the Environment	Germany 2020 103 firm-year observations OLS	Carbon disclosure quality (self-created score)	• CEO/CFO responsibility for CSR (+/−)
2024	Guo et al.	International Review of Economics and Finance	China 1,903 firms 2012-21 Panel; GMM; 2SLS/IV	Carbon performance (inverse: total emissions)	• CEO overconfidence (−) • Mediator: financial leverage (+ by board size)
2024	Khuong et al.	Corporate Social Responsibility and Environmental Management	Vietnam 134 firms 2015-22 GMM	Carbon disclosure quality (self-created score)	• CEO duality (−) • Moderator: earnings management (+)
2024	Kwabi et al.	Business Strategy and the Environment	International 2000-21 160,115 firm-year observations OLS; panel; 2SLS/IV	Carbon performance (inverse: total emission intensity)	• CEO overconfidence (+) • Moderator: board gender diversity (+)
2024	Luong et al.	Business Strategy and the Environment	Australia 2009-19 1,473 firm-year observations OLS; PSM; 2SLS/IV	Carbon performance (inverse: total and scope 1,2 emission intensity)	• CEO power (+) • Moderator: carbon-intensive industries (+/-); extreme weather (+/−); internal control systems (+)
2024	Mardini et al.	Studies in Economics and Finance	France 2010-21 67 firms GMM	Carbon disclosure quality (CDP score)	• CEO duality (+/−) • Moderator: innovative firms (+/−)
2024	Setiawan et al.	International Journal of Disclosure and Governance	International 2018-22 307 firm-year observations Panel; Heckman 2 stage	Carbon disclosure quality (self-created score)	• CEO foreign (+/−)
2024	Shahrour et al.	Journal of Environmental Management	USA 2006-21 491 firms Panel; diff-in-diff; GMM; 3SLS	Carbon performance (inverse: total emission intensity)	• CEO ownership (−; u-shaped link)

Table 3 (continued)

Year of publication	Author(s)	Journal	Regime time frame sample size regression method	Carbon disclosure or performance (dependent variable(s))	Corporate governance (independent variable(s))
2024	Wagner and Fischer-Kreer	Business Strategy and the Environment	USA 2007-18 492 firms panel	Carbon performance (inverse: total emissions)	• CEO promotion or prevention focus (−: promotion; + prevention) • Moderator: industry volatility (− prevention focus)
2023	Abbas et al.	Business Ethics, the Environment & Responsibility	China 2012-18 2,840 firm-year observations GMM; Heckman 2 stage	Carbon disclosure quality (self-created score)	• CEO duality (−) • Moderator: earnings management (−)
2023	Bose et al.	Corporate Governance	International 2006-18 3578 firm-year observations OLS; Heckman 2 stage	Carbon disclosure (CDP score) Carbon performance (inverse: total emissions; scope 1, 2, and 3)	• CEO compensation (also as moderator) (total: +; +) • Moderator: environmentally sensitive industry (+/−); US versus other firms (+); individual and societal culture (world value survey) (+ only disclosure, not performance); emission trading scheme (+ only disclosure)
2023	Gold and Taib	Social Responsibility Journal	International 368 firms 2016-19 Probit	Carbon disclosure quality (CDP score)	• CEO duality (+/−)
2023	Homroy	Journal of Banking & Finance	UK 2007-17 3,188 firm-year observations OLS	Carbon performance (inverse: emissions scope 1, 2, or 3; total) Carbon emission reduction target (dummy)	• CEO appointment parenting a daughter who replaces a CEO parenting only sons (+)
2023a	Hossain et al.	Journal of Business Ethics	International 2006-17 1,856 firm-year observations OLS; diff-in-diff; 2SLS/IV; PSM; entropy balancing	Carbon performance (inverse: total emissions)	• CEO risk aversion (insider debt holding) (−) • Moderator: CSR performance (+); CEO power (+); agency intensity (+); competitive market (+)
2023b	Hossain et al.	Journal of Economic Behavior and Organization	International 2007–2021 1,982 firm-year observations panel; entropy balancing; diff-in-diff; 2SLS/IV	Carbon performance (inverse: total emissions)	• CEO general ability (−) • Moderator: poor environmental disclosure (+); market competition (+); low long-term institutional investor (+)

Table 3 (continued)

Year of publication	Author(s)	Journal	Regime time frame sample size regression method	Carbon disclosure or performance (dependent variable(s))	Corporate governance (independent variable(s))
2023	Li et al.	International Review of Economics and Finance	China 512 firm-year observations n.A. OLS	Carbon performance (inverse: total emissions)	• CEO social network centrality (+) • Moderator: CEO negative media coverage (+)
2023	Oyewo	Journal of Environmental Management	International 2006-20 336 firms panel; 2SLS/IV	Carbon performance (inverse: scope 1, 2 emissions)	• CEO duality (+) • Moderator: carbon-intensive industries (+/−);
2023	Taglialatela et al.	Corporate Social Responsibility and Environmental Management	International 2020 4,417 firms Logit	Carbon disclosure (SDG 13 climate action reliance as dummy)	• CEO duality (+/−)
2022	Adu et al.	Business Strategy and the Environment	UK 2009–2018 262 firms GMM	Carbon performance (Symbolic as process-oriented level of engagement in climate protection initiatives versus substantive as actual total emissions)	• CEO compensation (long-term: +; salary: +; total: +; pensions: −)
2022	Garel and Petit-Romec	Economics Letters	USA 2002-18 5,757 firm-year observations Diff-in-diff	Carbon performance (inverse: total emission intensity)	• CEO exposure to global warming (+)
2022	Goud	Journal of Cleaner Production	India 220 firms 2014–2021 Panel; 2SLS/IV	Carbon performance (inverse: total emission intensity)	• CEO duality (−)
2022	Qosasi et al.	Cogent Economics & Finance	Indonesia 124 firms 2017-19 Panel; PSM	Carbon disclosure quality (self-created score)	• Family CEO (+/−)
2021	Cordova et al.	Corporate Governance	International 2013-18 2,251 firm-year observations Panel; GMM	Carbon disclosure (scope 1, 2, or total as dummy) Carbon performance (inverse: emissions scope 1, 2, or total)	• CEO duality (+/−; +/−)
2021	Lu and Wang	Journal of International Financial Markets, Institutions & Money	International 2010-17 12,218 firm-year observations 3SLS	Carbon performance (inverse: relative total emissions)	• CEO non-duality (+)
2020	Caby et al.	Technological Forecasting & Social Change	International 117 banks N.A. OLS; logit	Carbon disclosure quality (CDP score)	• CEO gender (+/−)
2020	Garcia Martin and Herrero	Corporate Social Responsibility and Environmental Management	International (EU) 644 EU-based firms 2002–2017 Panel	Carbon performance (inverse: total emissions)	• CEO duality (+/−)

Table 3 (continued)

Year of publication	Author(s)	Journal	Regime time frame sample size regression method	Carbon disclosure or performance (dependent variable(s))	Corporate governance (independent variable(s))
2018	Haque and Ntim	Business Strategy and the Environment	UK 2,245 firm-year observations 2002-14 GMM	Carbon performance (reduction initiatives as symbolic use; inverse: total emissions as substantive use)	• CEO duality (+; +/−) • Moderator: climate change act (dummy) (more pronounced by initiatives)
2018	Terlaak et al.	Journal of Business Ethics	South Korea 2008-13 259 firms Logit	Carbon disclosure (CDP participation as dummy)	• Family CEO (+/−) (also as moderator)
2017	Hossain et al.	Social Responsibility Journal	International 2011-13 1,175 firm-year observations OLS	Carbon disclosure quality (score)	• CEO duality (+/−)
2017	Jizi	Business Strategy and the Environment	UK 2007-12 1,155 firm-year observations Logit	Climate disclosure quality (score by Bloomberg)	• CEO duality (+/−)
2014	Amran et al.	Sustainable Development	International (Asia Pacific) n.A. 111 firms OLS	Climate disclosure quality (self-created score)	• CEO duality (−)
2014	Lewis et al.	Strategic Management Journal	USA 2,157 firm-year observations 2002–2008 Logit	Carbon disclosure (CDP participation as dummy)	• CEO tenure (+) • CEO education (MBA degrees +; lawyers -)
2014	Peters and Romi	Journal of Business Ethics	USA 2002-06 1,238 firm-year observations Probit; Heckman 2 stage	Carbon disclosure (CDP participation as dummy; CDP score)	• CSO (+; +)
2010	Prado-Lorenzo and Garcia-Sanchez	Journal of Business Ethics	International 283 firms 2007 OLS	Carbon disclosure quality (CDP score)	• CEO duality (+) • Moderator: high firm polluter, environmental intensive industry, environmental litigation risk, legal enforcement, national CSR index, code law regime (+/−)

interplay between CEOs and other *board members* should be recognized in future moderator analyses. Board effectiveness, determined by board independence, sustainability board committees, and the carbon-related experiences and education of boards, is assumed to impact the behaviors of CEOs (Kwabi et al. 2024). Future studies should consider the characteristics and incentives of executive and non-executive directors as possible catalysts for CEOs' impact on carbon disclosure and performance (Kwabi et al. 2024).

In line with our recommendations on extended CEO characteristics, carbon disclosure and carbon performance should be analyzed in an integrated manner. *Carbon decoupling* as the difference between carbon disclosure and performance should be addressed in future research designs. Analyses on the impact of board governance on CSR decoupling have seen massive growth in recent years (e.g., Gull et al. 2023). Some studies have addressed greenwashing as the positive difference between CSR disclosure and performance or have relied on environmental decoupling (Velte 2023), but a focus on climate issues would be useful for gaining new insights into the link between CEOs and climate achievements. Moreover, to increase the validity of carbon measures, we encourage researchers to conduct automated textual analyses of corporate governance and sustainability reports. Artificial intelligence (e.g., based on Python) can be used to analyze qualitative carbon disclosures and create

Table 4 Main results of the literature review

CEO characteristics	Carbon performance	Carbon disclosure (quality)	Total
Demographic	(+): -appointment parenting a daughter who replaces CEO parenting only sons (Homroy 2023) -social network centrality (Li et al. 2023) -duality (Oyewo 2023; Haque and Ntim 2018 symbolic, not substantive)- -exposure to global warming (Garel and Petit-Romec 2022) (−): -general ability (Hossain et al. 2023b) -duality (Goud 2022; Lu and Wang 2021) (+/−): -family CEO (Qosasi et al. 2022); -duality (Cordova et al. 2021p. 1; Garcia Martin and Herrero 2020)	(+): -Gender (Caby et al. 2024) -Tenure (Lewis et al. 2014) -education (MBA; Lewis et al. 2014) -CSO (Peters and Romi, 2014) -Duality (Prado-Lorenzo and Garcia-Sanchez 2010) (−): -Duality (Khuong et al. 2024; Abbas et al. 2023; Amran et al. 2014) (+/−): -Duality (Bedi and Singh 2024; Mardini et al., 2024; Gold and Taib 2023; Taglialatela et al. 2023; Cordova et al. 2021; Hossain et al. 2017; Jizi 2017) -CSR responsibility (Gebhardt et al., 2024) -foreign (Setiawan et al. 2024) -Gender (Caby et al. 2020) -Family CEO (Terlaak et al. 2018)	
Total	5+, 3−, 3+/−	5+, 3−, 11+/−	10+, 6−, 14+/−
Psychological	(+): -Ethical orientation (Chen et al. 2024 -Overconfidence (Kwabi et al. 2024) -Prevention focus (Wagner and Fischer-Kreer 2024) (−): -Overconfidence (Guo et al. 2024)	(+/−): -Ethical orientation (Chen et al. 2024)	
Total	3+, 1−	1+/−	3+, 1−, 1+/−
Incentives	(+): -power (Luong et al. 2024) -compensation (Bose et al. 2023) -long-term, salary and total compensation (Adu et al., 2022) (−): -ownership (Shahrour et al. 2024) -insider debt holding (Hossain et al. 2023a) -pensions (Adu et al., 2022)	(+): -compensation (Bose et al. 2023)	
Total	3+, 3−	1+	4+, 3−
Sum:	11+, 7−, 3+/−	6+, 3−, 12+/−	17+, 10−, 15+/−

individual quality scores (Chen et al. 2024). The reliance on external databases (e.g., Bloomberg or CDP) and manual content analyses of carbon reports relate to a limited validity of carbon research (Chen et al. 2024).

Table 5 summarizes the major research recommendations based on the structured CEO characteristics.

Summary

The findings of this literature review provide an overview of the archival research on *CEOs' impact on carbon disclosure and performance.* Our analysis was grounded in the upper echelons theory (Hambrick and Mason 1984), the most prominent theory in this research area, which assumes that

Table 5 Summary of major research recommendations

CEO demographic characteristics	CEO psychological characteristics	CEO incentives	all CEO categories
• Environmental (climate)-related CEO education and expertise • Recognition of cultural and environmental development of foreign CEOs	• CEO overconfidence • CEO narcissism • Non-linear relationships between CEO and carbon outputs	• Environmental (climate)-related CEO compensation (dummy, ratio, critical mass)	• Moderator analyses (board effectiveness) • Carbon decoupling (greenwashing) • Automated text analyses of carbon reports

CEO characteristics have a major impact on corporate carbon outputs. In line with prior research (Mahran and Elamer 2024) we differentiated between demographic, psychological, and incentive-based CEO attributes and developed three research questions. We determined that a focus on climate outputs was justified, considering the increased regulatory and stakeholder awareness of carbon issues and the varied nature of CEO characteristics. Climate outputs are different from other environmental topics and social measures.

The restriction on carbon efforts separates our study from previous literature reviews on the impact of CEOs on broad environmental (Mahran and Elamer 2024) and CSR measures (Velte, 2020). Most of the studies included in this literature review have addressed demographic variables, such as CEO duality, with an equal level of focus on carbon disclosure and performance (RQ 1). The specific CEO demographic attributes did not show any clear tendencies toward a positive or negative impact on carbon outputs, and the results were thus inconclusive. These inconsistencies are in line with the upper echelons theory, as positive or negative impacts of CEO characteristics on carbon performance and disclosure are context dependent (Hambrick and Mason 1984). Furthermore, CEOs may conduct carbon efforts symbolically or may feel responsible for substantive carbon management (Setiawan et al. 2024). Therefore, in addition to CEO demographics, we considered relevant psychological factors (RQ 2) and CEO incentives (RQ 3). However, the limited number of prior research on these topics did not allow for clear inferences regarding the specific drivers of corporate carbon outputs. Future studies should take these research gaps and restrictions into consideration and analyze the link between CEO attributes and carbon outputs in greater detail. Board characteristics should be recognized as moderator variables when analyzing the interdependency between CEOs and boards of directors, and future research awareness on the psychological factors and incentives is also required.

Literature reviews have some *limitations*: they only highlight the number of significances and do not allow for recognizing sample or effect size. Quantitative meta-analyses may overcome these restrictions (Bhaskar et al. 2023). Meta-analyses on the link between CEOs and carbon outputs are not useful at this time, as the number of studies on individual CEO categories, such as demographic attributes, is too low. We expect a significant increase in research on CEOs and carbon outputs in the coming years, which can make meta-analyses possible in the future.

Our study has several *managerial implications*. Previous studies have focused on CEOs' traditional financial consequences, while they neglected their responsibilities to corporate climate transformation, e.g., reaching climate neutrality in line with the Paris Climate Agreement. CEOs should support solid climate disclosure and climate performance measures. Stakeholders need to be provided with explicit descriptions of the climate-related duties and skills of CEOs and other members of the board as part of a climate report. Moreover, corporate disclosure of strategies, processes and management systems should directly refer to climate issues (Gebhardt and Schneider 2024). This may enable stakeholders to better analyze whether the symbolic or substantive use of carbon aspects is realistic. Boards should adopt a long-term perspective and select CEOs with adequate practical and academic climate skills (Lewis et al. 2014). The additional inclusion of a CSO can be the first step of a reorganization process, and close interactions between the CSO and CEO are necessary (Velte 2025). However, a CSO can only be a symbol for self-impression management when the impact of the CSO on climate strategies and processes is weak and conflicts of interest between the CSO and the CEO arise.

Our study also has significant *theoretical implications*. To explain a symbolic versus substantive use of climate issues, the upper echelons theory, which is the most prominent theoretical framework in CEO research (Hambrick and Mason 1984), needs to be supplemented by other management or economic theories. The legitimacy theory (Shocker and Sethi 1973; Deegan 2002) represents a useful complementary framework; it has often been used in research on the link between corporate governance and CSR outputs (Velte et al. 2020). Stakeholder and regulatory pressure on CEOs to increase their climate efforts may lead to increased stakeholder trust and societal legitimacy (Deegan 2002). Moreover, the stakeholder agency theory (Hill and Jones 1992) can complement this context and promote the use of monitoring and incentive tools so that CEOs contribute to climate management in a substantive manner. Information asymmetries and conflicts of interest between CEOs, other board members, and stakeholders may arise in relation to climate issues. Climate disclosure and related climate performance can reduce these agency conflicts in line with stakeholders' information needs (Hill and Jones 1992).

Consequently, we encourage researchers to adopt multi-theoretical perspectives when investigating the relationship between CEOs and CSR activities.

Finally, our study has some *regulatory implications*. We stress an increased regulatory awareness on mandatory climate disclosure, such as by the ISSB and the EU Commission. However, an increase in the quantity of climate information does not automatically lead to climate disclosure of proper quality. In line with the IFRS for financial disclosure, harmonization of climate disclosure is required at the global level. The global ISSB climate standard includes an investor-oriented approach and financial materiality within climate disclosure (outside-in perspective). In contrast, the EU Corporate Sustainability Reporting Directive (CSRD) and the related European Sustainability Reporting Standards (ESRS) follow the impact materiality principle (inside-out perspective) in line with a stakeholder approach. Global climate disclosure standards should explicitly refer to climate neutrality in relation to the Paris Climate Agreement and climate transition plans. CEOs should be required to implement these plans and science-based emission reduction targets to decrease the risks of greenwashing and information overload. Moreover, climate disclosure should explicitly include the climate-related tasks, skills and incentives of CEOs and other executive directors. Climate-related corporate governance disclosure should be mandatory for listed firms.

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Abbas, A., G. Zhang, Bila, and Y. Chengang. 2023. Firm governance structures, earnings management, and carbon emission disclosures in Chinese high-polluting firms. *Business Ethics the Environment & Responsibility* 32:1470–1489.

Adu, D.A., Flynn, A., and Grey, C. 2022. Executive compensation and sustainable business practices: The moderating role of sustainability-based compensation. *Business Strategy and the Environment* 31: 698–736.

Aguirre-Pérez, G., and I.-M. Garcia-Sanchez. 2025. Influence of CEO attributes on sustainability: From a bibliometric overview to a systematic review of the socio-psychological aspects. *Corporate Social Responsibility and Environmental Management.* 32 (5): 6732–6765.

Amran, A., V. Periasamy, and A.H. Zulkafli. 2014. Determinants of climate change disclosure by developed and emerging countries in Asia Pacific. *Sustainable Development* 22: 188–204.

Bedi, A., and B. Singh. 2024. Reconnoitering the impact of corporate governance on carbon emission disclosure in an emerging setting. *International Journal of Law and Management* 66:792–809.

Berns, K. V. D., and P. Klarner. 2017. A review of the CEO succession literature and a future research program. *Academy of Management Perspectives* 31:83–108.

Bhaskar, R., P. Li, S. Bansal, and S. Kumar. 2023. A new insight on CEO characteristics and corporate social responsibility (CSR): A meta-analytical review. *International Review of Financial Analysis* 89:102815.

Bonsu, C.O., C. Liu, and A. Yawson. 2024. The impact of CEO attributes on corporate decision-making and outcomes: A review and an agenda for future research. *International Journal of Managerial Finance* 20: 503–545.

Bose, S., N. Burns, K. Minnick, and S. Shams. 2023. Climate-linked compensation, societal values, and climate change impact: International evidence. *Corporate Governance: An International Review* 31:759–785.

Brahma, S., and F. Economou. 2024. CEO power and corporate strategies: A review of the literature. *Review of Quantitative Finance and Accounting* 62: 1069–1143.

Bromiley, P., and D. Rau. 2016. Social, Behavioral, and Cognitive Influences on Upper Echelons during strategy process: A literature review. *Journal of Management* 42: 174–202.

Busenbark, J.R., R. Krause, S. Boivie, and S.D. Graffin. 2016. Toward a configurational perspective on the CEO: A review and synthesis of the management literature. *Journal of Management* 42: 234–268.

Caby, J., Y. Ziane, and E. Lamarque. 2020. The determinants of voluntary climate change disclosure commitment and quality in the banking industry. *Technological Forecasting and Social Change* 161: 120282.

Caby, J., C. Coron, and Y. Ziane. 2024. How does gender diversity in top management teams affect carbon disclosure and its quality: Evidence from the technological industry. *Technological Forecasting and Social Change* 199: 13077.

Carpenter, M.A., M.A. Geletkanycz, and W.S. Sanders. 2006. Upper Echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management* 30: 749–778.

Chen, T.-H., S.-C. Liu, and C.-H. Wu. 2024. The influence of CEO ethics on climate change policy from the perspective of utilitarianism and deontology. *North American Journal of Economics and Finance* 73:102193.

Cordova, C., A. Zorio-Grima, and P. Merello. 2021. Contextual and corporate governance effects on carbon accounting and carbon performance in emerging economies. *Corporate Governance* 21:536–550.

Deegan, C. 2002. The legitimising effect of social and environmental disclosures: A theoretical foundation. *Accounting, Auditing and Accountability Journal* 15: 282–311.

Denyer, D., and D. Tranfield. 2009. Producing a systematic review. In *The sage handbook of organizational research methods*, ed. D. Buchanan and A. Bryman, 671–689. London: Sage.

Garcia Martin, C.J., and B. Herrero. 2020. Do board characteristics affect environmental performance? A study of EU firms. *Corporate Social Responsibility and Environmental Management* 27: 74–94.

Garcia-Sanchez, I.-M., D.J.C. Araujo, and S.-Y. Enciso-Alfaro. 2025. What do we need to know about the CEO's personality traits? A review on the influence on strategic and sustainability decisions. *Corporate Social Responsibility and Environmental Management* 32: 4081–4134.

Garel, A., and A. Petit-Romec. 2022. CEO exposure to abnormally hot temperature and corporate carbon emissions. *Economics Letters* 210: 110156.

Gebhardt, M., and A. Schneider. 2024. Climate reporting in the fast lane? The impact of corporate governance on the disclosure of climate-related risks and opportunities. *Business Strategy and the Environment* 33:7253–7272.

Gold, N.O., and F.M. Taib. 2023. Corporate governance and extent of corporate sustainability practice: The role of investor activism. *Social Responsibility Journal* 19: 184–210.

Goud, N.N. 2022. Corporate governance: Does it matter management of carbon emission performance? An empirical analysis of Indian companies. *Journal of Cleaner Production* 379: 134485.

Gull, A.A., N. Hussain, S.A. Khan, M. Nadeem, and A.M. Zalata. 2023. Walking the talk? A corporate governance perspective on corporate social responsibility decoupling. *British Journal of Management* 34: 2186–2211.

Guo, G., O. Lin, and J. Ruan. 2024. Corporate carbon emission governance: The mediating role of financial leverage. *International Review of Economics and Finance* 96:103734.

Habib, A., and M. Hossain. 2013. CEO/CFO characteristics and financial reporting quality: A review. *Research in Accounting Regulation* 25:88–100.

Hambrick, D.C. 2007. Upper echelons theory. *Academy of Management Review* 32: 334–343.

Hambrick, D.C., and P.A. Mason. 1984. Upper echelons. *Academy of Management Review* 9: 193–206.

Haque, F., and C.G. Ntim. 2018. Environmental policy, sustainable development, governance mechanisms and environmental performance. *Business Strategy and the Environment* 27: 415–435.

Hertrampf, P., T.M. Brunner-Kirchmair, M.R.W. Hiebl, and A. Wiedemann. 2025. The relationship between CEO characteristics and banks' risk-taking: Review and research directions. *Schmalenbach Journal of Business Research* 77: 127–178.

Heubeck, T. 2024. Untangling the paradoxical relationship between religion and business: A systematic literature review of Chief Executive Officer (CEO) religiosity research. *Journal of Business Ethics* 195: 191–214.

Hiebl, M.R.W. 2014. Upper echelons theory in management accounting and control research. *Journal of Management Control* 24: 223–240.

Hiebl, M.R.W. 2017. Finance managers in family firms: An upper-echelons view. *Journal of Family Business Management* 7: 207–220.

Hill, C.W.L., and T.M. Jones. 1992. Stakeholder-agency theory. *Journal of Management Studies* 29: 131–154.

Hoffmann, V.H., and Busch, T. 2008. Corporate Carbon Performance Indicators Carbon Intensity, Dependency, Exposure, and Risk. *Journal of Industrial Ecology* 12(4): 505–520.

Homroy, S. 2023. GHG emissions and firm performance: The role of CEO gender socialization. *Journal of Banking & Finance* 148: 106721.

Hossain, M., O. Al Farooque, M.A. Momin, and O. Almotairy. 2017. Women in the boardroom and their impact on climate change related disclosure. *Social Responsibility Journal* 13: 828–855.

Hossain, A., S. Saadi, and A.S. Amin. 2023a. Does CEO risk–aversion affect carbon emission? *Journal of Business Ethics* 182: 1171–1198.

Hossain, A., A.-A. Masum, S. Saadi, and R. Benkraiem. 2023b. Generalist CEO and carbon emissions. *Journal of Economic Behavior & Organization* 213: 68–86.

Jizi, M. 2017. The influence of board composition on sustainable development disclosure. *Business Strategy and the Environment* 26: 640–655.

Khuong, N.V., V.T.T. Tai, N.T.P. Thao, P.M. Tuan, T.T. Dung, and V.T. Khanh. 2024. Corporate governance and corporate carbon disclosures: The moderating role of earnings management. *Corporate Social Responsibility and Environmental Management* 31: 4596–4611.

Krause, R., M. Semadeni, and A.A. Cannella. 2014. CEO duality: A review and research agenda. *Journal of Management* 40: 256–286.

Kwabi, F., S. Fulgence, and G. Adamolekun. 2024. CEO hubris and corporate carbon footprint: The role of gender diversity. *Business Strategy and the Environment* 33:8102–8125.

Lewis, B.W., J.L. Walls, and G.W.S. Dowell. 2014. Difference in degrees: CEO characteristics and firm environmental disclosure. *Strategic Management Journal* 35: 712–722.

Li, P., Z. Lin, B. Peng, and H. Du. 2023. Do CEOs' social networks affect carbon emissions in China? The moderating role of CEO reputation. *International Review of Economics and Finance* 88:1122–1137.

Light, R., and P. Smith. 1971. Accumulating evidence: Procedures for resolving contradictions among different research studies. *Harvard Educational Review* 41: 429–471.

Lu, J., and J. Wang. 2021. Corporate governance, law, culture, environmental performance and CSR disclosure: A global perspective. *Journal of International Financial Markets, Institutions & Money* 70: 101264.

Luong, H., J. Kumarasiri, and A. Gunasekarage. 2024. CEO power and carbon emissions management: Australian evidence. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.4062.

Mahran, K., and A.A. Elamer. 2024. Chief executive officer (CEO) and corporate environmental sustainability: A systematic literature review and avenues for future research. *Business Strategy and the Environment* 33: 1977–2003.

Mardini, G.H., and F.E. Lahyani. 2024. The relevance of carbon performance and board characteristics on carbon disclosure. *Studies in Economics and Finance* 41: 660–683.

Neely, B.H., J.B. Lovelace, A.P. Cowen, and N.J. Hiller. 2020. Metacritiques of Upper Echelons Theory: Verdicts and recommendations for future research. *Journal of Management* 46: 1029–1062.

Oyewo, B. 2023. Corporate governance and carbon emissions performance: International evidence on curvilinear relationships. *Journal of Environmental Management* 334:117474.

Pandey, N., B. Jain, and S. Kumar. 2025. In the spotlight: CEO characteristics and financial misconduct—a comprehensive literature review. *Journal of Economic Surveys*. https://doi.org/10.1111/joes.70004.

Peters, G.F., and Romi, A.M. 2014. Does the Voluntary Adoption of Corporate Governance Mechanisms Improve Environmental Risk Disclosures? Evidence from Greenhouse Gas Emission Accounting. *Journal of Business Ethics* 125: 637–666

Plöckinger, M., E. Aschauer, M.R.W. Hiebl, and R. Rohatschek. 2016. The influence of individual executives on corporate financial reporting: A review and outlook from the perspective of upper echelons theory. *Journal of Accounting Literature* 37: 55–75.

Prado-Lorenzo, J.-M., and I.-M. Garcia-Sanchez. 2010. The role of the board of directors in disseminating relevant information on greenhouse gases. *Journal of Business Ethics* 97: 391–424.

Qosasi, A., H. Susanto, E. Rusmin, E.W. Astami, and A. Brown. 2022. An alignment effect of concentrated and family ownership on carbon emission performance: The case of Indonesia. *Cogent Economics & Finance* 101: 2140906.

Recendes, T., J.A. Chandler, Z. Huang, and A.D. Hill. 2024. Toward a stakeholder view of upper echelons: A framework synthesis review and future research agenda. *Journal of Management* 50: 2073–2118.

Rumstadt, F., and D.K. Kanbach. 2022. CEO activism. What do we know? What don't we know? A systematic literature review. *Society and Business Review* 17: 307–330.

Schnatterly, K., K.A. Gangloff, and A. Tuschke. 2018. CEO wrongdoing: A review of pressure, opportunity, and rationalization. *Journal of Management* 44: 2405–2432.

Setiawan, D., I.P. Rahmawati, A. Santoso, H.N. Saturwa, and F.A.F. Pratama. 2024. Foreign attributes and climate change disclosure. *International Journal of Disclosure and Governance*. https://doi.org/10.1057/s41310-024-00280-1.

Shahrour, M. H., M. Arouri, D. V. Tran, and S. Rao. 2024. Carbon consciousness: The influence of CEO ownership. *Journal of Environmental Management* 364:121455.

Shen, Y. 2021. CEO characteristics: A review of influential publications and a research agenda. *Accounting & Finance* 61: 361–385.

Shocker, A.D., and S.P. Sethi. 1973. An approach to incorporating societal preferences in developing corporate action strategies. *California Management Review* 15: 97–105.

Taglialatela, J., K.P. Maffiola, R. Barontini, and F. Testa. 2023. Board of directors' characteristics and environmental SDGs adoption: An international study. *Corporate Social Responsibility and Environmental Management* 30: 2490–2506.

Terlaak, A., S. Kim, and T. Roh. 2018. Not good, not bad: The effect of family control on environmental performance disclosure by business group firms. *Journal of Business Ethics* 153: 977–996.

Toukabri, M. 2024. Chief sustainability officer (CSO) power and sustainability-based compensation for climate change disclosure and carbon performance: Is it different for developed and developing nations? *Society and Business Review*. https://doi.org/10.1108/SBR-12-2023-0356.

Velte, P. 2020. Do CEO incentives and characteristics influence corporate social responsibility (CSR) and vice versa? A literature review. *Social Responsibility Journal* 16:1293–1323.

Velte, P. 2023. Determinants and consequences of corporate social responsibility decoupling—Status quo and limitations of recent empirical quantitative research. *Corporate Social Responsibility and Environmental Management* 30:2695–2717.

Velte, P. 2025. Female chief financial officers (CFOs) and environmental decoupling. The moderating impact of sustainability board committees. *Corporate Social Responsibility and Environmental Management* 32:1147–1160.

Velte, P., and M. Stawinoga. 2020. Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control* 31:333–377.

Velte, P., M. Stawinoga, and R. Lueg. 2020. Carbon performance and disclosure: A systematic review of governance-related determinants and financial consequences. *Journal of Cleaner Production* 254:120063.

Wagner, A., and D. Fischer-Kreer. 2024. The role of CEO regulatory focus in increasing or reducing corporate carbon emissions. *Business Strategy and the Environment* 33:1051–1065.

White, J.V., and C.J. Borgholthaus. 2022. Who's in charge here? A bibliometric analysis of upper echelons research. *Journal of Business Research* 139: 1012–1025.

Winschel, J. 2022. Mapping the determinants of carbon-related CEO compensation: A multilevel approach. *Society and Business Review* 17: 160–195.

Winschel, J., and M. Stawinoga. 2019. Determinants and effects of sustainable CEO compensation: A structured literature review of empirical evidence. *Management Review Quarterly* 69: 265–328.

Yamak, S., S. Nielsen, and A. Escriba-Esteve. 2014. The role of external environment in Upper Echelons Theory: A review of existing literature and future research directions. *Group & Organization Management* 39: 69–109.

Yu, M. 2023. CEO duality and firm performance: A systematic review and research agenda. *European Management Review* 20:346–358.