CEO's personal values and environmental practices in organizations

1. Introduction

With a compelling evidence on corporations creating negative externalities for the natural environment business and its practices used to be viewed as an obstacle in achieving environmentally sustainable development. However, socially responsible approach to managing environmental impacts can improve overall business sustainability and thus turn business into a solution (Camilieri, 2017). Responsible environmental practices are those which improve corporate effect on pollution, climate change, biodiversity loss, waste generation, water usage, land use changes, energy consumption, and transportation emissions. The development of managerial tools and frameworks to bring sustainability into practice supports businesses balancing business interests and environmentally sustainable growth (Epstein, 2018; Cort and Esty, 2017; Marcon et al. 2017, Sanchez-Planelles et al. 2022). In addition, there is evidence that investors collectively treat sustainability as a positive investment attribute allocating more money to sustainable businesses (Hartzmark and Sussman, 2019; Heeb et al. 2023). Another studies showcase firms with responsible initiatives on environmental issues experiencing better stock returns (Garel and Petit-Romec, 2021). From a financial market perspective, business sustainability is based on three pillars: Environmental, Social, and Governance (commonly abbreviated as ESG). In recent years, these aspects have garnered significant attention from investors, firm managers, and other stakeholders due to their importance in enhancing value of a firm (Ahmad et al. 2021). Indeed, many companies have reached the point of proactively anticipating pressures related to environmental performance beyond compliance with laws and regulations and constitute a business case for responsible environmental practices (Rhou and Signal, 2020; Camilieri, 2022). However, there is still a significant variation in how different corporations perform in the area of environmental management, with unsustainable business practices plaguing business landscape (Bocken and Short, 2021). An important question therefore arises: why is sustainable development not a common practice in the business world? Thus, understanding of mechanisms behind implementing strong ESG practices is critical. An important contribution of Wood (1991) articulates three fundamentally different levels of motivational principles behind social responsibility: institutional, organisational and individual. The institutional level is related to expectations placed on all businesses because of their roles as economic

institutions in a broad social context (Hoffman, 2007). The organisational level is related to corporate goals and expectations placed on particular firms because of what they are and what they do (Cordeiro and Tewari, 2015). The individual level is related to managers as actors within the firm, their motivations and discretion in particular (Gond et al. 2017). While other executives and managers contribute to shaping business practices, strategies, and performance, the CEO holds the ultimate responsibility and power. This results in CEO's paramount importance in driving environmental initiatives and shaping sustainability strategies (Aabo and Giorici, 2023, Ullah et al. 2022). Recent literature has empirically uncovered the importance of CEO's age, tenure, experience, gender, and country of origin for ESG performance (Garcia-Blandon et al. 2019; Ghardallou, 2022; Shahab et al. 2020; Aabo and Giorici, 2023). However, these easily observable factors provide limited insight into motivational aspects only to a limited extent, as those aspects are rooted in personal psychological level. At the same time, there is a dearth of studies on how CEO's psychological characteristics affects business environmental practices (Bildrici et al. 2024). Therefore, Mahran and Elamer (2024) call for exploring the impact of CEO psychological traits on a firm's environmental sustainability. Following this call, the present study focuses on the psychological factors driving a CEO's behaviour towards achieving specific goals—sustainable environmental practices.

So far, few studies have delved into the relationship between the psychological factors of a CEO and environmental practices. Ezzi et al. (2023) confirm the positive effect of CEOs' emotional intelligence on R&D investment for the environmental problems. Lee (2021) and Lee and Kim (2021) study the effect of CEO overconfidence on voluntary disclosure of greenhouse gas emissions and ESG investment. Bildirici et al. (2024) and Lin et al. (2021) study how CEO narcissism and hubristic tendencies affect the sustainable operation of a company. This study contributes to the existing literature by focusing on the role of CEO's personal values. Personal values are commonly identified as "beliefs that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-state of existence" (Rokeach, 1973). While personal values are stable and central to an individual's cognitive structure, they play a critical role in focusing attention on what is essential in a decision situation (Dietz and Stern, 1995; Schwartz, 1992). As such, values serve as a powerful driver for action. This study aims to explore CEO' personal values and identify the extent to which such values could be crucial to comprehending environmentally sustainable business practices.

TIn order to frame the link between personal values, the role of the CEO and environmentally sustainable practices by corporations we draw from two prominent theoretical frameworks: Attitude-Behavior-Context (ABC) theory (Stern, 2000; Stern et al., 1999) and Upper Echelon Theory (UET) (Hambrick and Mason, 1984).

The method applied in the study is logistic regression analysis on CEOs and firm-level data of American companies. Our sample consists of 139 CEOs and matching companies. We collected data on the personal values of CEOs using text mining tools for automatically assessing references to personal values in text (Ponizovskiy et al. 2020). This approach allowed us to overcome the confidentiality issue that had previously hindered the merging of psychometric and organizational analysis. Subsequently, we collected data on corresponding companies' environmental practices from the Refinitive Eikon database. The response variables in our regressions are binary indicators of whether a company implements a given environmentally sustainable practice/policy or not.

The study provides several contributions. Firstly, it is the first empirical examination of the effects of CEOs' personal values on the environmental sustainability of companies, thereby offering a unique contribution to the understanding of the psychological foundations of environmental sustainability. So far, Luque-Vílchez et al. (2019) have studied the impact of two out of ten fundamental personal values outlined by Schwartz on corporate six pro-environmental practices. They demonstrate that managerial self-transcendent values (universalism and benevolence) positively influence environmental reporting. However, the impact of others remains unknown. Moreover, sample of Luque-Vílchez et al. (2019) consisted only of managers in charge of environmental management within a company, individuals who may not be central to corporate strategy and – importantly – may be attracted to the role based on their values. Secondly, our study broadens the scope by investigating a diverse array of environmental practices and policies implemented by corporations, a viewpoint frequently neglected in prior research on sustainability factors that concentrated on specific environmental practices or on comprehensive ESG scores (Luque-Vílchez et al. 2019; D'Amato et al. 2021), which are susceptible to divergence (Berg et al. 2022). Our broader approach helps prevent drawing fragmentary conclusions or conclusions which are biased due to the rater's overall view of a firm influencing the measurement of ESG categories. Thirdly, the study controls for organizational-level variables, thus acknowledging that the discretion of CEOs can be

tempered by the organizational context. This approach ensures a more nuanced analysis of the relationship between CEO personal values and environmental sustainability.

2. Literature review and hypotheses development

2.1. Personal values and environmental sustainability

Schwartz (1996 p. 2) conceptualized values as "guiding principles in people's lives." More precisely, personal values are defined as cognitive representations of desirable, trans-situational goals (Sagiv et al. 2017). They serve as standards or criteria to guide not only action but also judgement, choice, attitude, evaluation, and even attribution of causality (Rokeach, 1979, p. 2). Values are a distinct construct, differing from other personal attributes also because they transcend specific circumstances (Roccas and Sagiv, 2000). As a result, they find expression in all domains of life and therefore underlie all attitudes and opinions (Boer and Fischer, 2013). Overall, values as complex "pre-codings" play significant role in explaining individuals' choices and behaviour (Arieli et al. 2020).

There is a large body of literature that has sought to understand and explain values (Rokeach, 1973, 1979). Nevertheless, Schwartz conceptualisation of values is now dominant in social psychology. Schwartz (1992) proposed a comprehensive set of ten basic values (Table 1). Notably, the ten values have been validated in cross-cultural research projects (Schwartz and Bilsky, 1990)

Table 1. Definitions of the value dimensions

Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-direction	Independent thought and action-choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms

Security	Safety, harmony, and stability of society, relationships, and the self

Source: Fegg et al. 2005.

The ten basic values constitute a coherent structure which arises from the social and psychological conflict or congruity between values that people experience when they make everyday decisions (Schwartz 1992, 2006). The structure is often depicted as a circular motivational continuum with four higher-order groups: openness to change, self-transcendence, self-enhancement and conservation (Fig. 1).

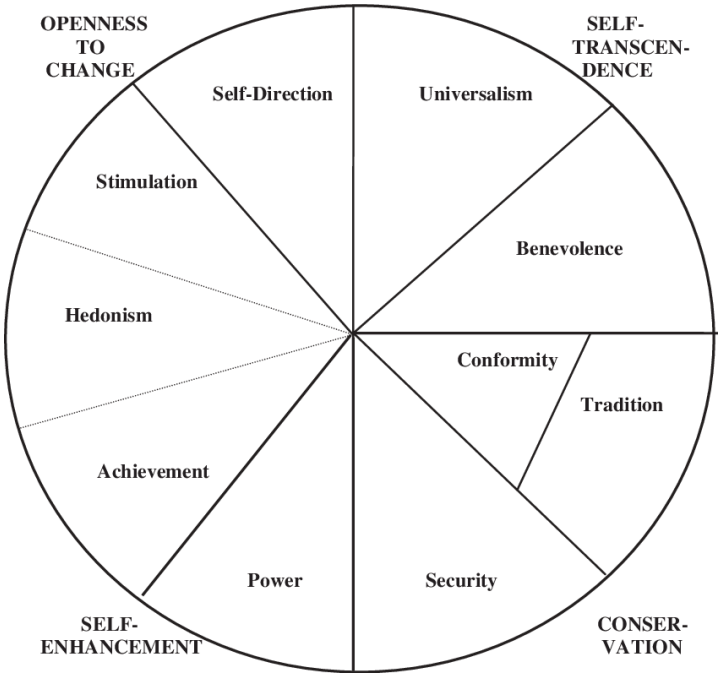

Fig. 1. The motivational continuum of 10 basic personal s

Source: Schwartz (2012).

Social-psychological literature has firmly established the framework for the role of personal values in fostering committed activism in the area of natural environment protection (Stern et al. 1999). The evidence on how different categories of values affect pro-environmental behaviour is rich. It's summary is presented in Table 2.

Higher order group	Influence	Type of environmental behaviour	Study
Self-transcendent s	Positive	Waste sorting 16 self-reported environmental activities Environmentally- conscious buying	Ling and Xu (2020) Karp (1996) Kim (2011) Nguyen et al. (2017) Nilsson et al. (2004)

		attitudes towards environmental protection Willingness to accept policy measures mitigating climate change	Dietz et al. (2004)
Self-enhancement	Negative	Energy consumption – pro-ecological patterns Environmentally- conscious buying Attitudes towards environmental protection	Poortinga et al. (2004) Kim (2011) Nguyen et al. (2017)
Openness to change	Positive	16 self-reported environmental activities	Karp (1996)
Universalism	Positive	16 self-reported environmental activities Public- and private-sphere environmental behaviour Environmental concerns Socially responsible consumption	Karp (1996) Gatz-Gerro et al. (2017) Degnet et al. (2022) Lee and Cho (2019)
Benevolence	Positive	Public- and private-sphere environmental behaviour Environmental concerns Socially responsible consumption	Gatz-Gerro et al. (2017) Degnet et al. (2022) Lee and Cho (2019)
Achievement	Positive	Energy-saving	Mirosa et al. 2013
Stimulation	Positive	Environmental strategy for private forest-owners	Degnet et al. (2022)

The evidence on self-transcendent values positively influencing pro-environmental attitudes and behaviours of individuals appears to be unequivocal. Overall, such results are in line with literature emphasizing that empathy and a concern for others appear to be associated with pro-environmental attitude and behaviour (Hirsch and Dolerman, 2006). Interestingly, the results of studies examining the impact of self-enhancement values on pro-environmental behaviours and attitudes are not straightforward. The majority of studies demonstrate the negative effect of these values on pro-environmental behaviour. However, the study by Mirosa et al. (2013) shows a positive effect of achievement on energy saving. These results highlight the importance of context. Energy saving helps to reduce the carbon footprint while simultaneously can be perceived as a household accomplishment in cost-cutting. In this way, energy saving can be seen as a success achieved by a competent decision-maker and be aligned with Achievement. This issue may be even more pronounced in an organizational environment, particularly for individuals with defined responsibilities. Therefore, a dedicated study is essential for understanding the role of CEO's values on environmentally sustainable corporate practices.

2.2. CEOs and business environmental sustainability

The key relevance of the chief executive for corporate strategy, practices and outcomes can be explained by the upper echelons theory (UET) by Hambrick and Mason (1984). UET states that if decisions contain a significant behavioural component, they reflect the behavioural properties of the decision-maker (Hambrick and Mason, 1984). Therefore, UET is particularly relevant for studying decision that are informationally complex and uncertain thus triggering personalized interpretations (Hambrick, 2007). Indeed, complexity and uncertainty feature decisions regarding environmentally sustainable practices. First, there are tensions between different desirable, yet interdependent and conflicting sustainability objectives (Hahn et al. 2018; Wannags and Gold, 2020). Second such decisions are accompanied by considerable uncertainty about whether and when these practices will contribute to the ultimate corporate goal of creating value for shareholders (Horváthová, 2010; Deswanto and Siregar, 2018; Hang et al. 2019). Consequently, optimization is unfeasible pushing decision-makers to rely on simplified heuristics, that is rules of thumb that serve as potential aids to decision making by focusing decision makers' attention on particular aspects of information (Hodgkinson et al. 2023). In such a scenario the decision maker's behavioural proprieties (knowledge, s, experience, worldviews etc.) are the screen through which the decision maker observes the situation (Hambrick and Mason, 1984). Subsequently, the decision maker limits attention to a subset of problematic issues. These issues are then interpreted in relation to the values and cognitive specificity of the decision-maker (Schwartz, 2010; Arieli et al. 2020). Consequently CEOs may use value priorities to ease the process of evaluating costs and gains from environmentally sustainable practices. Overall, in the UET model, decisions regarding environmental sustainable practices can be viewed as a function of the manager's personal values.

Friedman (1970) proposes that the primary obligation of the CEO is to create value for shareholders. However, companies often face pressure from various stakeholders to invest in activities that are deemed socially responsible, with pro-environmental practices topping the list of such pressures. Freeman (1984) argues that companies endure because they manage to align stakeholder interests in the same direction and that stakeholders' morally legitimate claims should be taken into account. CEOs may personally believe that they (and their company) have a moral imperative to invest in environmental protection over other, profit-enhancing activities (Borghesi et al. 2014). The orientation of accepting something (i.e. nature) or somebody other than one's self to be of highest worth and a

sincere interest in the good of others is self-transcendence (Theissen et al. 2024). Self-transcendence is a common aspect in corporate social responsibility and organizational citizenship behaviour (Pawar, 2009).

Schwartz (1994) classified two basic values as self-transcendent: universalism, and benevolence. Schwartz (1994) defined universalism as "understanding, appreciation, tolerance, and protection for the welfare of all people and for nature". Universalism is also depicted as associated with concern for and action to promote the welfare of people outside one's ingroup (Schwartz, 2007). The natural environment is shared and protecting it is necessary to foster welfare of distant people (Adamo et al. 2022). Universalism thus seems to be strongly and directly linked with valuing natural environment protection. Benevolence is defined as "preservation and enhancement of the welfare of people with whom one is in frequent personal contact" (Schwartz, 1994). It plays a critical role in predicting pro-social behaviours, as it is positively associated with helping, volunteering, demonstrating social sensitivity, and readiness for social contact (Arieli et al. 2014). Benevolence seems to be limited to an individual's closest environment. However, in an organisation the CEO is most likely the key decision-maker in embracing and balancing the varied and conflicting demands from different stakeholder groups as well as in strategically approach stakeholder engagement (Gamache et al. 2020). In this way, CEOs are directly confronted with diverse stakeholders' narratives and perspectives, including those of environmental advocacy groups. Overall, self-transcendent values encourage an expansion of one's self-concept to encompass other entities, including nature, because organisms, species, and ecosystems have intrinsic value (Jacobs and McConnel, 2022). Consequently, self-transcendent values can be directed toward both people and nature's goods as ends. Including nature in one's self-concept encourages more pro-environmental behaviour (Schultz, 2001). Egri and Herman (2000) confirm that the leaders of nonprofit and for-profit environmental organizations in Canada and the USA have more self-transcendent values than the leaders in industrial and public sector organizations. For Greece Papagiannakis and Lioukas (2012) found that the more managers' values are self-transcendent, the higher the level of corporate environmental responsiveness. Therefore, we hypothesize that:

Hypothesis 1: The self-transcendent values of CEOs have a positive effect on the likelihood of a company adopting environmentally sustainable practices

Self-enhancement represents how much people strive to “enhance their own personal interests even at the expense of others” (Schartz and Boehnke, 2004). Decisions related to pro-environmental behaviours are often framed as a conflict between hedonic/gain goals versus normative goals (Lindenberg and Stern, 2007). In this vein self-enhancement values are primarily seen as inhibitors of pro-environmental behaviour (Nguyen et al. 2017). However, environmental behaviour may also stem from various non-normative concerns, such as the desire to save money, confirm a sense of personal competence, or gain prestige (Stern, 2000). Thus, contextual forces may play a role in pro-environmental behaviour. This issue is structured within ABC theory. According to ABC theory, behaviour (B) is an interactive product of personal sphere attitudinal variables (A) and contextual factors (C) (Guagnano et al. 1995). Personal values are key attitudinal variables (Ertz et al., 2016). While contextual factors physical, financial, legal, and societal factors activating or soundproofing the effect of attitudinal variables on pro-environmental behaviour (Guagnano et al. 1995). In the setting examined in this study the key contextual factor which the values (attitudinal variables) are activated is the CEOs position and role within a company. Self-enhancement values concentrate around own personal interests. CEOs are often held accountable for their firm's performance. This can lead to dismissal when the firm is underperforming, or to rewards and pay increases in the case of outstanding results (Chen et al. 2015). Therefore, self-enhancement values predispose CEOs to focus on their firm’s performance. For decades ESG-related goals were not considered relevant by most of the companies that have been focusing on profit maximization. Nevertheless, with KLD Research & Analytics, Inc. starting their mission in 1988, the launch of the Dow Jones Sustainability Index in 1999, and the United Nations (UN) Global Compact's 2004 report "Who Cares Wins: Connecting Financial Markets to a Changing World," ESG performance has moved to the forefront for investors. Overall, in the twenty years ESG issues revealed their influence not only on financial performance and viability of firms (Velte, 2017; Zhou et al. 2022). As a result ESG metrics and disclosures has become a major focus of attention by shareholders (Arvidsson and Dumay, 2022). Moreover, executive compensation is increasingly being linked to ESG outcomes (Gan et al. 2020; Homroy et al. 2023). Thus, over the last two decades, ESG performance has been established as a critical element for corporate legitimacy across companies in diverse industries (Clark and Dixon, 2024). It is evidenced that narcissistic CEOs reduce irresponsible ESG practices as a self-interest strategy, specifically for reputation improvement (Martínez-

Ferrero et al. 2024). Self-enhancement value encompass Achievement and Power. Achievement is oriented at personal success through manifesting competence according to social standards (being ambitious, successful, capable, influential) that is active demonstration of successful performance (Schwartz, 2012). Power is oriented at social status and prestige, control or dominance over people and resources. It emphasizes the attainment or preservation of a dominant position within the social system (Schwartz, 2012). Superior environmental performance demonstrates the company's and its leaders' competence in managing complex environmental challenges leading to improved ESG metrics (Latan et al. 2018). Improved performance strengthens CEO's position in a company (Banker et al. 2013). As a result, CEO's Power and Achievement can foster their commitment to sustainable environmental practices. Therefore, we hypothesize that:

Hypothesis 2: The self-enhancement values of CEOs have a positive effect on the likelihood of a company adopting environmentally sustainable practices

Since the release of the Brundtland Report in 1987 sustainability has become a critical perspective in managing firms (Chang et al., 2017). During this time, the business environment changed, awareness of the degradation of the natural environment increased and higher expectations regarding corporate commitment to environmental preservation arose (Tang and Gekara, 2020). New opportunities from eco-innovation in technological processes and product design have created advantages for early movers (Przychodzen et al. 2020). In the last twenty years, ESG issues have made their way into investors' analytical toolkit, opening new avenues for raising funds and managing the cost of capital (Kotsantonis et al. 2016). Overall, corporate sustainability is often discussed in terms of "transition" (Wannags and Gold, 2020). As the business environment changes organizations often need to change their work methods, policies, and procedures. However, managing change is a complex process and risky endeavour (Errida et al. 2021). The literature suggests personal dispositional are antecedents to change-oriented or proactive behaviours (Vakola at el. 2004). Among Schwartz's personal values, openness-to-change represents an emphasis on the proactive and voluntary search for novelty. Openness-to-change encompasses Stimulation and Self-direction. Stimulation values derive from the organismic need for variety and are oriented at excitement, novelty, and challenge in life (Schwartz, 2012). While defining goals of Self-direction include independent thought and action-choosing, creating and exploring (Schwartz, 2012). Both:

strive for novelty and challenge in life as well as for independent action stimulate pro-change behaviour. Oreg et al. (2008) show that the correlation between resistance to change and Openness-to-change is consistently negative across 17 countries. While Seppälä et al. (2012) demonstrate that openness-to-change values positively affect change-oriented organisational behaviour in workers with a high sense of power. Thus for CEOs with Openness-to-change value the change transition to sustainable environmental practices can be experienced as intrinsically rewarding. Therefore, we hypothesise:

Hypothesis 3: The openness-to-change values of CEOs have a positive effect on the likelihood of a company adopting environmentally sustainable practices

3. Data and methodology

To examine the impact of CEOs' personal values on corporate environmental practices, we sourced data from three distinct databases: (i) The Wall Street Transcript, which includes CEO interviews; (ii) Refinitiv Eikon, which provides comprehensive environmental metrics; and (iii) Capital IQ, which offers extensive financial data. Our final sample consists of 139 observations spanning the years 2002 to 2022.

Text data from The Wall Street Transcript (TWST) comprises CEO interviews published on the TWST website, which as is a comprehensive source of information for investors and business researchers to gain up-to-date insights into the quality of management and strategic direction of the company. Each interview was processed using text mining tools and tokenized. Subsequently, based on the value dictionary developed by Ponizovskiy et al. (2020), we computed the value frequency ratios by dividing the number of words describing specific value types by the total number of values-related words in the interview. These frequency metrics illuminate the CEOs' inclination to emphasize particular values in their conversations, thereby serving as proxies for their value profiles. For instance, a distribution of values (frequencies) such as: Power (0.23), Self-direction (0.17), Universalism (0.15), Conformity (0.09), Stimulation (0.09), Security (0.05), Benevolence (0.04), Achievement (0.02), and Tradition (0.01), highlights that the CEO prioritizes Power and Self-direction, placing relatively less emphasis on Achievement and Tradition. Furthermore, to mitigate multicollinearity, we have limited the number of considered values to Conformity, Benevolence, Universalism, Self-direction, Stimulation, Achievement, and Power.

Data on environmentally sustainable practices were obtained from the Refinitiv Eikon database. For the purpose of this analysis, the set of the metrics has been restricted to the binary variables with possibly highest number of observations. Sector-specific variables were not included in the analysis. Table 1 presents all these metrics with their original labelling. In contrast to other ESG-related research, which often employs ESG indices at a highly aggregated level, we utilize granular metrics with a narrow focus on specific fields of corporate environmental activities. The advantage of this approach is its independence from potential rater biases in aggregating ESG information. Thus our dependent variables objectively measure diverse facets of environmental performance. For the purposes of this analysis, the metrics have been additionally grouped into three subcategories: (1) corporate-wide environmentally sustainable practices, (2) practices oriented toward environmental footprint reduction, and (3) climate-related environmentally sustainable practices. This approach allows for a more detailed examination of the interplay between CEO values and environmental initiatives.

Table 1 Environmental metrics

Group	Variable	Description
Corporate-wide environmentally sustainable practices	Environmental Supply Chain Management	Binary variable: 1 if a company implemented environmental management system along the supply chain, 0 otherwise
	Environmental Partnerships	Binary variable: 1 if a company participates in partnerships for environment protection, 0 otherwise
	Environmental Expenditures Investments	Binary variable: 1 if a company launches investment oriented at environment protection, 0 otherwise
	Environment Management Team	A binary variable taking one if a company has an Environmental Management Team, 0 otherwise
	Environmental Materials Sourcing	Binary variable: 1 if a company sources materials in environmentally responsible manner, 0 otherwise
	Environment Management Training	Binary variable: 1 if a company provides employees with training on environment protection, 0 otherwise
	Green Buildings	Binary variable: 1 if a company adopts a policy to improve its building impact on the natural environment, 0 otherwise
	Toxic Chemicals Reduction	Binary variable: 1 if company achieves reduction in toxic chemicals usage and waste, 0 otherwise
Practices oriented at environmental footprint reduction	Resource Reduction Targets	Binary variable: 1 if company established targets for reducing resource consumption, 0 otherwise
	Staff Transportation Impact Reduction	Binary variable: 1 if company achieves reduction in employees transportation, 0 otherwise
	Waste Reduction Initiatives	Binary variable: 1 if company established initiatives oriented at reduction of waste, 0 otherwise
	Resource Reduction Policy	Binary variable: 1 if company established policy oriented at reduction of resource consumption, 0 otherwise
	Biodiversity Impact Reduction	Binary variable: 1 if company achieved reduction in biodiversity damage, 0 otherwise

	Policy Water Efficiency	Binary variable: 1 if company established policy oriented at improving efficiency of water consumption, 0 otherwise
	Targets Water Efficiency	Binary variable: 1 if company established targets for reduction of water consumption, 0 otherwise
	Targets Energy Efficiency	Binary variable: 1 if company established targets for improvements in efficiency of energy consumption, 0 otherwise
Climate-related environmentally sustainable practices	Targets Emissions	Binary variable: 1 if company established targets for reduction of greenhouse gases emissions, 0 otherwise
	Renewable Energy Use	Binary variable: 1 if company established targets for reduction of water consumption, 0 otherwise
	Policy Emissions	Binary variable: 1 if company established policy oriented at reducing greenhouse gases emissions, 0 otherwise
	NOxSOx Emissions Reduction	Binary variable: 1 if company achieves reduction in NOxSOx Emissions, 0 otherwise
	Policy Energy Efficiency	Binary variable: 1 if company established policy oriented at improving efficiency of energy consumption, 0 otherwise

The final component of our dataset encompasses financial ratios sourced from the Capital IQ database, which serve as control variables in our models. In a widely accepted extension of UET, Carpenter et al. (2004) propose that attention should be paid to factors moderating the relationship between cognitive properties and the decision-making result. Decision-maker power, discretion, incentive system and processes occurring in the managerial team can he relationship between managerial characteristics and organizational outcomes (Hiebl, 2014). In this paper, we do not examine the moderating effects of such situational characteristics. Nevertheless, we account for their potential importance by including a set of control variables related to managerial discretion. Managerial discretion refers to the latitude of action top managers enjoy in making choices. (Hambrick and Finkelstein, 2007). If managerial discretion is high, managerial characteristics will be better predictors of organizational outcomes than if managerial discretion is low (Hambrick, 2007). We employ three control variables to approximate managerial discretion: the ratio of cash to total assets (Cash), the ratio of total liabilities to total assets (Leverage) and return on equity (ROE). The first variable approximates the availability of resources ready for the CEO's discretionary use (Wangrow et al. 2015). The second variable approximates the level of control from debt providers, which reduces the CEO's power over corporate resources (De Angelo et al. 2002). The third variable approximates the trust from shareholders, which provides CEOs with latitude of action (Aharoni, 2014).

Table 2 presents descriptive statistics of all the variables used in our analysis.

Table 2 Descriptive statistics of all variables

vars	n	mean	sd	median	min	max	skew	kurtosis
Conformity	139	0.059	0.037	0.051	0.00562	0.250	1.6443	4.6008
Benevolence	139	0.053	0.033	0.044	0.00000	0.167	1.0730	0.9327
Universalism	139	0.133	0.052	0.127	0.02410	0.282	0.5791	0.0031
Self_direction	139	0.140	0.054	0.133	0.05028	0.333	0.7474	0.5363
Stimulation	139	0.100	0.044	0.096	0.01734	0.197	0.2721	-0.8593
Achievement	139	0.267	0.069	0.267	0.11765	0.444	0.0061	-0.2009
Power	139	0.176	0.064	0.174	0.04167	0.378	0.3948	0.2177
EnvironmentalSupplyChainManagement	126	0.087	0.283	0.000	0.00000	1.000	2.8893	6.3992
EnvironmentalPartnerships	126	0.206	0.406	0.000	0.00000	1.000	1.4340	0.0570
EnvironmentalExpendituresInvestments	116	0.112	0.317	0.000	0.00000	1.000	2.4278	3.9283
EnvironmentManagementTeam	126	0.214	0.412	0.000	0.00000	1.000	1.3761	-0.1071
EnvironmentalMaterialsSourcing	126	0.071	0.259	0.000	0.00000	1.000	3.2887	8.8860
EnvironmentManagementTraining	126	0.151	0.359	0.000	0.00000	1.000	1.9285	1.7331
GreenBuildings	126	0.111	0.316	0.000	0.00000	1.000	2.4455	4.0124
ToxicChemicalsReduction	126	0.024	0.153	0.000	0.00000	1.000	6.1727	36.3916
ResourceReductionTargets	126	0.079	0.271	0.000	0.00000	1.000	3.0753	7.5173
StaffTransportationImpactReduction	126	0.063	0.245	0.000	0.00000	1.000	3.5377	10.5993
WasteReductionInitiatives	126	0.238	0.428	0.000	0.00000	1.000	1.2152	-0.5272
ResourceReductionPolicy	126	0.278	0.450	0.000	0.00000	1.000	0.9805	-1.0468
BiodiversityImpactReduction	126	0.056	0.230	0.000	0.00000	1.000	3.8345	12.8049
PolicyWaterEfficiency	126	0.151	0.359	0.000	0.00000	1.000	1.9285	1.7331
TargetsWaterEfficiency	55	0.145	0.356	0.000	0.00000	1.000	1.9567	1.8634
TargetsEnergyEfficiency	56	0.143	0.353	0.000	0.00000	1.000	1.9868	1.9838
TargetsEmissions	63	0.302	0.463	0.000	0.00000	1.000	0.8441	-1.3074
RenewableEnergyUse	126	0.190	0.394	0.000	0.00000	1.000	1.5578	0.4302
PolicyEmissions	126	0.254	0.437	0.000	0.00000	1.000	1.1170	-0.7581
NOxSOxEmissionsReduction	126	0.032	0.176	0.000	0.00000	1.000	5.2781	26.0659
PolicyEnergyEfficiency	126	0.222	0.417	0.000	0.00000	1.000	1.3204	-0.2583
Cash	125	0.159	0.192	0.089	0.00075	0.908	1.7475	2.9575
ROE	123	-0.179	1.683	0.104	-13.5247	1.870	-6.1254	40.7197
Leverage	125	0.557	0.213	0.577	0.11148	1.096	0.1023	-0.4718

In the empirical part of our study, we used a logistic regression framework to assess the likelihood of specific environmental actions at the company level based on CEOs' values. Specifically, we computed three separate sets of nonlinear (with logit as a link function) models, using selected environmental metrics as the dependent variables and value-related variables as the predictors of the company's environmental performance.

Furthermore, for robustness check, we performed cluster analysis based on all ten Schwartz values. Firstly, we applied k-means clustering to segment the dataset into three distinct clusters based on CEOs' reported values. The optimal number of clusters (k) was determined using the elbow method based on within-cluster sum of squares. Next, we employed decision tree modelling to identify the key value-related factors influencing cluster assignment. Subsequently, we analysed how these value-based clusters differ in their implementation of environmental actions using the particular environmental metrics. This approach provides additional insights into the relationships between specific combinations of CEO values and may potentially detect non-linear relations between Schwartz values and environmental factors, as represented by the clusters, and corporate environmental performance.

4. Results and analysis

Table 3 presents logistic regression results for dependent variables related to corporate-wide environmental practices.

Table 3 Logit regression for Group I - Corporate-wide environmentally sustainable practices

	EnvironmentalSupplyChainManagement	EnvironmentalPartnerships	EnvironmentalExpendituresInvestments	EnvironmentManagementTeam	EnvironmentalMaterialsSourcing	EnvironmentManagementTraining	GreenBuildings
Predictors	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*
Conformity	-11.89 (19.05)	-1.30 (11.21)	19.18 (14.82)	10.56 (12.30)	14.47 (22.09)	13.95 (11.98)	-20.40 (16.19)
Benevolence	17.14 (24.55)	0.75 (16.90)	-2.86 (24.17)	45.56 ** (18.60)	27.41 (32.15)	13.27 (17.75)	21.74 (24.11)
Universalism	-24.74 * (14.88)	0.75 (8.54)	-26.28 ** (11.85)	9.51 (9.29)	4.13 (18.95)	-1.63 (9.10)	-20.96 * (12.25)

Self direction	7.89	7.49	-11.87	12.10	17.87	10.01	-0.30
	(18.01)	(10.78)	(14.56)	(11.31)	(23.53)	(10.78)	(15.95)
Stimulation	-0.56	19.27 *	-9.16	35.85 ***	17.30	16.75 *	2.59
	(17.41)	(9.93)	(12.10)	(11.44)	(20.30)	(9.89)	(14.65)
Achievement	3.19	7.00	-12.60	21.12 **	20.58	7.07	2.79
	(10.32)	(8.68)	(10.90)	(9.50)	(18.04)	(8.86)	(10.00)
Power	12.86	15.02	1.82	23.87 **	27.79	15.53 *	10.39
	(15.21)	(9.32)	(10.29)	(9.84)	(19.45)	(9.21)	(12.80)
Cash	3.93	-1.34	-6.14	-3.32	-4.96	-2.76	-2.58
	(4.56)	(3.12)	(4.48)	(3.06)	(9.80)	(3.23)	(5.90)
ROE	1.31	1.24	1.86	1.68	3.57	1.75	3.90
	(1.30)	(1.20)	(2.23)	(1.20)	(3.15)	(1.15)	(2.44)
Leverage	14.52 ***	5.34 ***	-6.05 **	3.58 *	8.56 *	-0.18	6.22 *
	(5.30)	(2.05)	(2.55)	(1.93)	(4.64)	(1.98)	(3.45)
Observations	112	112	104	112	112	112	112
R^2 Tjur	0.385	0.250	0.303	0.323	0.392	0.142	0.397

Among self-transcendent values, Benevolence has a significant positive effect on one environmentally sustainable practice: the establishment of an environmental management team. CEOs' benevolence is oriented toward people with whom the CEO has personal contact, and our results reveal it contributes to CEOs' commitment to invest in human capital related to environmental sustainability. Surprisingly, Universalism shows a significant negative effect on three corporate-wide practices. This seems counterintuitive and may result from specific features of American business culture driven by shareholder-value orientation. Nevertheless, our first hypothesis is rejected. Regarding openness-to-change, Self-direction shows no effect, while Stimulation has a significant positive effect on three variables. This result confirms that CEOs who value novelty are keen to implement environmentally sustainable practices. Self-enhancement has a significant positive effect on establishing environmental teams and on implementing environmental training. This result supports our second hypothesis. Leverage as the only control variable demonstrates significant effects for six out of seven respondent variables. The effects of Leverage are positive with exception of one variable: Environmental Expenditures Investments. Clearly, servicing debt reduces corporation's ability to invest in environmental sustainability.

Table 4 presents logistic regression results for dependent variables related to company's reducing impact on the natural environment: through resource consumption reductions, waste reduction and biodiversity impact reduction.

Table 4 Logit regression for Group II – Practices oriented at environmental footprint reduction

	ToxicChemicalsReduction	**ResourceReductionTargets**	**StaffTransportationImpactReduction**	**WasteReductionInitiatives**	**ResourceReductionPolicy**	**BiodiversityImpactReduction**	**PolicyWaterEfficiency**
Predictors	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*
Conformity	11.49 (31.76)	1.11 (20.07)	24.46 (19.70)	16.51 (11.41)	7.01 (10.79)	23.22 (20.50)	9.02 (12.47)
Benevolence	47.47 (51.80)	22.08 (32.54)	57.40 * (32.09)	11.76 (15.74)	53.56 *** (16.65)	-34.34 (32.57)	11.52 (20.94)
Universalism	6.94 (30.53)	1.72 (15.79)	-4.58 (17.05)	5.48 (8.88)	0.85 (7.48)	-0.21 (15.46)	-3.88 (8.96)
Self direction	45.86 (38.33)	9.01 (20.50)	10.23 (22.73)	13.34 (10.06)	18.26 * (9.55)	-7.30 (17.34)	3.68 (12.37)
Stimulation	34.88 (35.30)	18.85 (18.80)	53.43 ** (25.32)	23.99 ** (9.48)	21.83 ** (9.34)	14.81 (14.85)	6.54 (10.44)
Achievement	28.80 (28.82)	8.85 (15.17)	27.68 (17.80)	16.79 * (8.93)	14.92 * (7.69)	0.84 (16.29)	-3.11 (9.24)
Power	45.13 (36.09)	24.00 (16.66)	48.75 ** (20.67)	18.55 ** (8.95)	23.65 *** (8.41)	-8.27 (16.17)	14.62 (9.73)
Cash	-12.27 (13.60)	-3.24 (8.32)	-17.26 (12.87)	-2.60 (2.84)	-5.13 * (2.92)	-3.67 (5.55)	-2.37 (4.09)
ROE	-0.55 (1.09)	5.28 * (3.16)	-0.83 (1.48)	1.18 (1.06)	3.15 ** (1.34)	0.28 (1.33)	5.08 *** (1.96)
Leverage	8.89 (5.44)	4.20 (4.08)	1.82 (3.78)	0.41 (1.70)	0.28 (1.79)	-0.07 (2.99)	-0.04 (2.26)
Observations	112	112	112	112	112	112	112
R^2 Tjur	0.157	0.372	0.386	0.171	0.292	0.131	0.260

Benevolence is the only self-transcendent value showing significant positive effects on practices aimed at reducing environmental footprints: Staff Transportation Impact Reduction and Resource Reduction Policy. Universalism shows no significant effects. Openness-to-change values have positive effects on three variables: Staff Transportation Impact Reduction, Waste Reduction Initiatives, and Resource Reduction Policy, again confirming the third hypothesis. Self-enhancement values have a significant positive effect on the same set of variables as openness-to-change. Thus, the second and third

hypotheses are confirmed. Control ROE has a positive effect on Resource Reduction Policy and Policy Water Efficiency. However, cash to total assets has a negative effect on Resource Reduction Policy, contrary to expectations about the effect of slack resources on environmentally sustainable practices.

Table 5 presents logistic regression results for dependent variables related to Climate-related environmentally sustainable practices

Table 5 Logit regression for Group III – Climate-related environmentally sustainable practices

	TargetsEmissions	**RenewableEnergyUse**	**PolicyEmissions**	**NOxSOxEmissionsReduction**	**PolicyEnergyEfficiency**
Predictors	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*	*Log-Odds*
Conformity	103.24 *	13.81	13.53	65.27	9.99
	(58.33)	(12.25)	(10.68)	(43.51)	(11.94)
Benevolence	-43.62	11.99	27.38 *	26.08	52.18 ***
	(68.78)	(18.16)	(15.91)	(50.68)	(18.75)
Universalism	-7.37	8.31	-0.64	21.04	0.27
	(31.96)	(10.03)	(7.48)	(30.54)	(8.32)
Self direction	8.72	10.34	14.91	25.44	9.92
	(34.64)	(11.93)	(9.39)	(27.02)	(10.74)
Stimulation	81.79 *	23.72 **	14.25	16.58	15.36
	(49.01)	(10.66)	(8.83)	(22.45)	(10.09)
Achievement	-0.54	13.35	4.83	57.50	7.89
	(29.84)	(10.04)	(7.44)	(35.03)	(8.28)
Power	29.75	21.67 **	17.76 **	15.78	17.65 **
	(29.67)	(10.38)	(8.24)	(25.22)	(8.95)
Cash	-21.18	-4.99	-2.34	-31.00	-7.06 *
	(19.42)	(4.24)	(2.62)	(25.90)	(4.16)
ROE	36.84 *	1.30	2.47 **	-1.87	6.27 ***
	(21.01)	(1.27)	(1.20)	(1.82)	(2.02)
Leverage	9.74	2.67	1.29	-2.82	-0.27
	(6.73)	(2.05)	(1.80)	(5.98)	(2.05)
Observations	58	112	112	112	112
R^2 Tjur	0.777	0.227	0.195	0.314	0.329

Benevolence shows positive effects companies having established policies to reduce emissions and improve energy efficiency. Universalism shows no significant effect.

Stimulation has a significant positive effect on companies establishing targets for greenhouse gas emission reduction and using renewable energy. Power shows positive effects on using renewable energy, having a policy related to greenhouse gases emission and on having a policy related to energy efficiency. Cash to total assets has a negative effect on having a policy related to energy efficiency probably because companies having larger levels of cash are less willing to engage in cost-cutting initiatives. While ROE has positive effect on establishing policy to reduce greenhouse gases emissions and policy related to energy efficiency, which is in line with expectations regarding CEOs latitude of action effect on environmentally sustainable practices.

Robustness check

The clustering procedure identified three distinct clusters of CEOs characterized by specific combinations of personal values. Table 6 illustrates the mean importance of different Schwartz values across three identified clusters.

Table 6 Distribution of Schwartz values (averages) in clusters

Cluster	Value type									
	Security	Conformity	Tradition	Benevolence	Universalism	Self direction	Stimulation	Hedonism	Achievement	Power
1	0,06	0,08	0,01	0,08	0,12	0,19	0,12	0,02	0,20	0,13
2	0,03	0,05	0,02	0,05	0,12	0,13	0,09	0,02	0,33	0,16
3	0,03	0,06	0,02	0,04	0,15	0,12	0,09	0,02	0,25	0,22

Based on these results, CEOs in cluster 1 demonstrate a relatively greater emphasis on values related to Security, Conformity, Benevolence, Self-direction and Stimulation, suggesting a relatively balanced profile of their pro-self and pro-social motivations. Cluster 2 CEOs are predominantly driven by Achievement, indicating a focus on performance-oriented goals with lesser emphasis on power. On the other hand, CEOs in cluster 3 likely prioritize Power, potentially reflecting a more assertive and influential leadership style within their organizations.

Table 7 presents the simplified ex-post generated rules that may serve as approximative explanations for assigning clusters based on CEO values, along with the probability distribution of cluster memberships for each rule. The latter indicate the likelihood that an observation belongs to each cluster given the specified conditions.

Table 7 Simplified ex-post decision tree rules and probability distribution for CEO value-based clusters

Cluster	Probabilities	Conditions
1	[.96 .04 .00]	Achievement < 0.28 & Power < 0.17 & Universalism < 0.18
2	[.00 .96 .04]	Achievement >= 0.28 & Power < 0.23
3	[.00 .40 .60]	Achievement >= 0.28 & Power >= 0.23
3	[.25 .00 .75]	Achievement < 0.28 & Power < 0.17 & Universalism >= 0.18
3	[.11 .02 .87]	Achievement < 0.28 & Power >= 0.17

Finally, Table 8 provides a detailed analysis of how various environmental metrics are distributed across the three CEO value-based clusters.

Table 8 Mean values of environmental metrics across CEO value-based clusters

Environmental metric	Cluster 1	Cluster 2	Cluster 3
EnvironmentalSupplyChainManagement	0.034	0.133	0.077
EnvironmentalPartnerships	0.103	0.267	0.212
EnvironmentalExpendituresInvestments	0.042	0.049	0.196
EnvironmentManagementTeam	0.103	0.289	0.212
EnvironmentalMaterialsSourcing	0.000	0.133	0.058
EnvironmentManagementTraining	0.034	0.133	0.231
GreenBuildings	0.034	0.200	0.077
ToxicChemicalsReduction	0.000	0.022	0.038
ResourceReductionTargets	0.000	0.133	0.077
StaffTransportationImpactReduction	0.000	0.044	0.115
WasteReductionInitiatives	0.103	0.289	0.269
ResourceReductionPolicy	0.138	0.333	0.308
BiodiversityImpactReduction	0.103	0.067	0.019
PolicyWaterEfficiency	0.103	0.156	0.173
TargetsWaterEfficiency	0.000	0.200	0.200
TargetsEnergyEfficiency	0.000	0.286	0.100
TargetsEmissions	0.176	0.318	0.375
RenewableEnergyUse	0.138	0.222	0.192
PolicyEmissions	0.207	0.289	0.250
NOxSOxEmissionsReduction	0.000	0.044	0.038
PolicyEnergyEfficiency	0.138	0.267	0.231

These findings reveal the distinct approaches that CEOs with specific value profiles take towards environmental initiatives. Interestingly, in accordance with our hypothesis H2, CEOs driven by self-enhancement values are more inclined to adopt environmentally sustainable practices in their companies compared to CEOs with a relatively higher emphasis on self-transcendence or openness-to-change values. However, the case of Biodiversity Impact Reduction, which shows an opposite tendency, suggests a more intricate relationships between values and specific environmental contexts.

5. Discussion and conclusions

Based on logistic regression analysis of 139 observations of American companies we provide an novel insight into psychological factors driving a CEO's behaviour towards environmental performance, namely by evidencing the effect of personal values on pro-environmental practices. Our results shed a new light on extent knowledge in the field. Luque-Vílchez et al. (2019) demonstrate that managerial self-transcendent values (Universalism and Benevolence) positively influence environmental reporting. By focusing on wider set of personal values and a wider set of environmentally sustainable practices we show that the effects of self-transcendent values is not straightforward, with Benevolence showing positive, while Universalism showing negative effects on probability of company to establish environmentally sustainable practices. Overall, our first hypothesis is rejected. This puzzling result can be explained in the wider context of stakeholder management. A CEO's Universalism is related to the protection of the welfare of all people and nature. The natural environment is just one of many corporate stakeholders. Since legitimate stakeholder claims might compete for limited corporate budgets, a CEO's Universalism can be translated into a commitment to reduce the harm intergroup conflict inflicts on stakeholders. The negative effect of a CEO's Universalism on environmentally sustainable practices could be the outcome of compromising environmental goals to achieve intergroup justice and fairness (Halevy et al. 2020). This problem requires further attention by scholars to the role of CEOs values in terms of trade-offs between diverse corporate goals.

Our second hypothesis on positive effect of Self-enhancement values on environmentally sustainable practices is confirmed. Knafo and Sagiv (2004) and Ariza-Montes et al. (2017) demonstrate, that managers value self-enhancement more and self-transcendence less compared to individuals in other professions. We firmly establish that CEOs' self-enhancement values should not be viewed as an obstacle to corporate sustainability (as is often the case with individual choices in private life), but rather as a stimulator for such practices. Our results support the notion that the wider trend of including ESG performance evaluation in overall corporate performance analysis creates a context where CEOs' self-enhancement is harnessed for the benefit of the natural environment. More research is needed to examine the importance of contextual factors that interplay with CEOs' self-enhancement and pro-environmental decision-making.

Our third hypotheses is also confirmed as openness-to-change values show positive effect on probability of implementation of environmentally sustainable practices. Our results support that openness-to-change values act as enablers for the green corporate transition.

It should be stressed however, that the mentioned significant positive effects of Benevolence, Self-enhancement and Openness-to-change are not observable for all the dependent variables. Therefore, CEOs imprint only some environmental practices with their own values. This uneven effect requires further studies to account for differences in the decision-making process concerning various environmentally sustainable practices.

The effect of Leverage, as control variable, is significant and evident for corporate-wide environmental practices (except from expenditure on environmental investment). This important result can be interpreted taking a risk management perspective. Environmentally sustainable practices help to reduce environmental risk (Sharfman and Fernando, 2008). Environmental risk is a component of operational risk and environmental losses are fixed costs for a company contributing to operating leverage (Saes and Muradian, 2021). When a company decides on its overall risk tolerance, it takes into account how both: operational and financial risks contribute to its exposure to risk (Markou and Cortsen, 2021). In this vein the literature argues that operating leverage and financial leverage behave as substitutes (Li and Henderson, 1991, Trezevant, 1992). Consequently, a firm with high financial leverage has a higher incentive to reduce operational risk (Purnanandam, 2008), including implementation of environmentally sustainable practices.

The theoretical implications of our study primarily include the challenge our results pose to the conventional understanding and earlier evidence of how self-enhancement values affect pro-environmental decisions (Luque-Vílchez et al. 2019). We demonstrate that in a specific setting—where the decision-maker potentially gains recognition and improves their status due to better environmental management—self-enhancement values actually stimulate pro-environmental behaviour. This effect should be further examined by considering organization-specific differences in the extent to which the CEO's pro-environmental behaviour aligns with their self-interest.

The practical implications of our study are related to informing executive recruiters about which CEOs' personal values contribute to corporate environmental performance. Today, companies are rethinking the qualities required for a CEO expected to excel in the

ESG area (Liu et al. 2024). We demonstrate that primarily openness-to-change and self-enhancement values of CEOs are important for environmental performance, while a CEO's Universalism can even inhibit environmental performance. Additionally, our results support designing contextual factors that align CEOs' interests with ESG performance to harness self-enhancement for improving ESG outcomes. This knowledge can help companies make more informed decisions with a view to foster sustainable corporate growth

Our study has several limitations. First, our sample is limited to CEOs and companies covered simultaneously by three distinct databases: CapitalIQ, Refinitive and Wall Street Transcript (TWST), which constrained the size of our sample. Second, our study doesn't take into consideration potential ESG-CEO compensation link as a control variable due to lack of data. Third, we do not study the effect of interaction between CEOs and other important decision makers in a company. These limitations will be addressed in our future research efforts.

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