Received: 1 December 2023 | Revised: 22 January 2024 | Accepted: 30 January 2024

DOI: 10.1002/csr.2741

Corporate Social Responsibility and Environmental Management

WILEY

REVIEW ARTICLE

Archival research on sustainability-related executive compensation. A literature review of the status quo and future improvements

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Abstract

This literature review summarizes previous quantitative archival research on sustainability-related executive compensation (SREC) as the overarching research method in this field. Based on stakeholder agency theory, we included 66 peer-reviewed studies on the determinants (governance, financial, and sustainability drivers) and consequences of SREC on firm value (financial and sustainability consequences). Regarding SREC, we differentiated between the Chief Executive Officer (CEO) and the total executive level. Although we note a lower attraction of SREC research on possible determinants, there are clear indications that SREC has a positive effect on sustainability performance. In contrast to the business case argument for sustainability, this is not true for financial performance. We find major limitations and research gaps in previous studies that should be recognized in future studies (e.g., differentiation between symbolic and substantive use of SREC). Our results are mainly important for researchers, business practice and regulatory bodies.

KEYWORDS
board of directors, CEO, corporate governance, CSR performance, executive compensation, stakeholder agency theory

1 | INTRODUCTION

This study focuses on sustainability-related executive compensation (SREC) as the inclusion of environmental and/or social aspects in the variable executive compensation for executive directors. Specifically, we are interested in the governance, financial, and sustainability determinants of SREC and its financial and sustainability consequences. SREC, as a modern corporate governance mechanism, is a relevant topic for the following reasons. The inclusion of SREC is still voluntary in most settings, highly recommended by several institutions (Adu et al., 2022), and already recognized by many firms. Moreover, controversial discussions on the specific dimensions of SREC have emerged (Walker, 2022). The literature on business administration promotes the inclusion of environmental and/or social goals in executive compensation (e.g., Adu et al., 2022), among others, but law scholars have recently raised major concerns about it (Bebchuk & Tallarita, 2022; Walker, 2022). Our analysis is based on stakeholder agency theory (Hill & Jones, 1992) and assumes an incentive-alignment between top managers and stakeholders using SREC (Hill & Jones, 1992). The implementation of SREC can decrease agency conflicts (information asymmetries and conflicts of interest) because executive directors will be paid for recognizing specific environmental and/or social goals (Almici, 2023). However, SREC may be used as a pure marketing tool to signal ethical behavior to stakeholders (Winschel & Stawinoga, 2019). This stresses the heterogeneous results of previous research.

In comparison with the number of reviews on financial-related CEO compensation (e.g., Aggarwal, 2008; Bebchuk & Fried, 2010a, 2010b; van Essen et al., 2015), we know very little about the major determinants and consequences of SREC. Thus, this study presents a structured literature review of archival studies regarding SREC. As Winschel and Stawinoga (2019) is the only review on SREC, we describe in detail the differences in our approach, the major research gaps, and our key contribution. First, Winschel and Stawinoga (2019) included various studies on long-term financial compensation as SREC. They refer to either (long-term) financial or environmental and social goals in executive compensation. This strategy may be related to the low number of empirical studies on environmental and/or social goals in management pay when they prepared their study. In our analysis, we are interested in the inclusion of environmental and/or social components in executive compensation to ensure an increased comparability of the included studies. Furthermore, a comparative analysis of this restricted SREC concept is extremely useful due to the increasing awareness of environmental and/or social goals in management pay in recent years. We also stress the limitations and formulate innovative research recommendations exclusively for SREC in this restricted definition.

Second, in contrast to Winschel and Stawinoga (2019), we are only interested in archival studies to show the main statistical relationships between the determinants and consequences of SREC. This restriction is linked to the increased comparability and validity of our research. Third, Winschel and Stawinoga (2019) did not clearly differentiate between the CEO and executive levels. Conversely, we clearly differentiate between the two levels, as there are major pay differences between the CEO and other executive directors in business practice. Fourth, as archival research on SREC has greatly increased in recent years, we have a final sample of 66 studies compared with Winschel and Stawinoga (2019)'s number of 37 studies. Only 10 studies from our literature review were also reflected in Winschel and Stawinoga (2019) study. Fifth, as Winschel and Stawinoga (2019) presented a complex research structure with various proxies in their review, we rely on the separation in governance, financial, and sustainability determinants, as well as the financial and sustainability consequences for firm value. This strategy allows for a better comparative analysis of the major attributes.

Finally, due to the heterogeneous use of previous literature, there is a strong need for a detailed and comparative analysis of the respective SREC proxies and the designs of archival SREC studies. Thus, in contrast to Winschel and Stawinoga (2019), we refer to the sub-pillars of sustainability, such as environmental and social issues. This presents the key contributions of the present literature review. In detail, we selected 66 peer-reviewed archival studies on SREC and posed the following major research questions based on stakeholder agency theory:

1. *What are the main determinants of the voluntary inclusion of SREC, based on governance, financial and sustainability determinants?*
2. *What corporate financial and sustainability consequences are related to SREC?*

Our structured literature review indicates that many research results on specific firm determinants or consequences were either too low in number or too heterogeneous. We found many research gaps related to significant research gaps. However, there are clear indications that SREC increases corporate sustainability performance. This is in accordance with our stakeholder agency-theoretical framework, which assumes a positive effect of SREC on stakeholder satisfaction. One major implication of our review is that SREC may be a positive contributor to successful stakeholder management. However, previous research does not mainly support the business case argument for sustainability, assuming a positive relationship between SREC and future financial performance. This implication may be related to either conflict of interests between shareholders and other stakeholders concerning SREC or a lack of integration of financial and sustainability goals in compensation contracts. Our literature review extends and complements the scholarship on archival sustainable board governance. We stress the significant limitations of previous research and present useful recommendations for future research, based on content and methodological aspects. We see an urgent need to increase our knowledge of stakeholder pressure and reactions to SREC in archival research in accordance with stakeholder agency theory.

This article is structured as follows. First, we explain our stakeholder agency theoretical framework and the key determinants of SREC and its firm consequences (Section 2). We then stress the objectives and explain the research method (Section 3). Section 4 provides an overview of the key findings of the literature review, the bibliometric and descriptive content analysis (4.1), determinants (4.2), consequences for firm value (4.3) and key results (4.4). Section 5 discusses the main implications, the limitations of previous research, and the possibilities for future research on SREC, as well as provides a summary of the study.

2 | THEORETICAL FRAMEWORK

Previous literature on SREC predominantly used either principal agent theory (Jensen & Meckling, 1976; Ross, 1973) or stakeholder theory (Freeman, 1984). Other theories, such as institutional, managerial power, and resource dependence theories, are of low relevance. Our goal is to present the current status of archival research on the governance, financial, and sustainability determinants of SREC and its consequences for firm value. We need a management theory to specify possible drivers and an economic theory to analyze the market reactions of SREC. Thus, this literature review is based on stakeholder agency theory (Hill & Jones, 1992) as a useful combination of two dominant theories (Winschel & Stawinoga, 2019) and a good mix of management and economic perspectives.

Stakeholder agency theory assumes that executive directors have a contractual relationship with a broad range of stakeholders (Hill & Jones, 1992). Thus, top managers are requested to recognize stakeholders' demands in business strategies and processes. As the classical agency problems of conflicts of interests and information asymmetries (Jensen & Meckling, 1976; Ross, 1973) can also be related to top

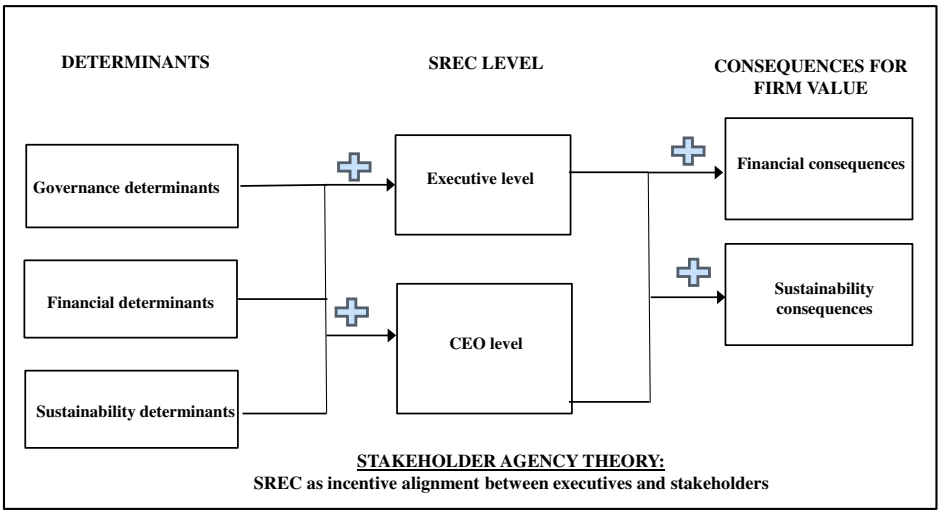


FIGURE 1 Conceptual framework on sustainability-related executive compensation (SREC).

managers and stakeholders, these problems may be solved by incentive alignment and monitoring (Hill & Jones, 1992). Corporate governance deals with solid supervision and control mechanisms to change the attitude of top managers (Shleifer & Vishny, 1997). The inclusion of environmental and/or social goals in executive remuneration as an incentive alignment represents a major instrument for decreasing agency conflicts (Adu et al., 2022). From a traditional view, compensation packages are mainly linked to financial goals and short-term preferences (Velte, 2023a, 2023b, 2023c). By contrast, SREC should increase the extrinsic motivations of executive directors to include substantive sustainable management and implement ambitious environmental and social business strategies (Winschel & Stawinoga, 2019). Therefore, we assume that SREC leads to better stakeholder relationships and firm reputation (Gao et al., 2023). The positive consequences for firms may be related to increased financial and sustainability performance. The positive connection between sustainability and financial performance is highlighted in the "business case argument" for sustainability (Schaltegger et al., 2019). This concept assumes that SREC, as an inclusion of financial and sustainability goals, can satisfy both shareholders and other stakeholders (Schaltegger et al., 2019).

As the recognition of SREC is voluntary in most regimes and is subject to management discretion in accordance with potential consequences for firms, stakeholder agency theory can also explain specific firm determinants (Hill & Jones, 1992). Corporate governance characteristics other than SREC and country governance may also have a major effect on SREC (Velte, 2023a, 2023b, 2023c). Either a complementary or a substitutive relationship can be assumed, leading to increased or decreased motivation to include SREC. Potential pressure to recognize SREC can come from the board of directors or owners (Ikram et al., 2019). Referring to cross-country settings, specific country effects (e.g., shareholder rights or enforcement strength) influence management decisions. The inclusion of SREC requires increased resources, such as implementation costs or monitoring costs. Consequently, financial aspects as slack resources may be the precondition for a future recognition of SREC (Ittner et al., 1997). Firms may also be more aware of SREC if prior sustainability efforts are successful or if stakeholder relations are more intensive. Thus, sustainability performance may be a relevant determinant of SREC. In this context, sustainability performance refers to environmental and/or social performance to differentiate it from our financial performance category. As financial performance is mainly linked to shareholders' wealth and economic performance, sustainability performance leads to stakeholder value and the sustainable transformation of business.

In the following section, we present our conceptual framework and the categories of determinants and consequences of SREC based on these stakeholder agency-related explanations.

3 | CONCEPTUAL FRAMEWORK, OBJECTIVES, AND RESEARCH METHOD

Figure 1 provides an overview of the conceptual framework for the literature review. In accordance with prior frameworks (e.g., Winschel, 2022), we stress the main firm- and country-related determinants of SREC and its effect on firm value. According to Winschel (2022), governance aspects are one of the major determinants of SREC. Based on our stakeholder agency-theoretical framework, opportunistic management behavior can be linked to SREC, leading to a symbolic implementation in contrast to stakeholder demands. Proper governance mechanisms at the corporate and country levels are needed as a monitoring tool to increase the sensibility of the board to include SREC with high quality. Moreover, Winschel (2022) and Winschel and Stawinoga (2019) also highlighted the need for adequate financial and sustainability resources as a major requirement for SREC. Financial and sustainability slack increases the probability that firms will implement SREC as a substantive management tool in accordance with stakeholder preferences. Moreover, based on the business case argument for sustainability, SREC may be related to positive consequences for firm value. Shareholders and other stakeholders may include information about SREC in their decision-making processes, leading to increased firm reputation and related financial

TABLE 1 Included variables of the literature review.

Determinants (independent variable(s))	Sustainability-related executive compensation (SREC)	Consequences for firm value (dependent variable(s))
1. **Governance:** a. Board composition: • Gender diversity • Compensation committee • CSR committees (dummy; sustainability expertise) • Board independence • Board size • Classified boards • Board cooption • CEO power • CEO duality • Director experience of using SREC in other firms • Abnormal executive compensation b. Ownership structure: • (Sustainable/long-term) institutional ownership • Ownership structure • Block ownership • Managerial/CEO ownership c. Country governance: • Social and environmental regulatory pressure • EU Non-Financial Reporting Directive: mandatory ESG reporting • Country-related ESG performance • Board regulations 2. **Financial determinants:** • (environmentally sensitive) Industry • Firm size • Earnings volatility; noise in financial performance • Growth rate • Product life cycle • Financial performance (ROA) 3. **Sustainability determinants:** • Corporate sustainability assurance • CSR performance; carbon performance • Resource efficiency policy • Innovation-oriented strategy • Strategic quality initiatives • Sustainability business plans; declaration of carbon neutrality goals and target-related year	1. **Executive level:** • Dummy (CSR/ESG; environmental; social)) • Dummy (environmental quality manager, plant manager) • Ratio (CSR/ESG) • Qualitative versus quantitative/hard targets; • Objective versus subjective targets 2. **CEO level:** • Dummy (CSR/ESG; environmental; social) • Ratio (CSR/ESG) • Number of CSR/ESG dimensions • Majority of quantitative measures	1. **Sustainability consequences:** • CSR performance and subpillars • Environmental practices; environmental product innovation strategy; environmental (carbon) activities; environmental investments; environmental regulatory performance; environmental capital expenditures • Pollution prevention performance • Emission performance; toxic emission reduction; toxic release index • Energy performance • Water performance • Resource use performance • Carbon reduction management; carbon performance • Waste management • Compliance performance • Spill performance • Long-term orientation in business reports • Pay-for-sustainability sensitivity; CEO bonus pay sensitivity to shareholder return • Innovation (patents; green patents); R&D investments • Employee innovation productivity • Corporate sustainability assurance; carbon assurance • Corporate sustainability reporting and subpillars (e.g., sustainably supply chain reporting) • Climate reporting • Integrated reporting 2. **Financial consequences:** • Accounting-based: ROE, ROA volatility • Market-based: Tobin's Q; shareholder return • Earnings management • CEO performance-induced turnover • Non-transient institutional ownership; shareholder voting support; engagement, voting support and ratio of institutional ownership • Excess annual cash bonus • Cost of equity • Price volatility • Firm risk

and sustainability consequences. Therefore, we formulated the following major research questions of our study:

1. *Which governance, financial, and sustainability determinants affect SREC?*
2. *What are the consequences of SREC on firm value, based on financial and sustainability aspects?*

We note a great diversity of the collected data, study approaches, theoretical frameworks, and analytical techniques in previous empirical research on SREC, which is linked to an increased complexity. Thus, it is a great challenge to structure the key results of previous studies and to highlight the tendencies and research gaps in previous research. Table 1 summarizes the heterogeneous use of the variables used in the included research articles.

In the following section, we explain the selection of our research method and the related steps involved in selecting the relevant literature. In this context, we followed the guidelines of Massaro et al. (2016). There are different types of literature reviews (e.g., narrative, research synthesis, systematic and structured literature reviews). As

we rely on a structured literature review, we briefly clarify the major differences between structured, systematic, and narrative reviews. In contrast to systematic or narrative reviews, we require a rigid structure in the included papers. This specifically relates to the variety of SREC proxies and the distinction between performance and reporting as well as the basic structure of determinants and consequences. As we aim to account for archival research and the economic relationships between related proxies, a structured literature review is more useful than other literature reviews, which are more open-ended in terms of structure (Massaro et al., 2016). In the following, we present Massaro et al. (2016) steps for developing a structured literature review. We remain consistent with the literature review protocol presented by these authors.

First, we identified our research gap and focus. In contrast to Winschel and Stawinoga (2019), this review focuses on quantitative archival research as the dominant research method and CSR-related executive compensation. We present the main drivers and consequences of SREC, differentiating between the total executive and CEO levels. Second, we determined the types of studies and conducted a comprehensive literature search. We used Scopus and Web of Science databases to conduct the literature review (Thorpe et al., 2005; Tranfield et al., 2003). We use asterisks to capture related terms and we include relevant keywords ("compensation", "remuneration", "pay", "incentives", in connection with "CSR", "ESG", "sustainability", "environment", "social", "governance", "carbon", "climate", "executives", "top management", "CEO", and "directors", and mixed terms) ("CSR-related compensation", "ESG-related compensation", "CSR-linked compensation", "ESG-linked compensation", "sustainability-related compensation", and related terms). We start with an initial sample of 178 studies.

Then, we set the exclusion criteria. As stated previously, we restrict our literature review to quantitative archival research. As archival research represents the dominant research method in view of a few qualitative or conceptual designs, we are interested in studying the determinants and consequences of SREC. This leads to the exclusion of 32 studies. In contrast to Winschel and Stawinoga (2019), we excluded pure long-term financial-related compensation studies from "sustainability". We are interested in SREC, which is related to the triple bottom line as financial, environmental, and social goals. Thus, we deleted another 48 studies. Articles published in English in high-quality journals with double-blind review processes were recognized solely. In this context, we refer to well-known international journal rankings (Journal Citation Reports, VHB-Jourqual, SC Imago Journal Rank, TI Journal List, Journal Quality List, ABDC Journal Quality List, and Financial Times Research Rank) and exclude any study not included in at least one of these lists. Thus, 32 more studies were excluded. Most studies include archival data for selecting independent, dependent, and control variables for their regression models (e.g., Refinitiv or Bloomberg as external ESG databases). Some studies used mixed-method design and obtained primary data, such as content analyses of sustainability or compensation reports. We do not set a temporal limitation on included studies. This screening process resulted in a final sample of 66 studies for this literature review. Figure 2 illustrates the sample selection process.

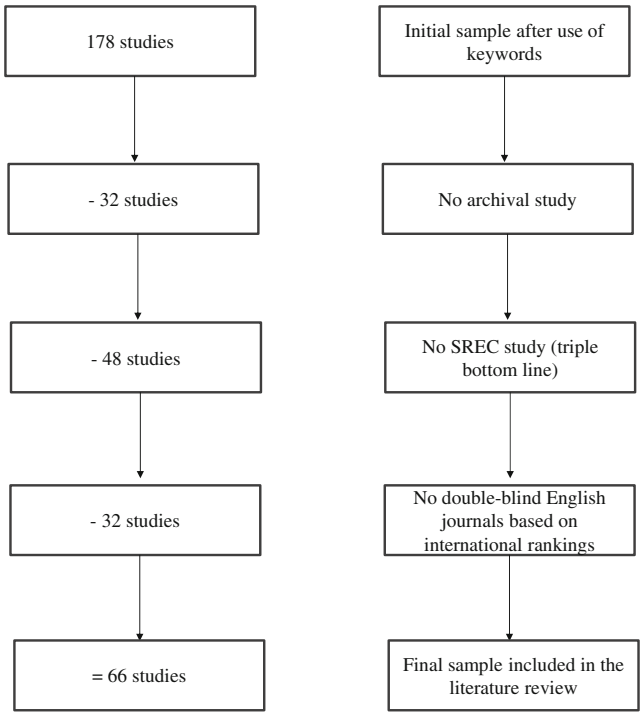


FIGURE 2 Selection process of the final sample.

Finally, we coded these studies in accordance with the selected (sub-)constructs and previously developed framework. Using vote-counting methodology (Light & Smith, 1971), we measured the significant findings and their indicators. Table 2 presents the significant positive coefficients (+), negative coefficients (−), and insignificant results (+/−).

4 | KEY FINDINGS

4.1 | Bibliometric and descriptive content analysis

Figures 3–9 show the results of the bibliometric and descriptive analysis of the literature review. Figure 3 stresses an increased awareness of SREC research in recent years (2021–2023). Figure 4 shows that both cross-country and single studies were often conducted with a focus on a US setting. Based on Figure 5, management & sustainability journals represent the most important publication outlet in comparison to disciplinary accounting and finance journals. Among others, the "Journal of Business Ethics" and "Corporate Governance" were often included. As Figure 6 indicates, most research is linked to the impact of SREC on firm value, while analyses on determinants are of lower attraction yet. Figure 7 illustrates that the validity of prior research is limited due to the dominant use of SREC as a dummy variable. Other proxies, such as the ratio or the specification of either environmental- or social-related goals were rarely included. Moreover, in line with Figure 8, the incentive function of SREC based on classical principal agent theory was mainly discussed. However, stakeholder theory, as a counterpart of agency theory, was also recognized at a moderate level. Finally, as shown in Figure 9, many studies did not properly

TABLE 2 Main results of the literature review.

Determinants (independent variable(s))	Sustainability-related executive compensation (SREC) Executive level	Sustainability-related executive compensation (SREC) CEO level	Consequences for firm value (dependent variable(s))
Determinants			
Governance determinants: a. Board composition:	• Board independence: + (Cohen et al., 2023; Hong et al., 2016; Ikram et al., 2019) • Board size: + (Ikram et al., 2019) • Board cooption: − (Ikram et al., 2019) • Classified boards: +/− (Ikram et al., 2019) • Compensation committee (independence): + (Abdelmotaal & Abdel-Kader, 2016) • Gender diversity: + (Liu et al., 2023) • CSR committees: + (Al-Shaer & Zaman, 2019); sustainability expertise of CSR committees: + (Yang, 2023) • CEO power: + (Bachmann et al., 2020) • CEO duality: − (Ikram et al., 2019)	• Board independence: + (Schiehll & Bellavance, 2009) • CEO power: − (Cho et al., 2019); +/− (Ittner et al., 1997) • Director experience with SREC in other firms: + (Li & Yang, 2023)	
b. Ownership structure:	• Ownership structure: +/− (Abdelmotaal & Abdel-Kader, 2016) • Block ownership: + (Hong et al., 2016) • Sustainable/long-term institutional investors: + (Focke, 2022) • Managerial ownership: − (Hong et al., 2016)	• CEO ownership: + (Schiehll & Bellavance, 2009)	
c. Country governance:	• Social and environmental regulatory pressure: + (Aresu et al., 2023) • EU NFRD: + (Fiechter et al., 2022); mandatory ESG reporting (Cohen et al., 2023) • Board regulations: + (Liao et al., 2021) • Country-related ESG performance (Cohen et al., 2023)		
Financial determinants	• Firm size: + (Abdelmotaal & Abdel-Kader, 2016; Cohen et al., 2023) • Industry: + (Ikram et al., 2019); environmentally sensitive industry (Cohen et al., 2023) • Product life cycle: +/− (Abdelmotaal & Abdel-Kader, 2016) • Earnings volatility: − (Ikram et al., 2019); +/− (Abdelmotaal & Abdel-Kader, 2016); + (Cohen et al., 2023) • Growth rate: +/− (Abdelmotaal & Abdel-Kader, 2016) • Stock return: + (HassabElnaby et al., 2005) • Tobin's Q: − (Ikram et al., 2019) • ROA: + (Cohen et al., 2023)	• Industry: + (Ittner et al., 1997) • (Noise in) financial performance: + (Ittner et al., 1997)	

TABLE 2 (Continued)

Determinants (independent variable(s))	Sustainability-related executive compensation (SREC) Executive level	Sustainability-related executive compensation (SREC) CEO level	Consequences for firm value (dependent variable(s))
Sustainability determinants	• CSR performance: + (Abdelmotaal & Abdel-Kader, 2016; Cohen et al., 2023); − (Ikram et al., 2019); carbon performance: – (Cohen et al., 2023) • Corporate sustainability assurance: + (Al-Shaer & Zaman, 2019) • Resource efficiency policy: + (Abdelmotaal & Abdel-Kader, 2016) • Product and service quality policy: +/− (Abdelmotaal & Abdel-Kader, 2016)	• Innovation-oriented strategy; strategic quality initiatives: + (Ittner et al., 1997) • Sustainability business plan and declaration of carbon neutrality goals and target-related year: + (Ratti et al., 2023) • Environmental report: +/− (Ratti et al., 2023)	
Consequences on firm value			
	• CSR performance: + (Almici, 2023); (Liu et al., 2023): (Adu et al., 2022); (Wasiuzzaman et al., 2022); (Ben-Amar et al., 2021); (D'Apolito et al., 2019); (Flammer et al., 2019); (Ikram et al., 2019); (Maas, 2018, only hard targets); (Hong et al., 2016); (Velte, 2016); (Banker et al., 2000); +/− (Baraibar-Diez et al., 2019, but + by interaction with CSR committees) • ES performance: + (Minciullo et al., 2022; Cavaco et al., 2020; Cohen et al., 2023; Derchi et al., 2021 after third year adoption); (Galbreath, 2017, negative impact of board non-independent members is positive by interaction) • Environmental performance: + (Al-Shaer et al., 2023; Rodrigue et al., 2013; Garcia Martin & Herrero, 2020, but not resource use, water, energy and emission; Velte, 2023a, 2023b, 2023c, but not biodiversity and water); +/− (Mahmoudian et al., 2022); environmental investments: + (Bhuiyan et al., 2021); environmental product innovation strategy: – (Birindelli & Palea, 2023); environmental innovation: + (interacted with sustainability targets: Ullah & Nasim, 2021); (Flammer et al., 2019) • Waste management: gender diversity interacted: + (Gull et al., 2023) • Carbon performance: + (Cohen et al., 2023; interacted with total compensation and only symbolic: Haque & Ntim, 2020); (Haque, 2017, initiatives, but not	• CSR/ESG performance and sub-pillars: + (Khenissi, Hamrouni, & Farhat, 2022)	**Sustainability consequences**

(Continues)

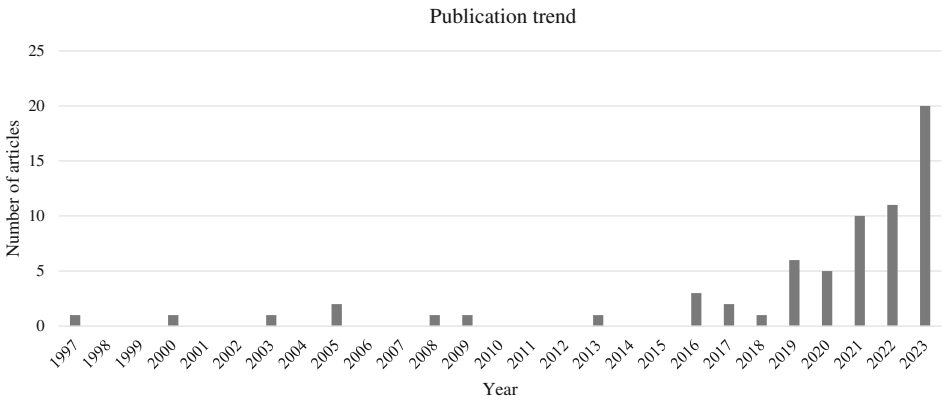
TABLE 2 (Continued)

Determinants (independent variable(s))	Sustainability-related executive compensation (SREC) Executive level	Sustainability-related executive compensation (SREC) CEO level	Consequences for firm value (dependent variable(s))
	emissions); +/− (Lu & Wang, 2021) • Toxic emission reduction performance: + (Flammer et al., 2019); toxic release index: +/− (Cordeiro & Sarkis, 2008); + (Russo & Harrison, 2005, only for facility managers, not for environmental quality managers) • Compliance and spill index: + (Cordeiro & Sarkis, 2008 only be absolute performance terms) • CSR assurance: + (Simic et al., 2023; Wang et al., 2020) • Innovation, employee innovation productivity, R&D investments: + (Tsang et al., 2021) • CSR/ESG reporting: + (Mahmoudian et al., 2022); + (Nandy et al., 2023); mediator of CSR committee: + (Radu & Smaili, 2022); (Lu & Wang, 2021) • Climate reporting: + (Cordova et al., 2021; Luo et al., 2021; Park et al., 2023); +/− (Garcia-Sanchez et al., 2023) • Sustainable supply chain reporting: + (Velte, 2023a, 2023b, 2023c) • Long-term orientation in annual reports: + (Flammer et al., 2019) • Integrated reporting: + (Wang et al., 2020; materiality disclosure quality: Velte, 2022)		
	• ROE: +/− (Cavaco et al., 2020); (D'Apolito et al., 2019); ROA: + (quantitative targets; long term: Bachmann et al., 2020); (Banker et al., 2000); +/− (Cavaco et al., 2020); (D'Apolito et al., 2019); ROA volatility: + (Tsang et al., 2021) • Tobin's Q: + (Flammer et al., 2019); − (Liu et al., 2023); +/− (Cavaco et al., 2020); shareholder return: + (Abdelmotaal & Abdel-Kader, 2016); (Said et al., 2003) • Firm risk: CSR performance interacted: + (Uyar et al., 2023); − only when risk is above the optimal level (Gao et al., 2023) • Cost of equity: +/− (Chouaibi et al., 2021) • Pay-for-sustainability sensitivity: + (Adu et al., 2022) • Non-performing loans and price volatility: – (D'Apolito et al., 2019) • Excess annual cash bonus compensation: – (Keddie & Magnan, 2023)	• ROE: +/− (Khenissi, Hamrouni, & Farhat, 2022) • Tobin's Q: – (Khenissi, Hamrouni, & Farhat, 2022) • Earnings management: – (Khenissi, Jahmane, & Hofaidllaouni, 2022) • CEO performance-induced turnover: – (Qin & Yang, 2022) • CEO bonus pay sensitivity to shareholder returns: + (Cho et al., 2019) • Non-transient institutional ownership; shareholder voting support: + (Qin & Yang, 2022)	**Financial consequences**

TABLE 2 (Continued)

Determinants (independent variable(s))	Sustainability-related executive compensation (SREC) Executive level	Sustainability-related executive compensation (SREC) CEO level	Consequences for firm value (dependent variable(s))
	• Engagement, voting support and ratio of institutional ownership (Cohen et al., 2023)		

FIGURE 3 Publication trend.



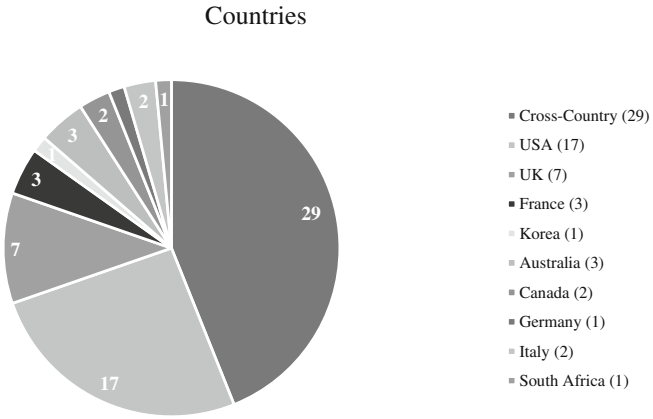


FIGURE 4 Countries.

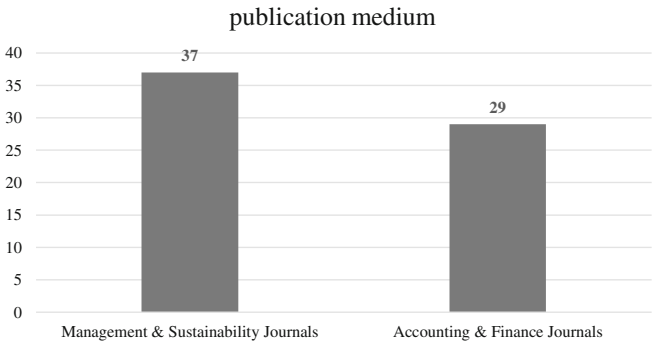


FIGURE 5 Publication medium.

check for endogeneity concerns using advanced regression models (e.g., 2 state least square (SLS)/instrumental variable (IV), generalized method of moments (GMM), propensity score matching (PSM), and difference-in-difference approach).

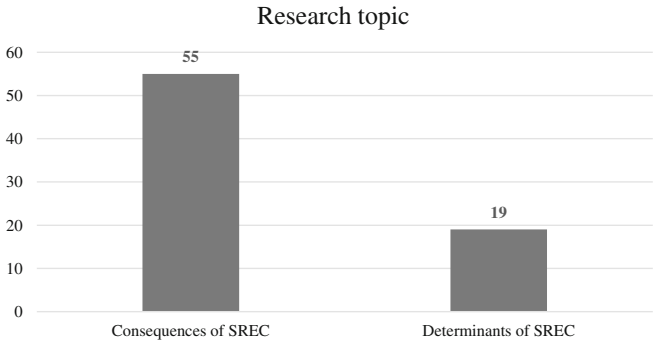


FIGURE 6 Research topic.

4.2 | Determinants of SREC

Whereas most studies in our literature review discuss the consequences of SREC on firm value, we begin with a summary of the major drivers of SREC. Research on selective determinants is structured in governance (corporate and country governance), financial, and sustainability aspects.

4.2.1 | Governance

Board composition

Consistent with our stakeholder agency-theoretical framework, SREC represents a major element of sustainable corporate governance (Velte, 2023a, 2023b, 2023c). SREC should be an incentive-alignment between executives, shareholders, and other stakeholders (Hill & Jones, 1992). Eleven studies in our review have included the effect of board composition on SREC. In this context, the monitoring and consulting function of the board of executive directors was addressed.

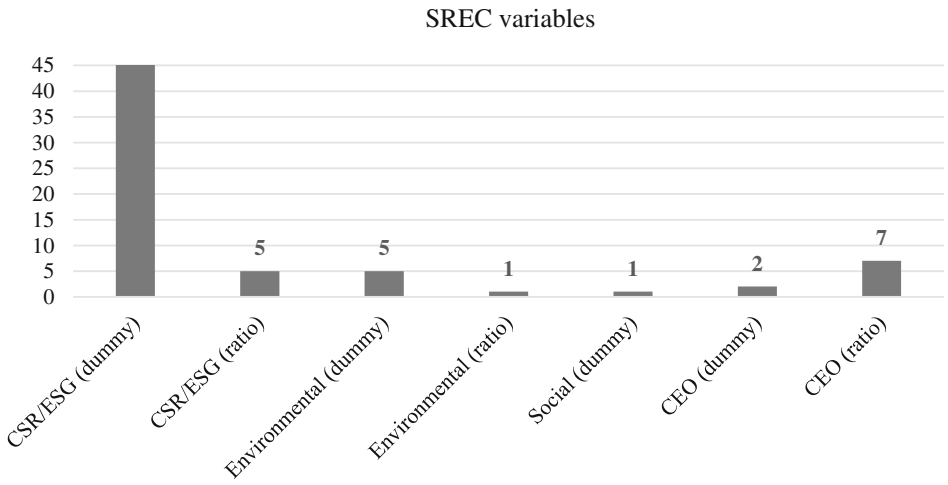


FIGURE 7 SREC variables.

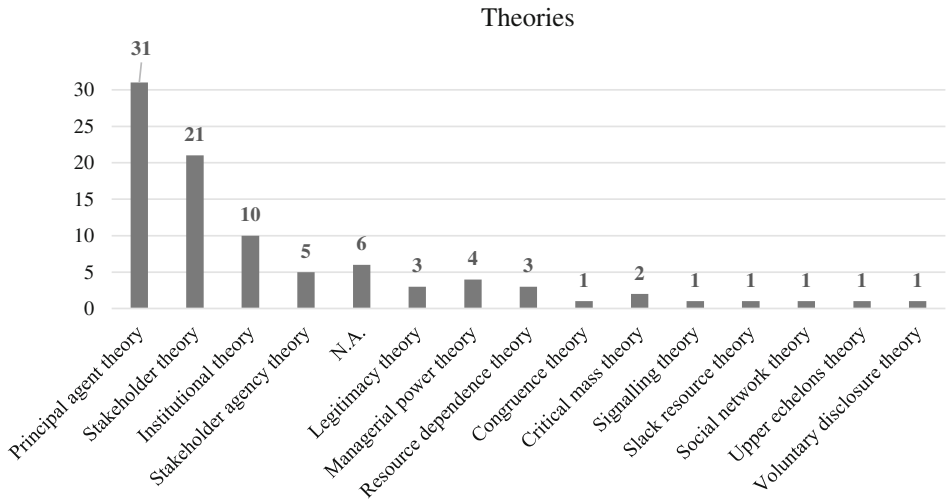


FIGURE 8 Theories.

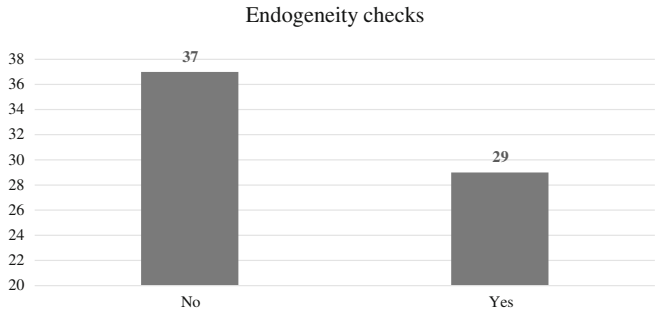


FIGURE 9 Endogeneity checks by advanced regression models (e.g., GMM, difference-in-difference, 2SLS/IV).

First, sustainable board attributes, such as *board gender diversity* (Liu et al., 2023) and *CSR committees* (Al-Shaer & Zaman, 2019; Yang, 2023) are positively related to SREC. Second, "traditional" board characteristics, such as *board independence*, also strengthen the probability of including SREC at the executive level (Cohen et al., 2023; Hong et al., 2016; Ikram et al., 2019) and CEO level (Schiehll & Bellavance, 2009). This also relates to (independent) *compensation committees* (Abdelmotaal & Abdel-Kader, 2016) and director experience with SREC in other firms (Li & Yang, 2023). According to Ikram et al. (2019), *board size* increases SREC, whereas *board cooption* reduces it and *classified boards* do not have any main effect. Overall, there are some tendencies for the composition of the board to be a major promoter of SREC in accordance with stakeholder interests.

A few heterogeneous results are related to the effect of *CEO power* on SREC, as Bachmann et al. (2020) found positive results at the executive level, whereas others stated a negative link (Cho et al., 2019) or an insignificant relationship (Ittner et al., 1997) at the CEO level. Ikram et al. (2019) found that *CEO duality* decreases SREC.

Ownership structure

In accordance with board composition, ownership as an additional active monitoring mechanism may also have a huge effect on SREC. Based on the diversity of ownership preferences (financial vs. sustainability), there may be a positive or negative impact on SREC. Overall *ownership structure* is not related to SREC (Abdelmotaal & Abdel-Kader, 2016), while *block ownership* (Hong et al., 2016) and *sustainable (long-term) institutional investors* (Focke, 2022) increase it. Controversial results were observed for *managerial* (CEO) ownership, as negative (positive) results were found (Hong et al., 2016;

Schiehll & Bellavance, 2009). Thus, stakeholder interests are only partially included in owners' decision-making.

Country governance

We know little about *country governance* as a possible complement to or substitute for corporate governance and its influence on SREC. Aresu et al. (2023) found a positive relationship between social and environmental regulatory pressure and SREC. This also relates to country-related ESG performance (Cohen et al., 2023). The *EU Non-Financial Reporting Directive (NFRD)* 2014 (Fiechter et al., 2022), *sustainability reporting regulations* (Cohen et al., 2023), and *international board regulations* (Liao et al., 2021) also contribute to higher SREC awareness, indicating some arguments for evidence-based regulations and the inclusion of stakeholder demands.

4.2.2 | Financial determinants

In this section, we differentiate between financial and sustainability determinants and assume that adequate financial and sustainability conditions within a firm may lead to increased awareness of SREC implementation. Previous research results on the financial determinants of SREC are heterogeneous. *Firm size* (Abdelmotaal & Abdel-Kader, 2016; Cohen et al., 2023) and (environmentally sensitive) *industries* increase SREC at the executive level (Cohen et al., 2023; Ikram et al., 2019) and CEO pay (Ittner et al., 1997). Moreover, Ittner et al. (1997) found a positive impact of (noise in) financial performance on CEO compensation. A non-significant link was found for *product life cycle, growth rate and earnings volatility* (Abdelmotaal & Abdel-Kader, 2016). However, others have reported a negative impact of *earnings volatility and Tobin's Q* (Ikram et al., 2019) or a positive influence of volatility, stock returns, and ROA (Cohen et al., 2023; HassabElnaby et al., 2005) on SREC.

4.2.3 | Sustainability determinants

The sustainability determinants of SREC are rarely included yet. Consistent with stakeholder agency theory, we assume a positive effect of sustainability determinants on SREC. However, previous research results have remained inconclusive. Some researchers found a positive impact of *CSR performance, carbon performance, and resource efficiency policy* (Cohen et al., 2023); Abdelmotaal and Abdel-Kader (2016), while *product and service quality policy* was not found to be related to SREC. Whereas innovation-oriented strategies were found to increase SREC for CEOs (Ittner et al., 1997), CSR performance reduces SREC (Ikram et al., 2019). Ratti et al. (2023) found a positive influence of sustainability business plans, declarations of carbon neutrality goals and target-related years on sustainability-related CEO pay, while environmental reporting was not significant. Finally, *voluntary CSR assurance* was found to increase the implementation of SREC (Al-Shaer & Zaman, 2019).

4.3 | Consequences of SREC on firm value

4.3.1 | Sustainability consequences

Performance

Most studies in this literature review addressed the effect of SREC on total sustainability performance, environmental and social performance, or solely on environmental performance. In line with CEO compensation (Khenissi, Hamrouni, & Farhat, 2022), there are clear indications that SREC increases *total sustainability performance* (Almici, 2023; Liu et al., 2023; Adu et al., 2022; Wasiuzzaman et al., 2022; Ben-Amar et al., 2021; D'Apolito et al., 2019; Flammer et al., 2019; Ikram et al., 2019; Maas, 2018, related to hard targets; Hong et al., 2016; Velte, 2016; Banker et al., 2000). While Baraibar-Diez et al. (2019) found an insignificant link, with the inclusion of sustainability board committees as a moderator, leading to a positive significance. According to Wang et al. (2020) and Simic et al. (2023), SREC increases *voluntary CSR assurance*. Few studies have documented a positive impact on combined *environmental-social performance* (Minciullo et al., 2022; Cavaco et al., 2020; Cohen et al., 2023; Derchi et al., 2021, after third-year adoption of SREC). According to Galbreath (2017), the negative association between non-independent board members and environmental-social performance is positive if SREC is interacted. These results are consistent with stakeholder agency theory, assuming greater stakeholder attraction after the implementation of SREC as a corporate governance mechanism.

However, previous results on *environmental performance* are inconclusive, as a positive (Al-Shaer et al., 2023; Bhuiyan et al., 2021; Flammer et al., 2019; Garcia Martin & Herrero, 2020; Rodrigue et al., 2013; Ullah & Nasim, 2021), insignificant (Mahmoudian et al., 2022), and negative associations (Birindelli & Palea, 2023, based on an environmental product innovation strategy) were stated. Thus, the sub-pillars of environmental performance were also focused in SREC research. *Carbon performance* is one of the "hot topics" in environmental research, but the research results are heterogeneous. Cohen et al. (2023) found a positive effect of carbon performance on SREC, whereas Haque and Ntim (2020) stressed that symbolic SREC, interacted with total executive compensation, increases carbon performance. Similarly, according to Haque (2017), SREC leads to increased input-related carbon performance (initiatives), but not to increased output factors (emissions). Lu and Wang (2021) also stressed insignificant results. Using *toxic emission reduction* performance and indices, SREC was found to have a positive association (Flammer et al., 2019; Russo & Harrison, 2005, related to facility managers, but not to environmental quality managers), while Cordeiro and Sarkis (2008) found insignificant results. Gull et al. (2023) examined *waste management* and documented a positive influence of SREC when interacting with board gender diversity. According to Tsang et al. (2021), SREC increases *innovation, employee innovation productivity, and R&D investments*. Moreover, SREC positively affects the *compliance and spill index* (Cordeiro & Sarkis, 2008).

Reporting

Compared with performance, related sustainability reporting proxies have been included to a smaller degree. There are tendencies that SREC increases overall *sustainability reporting quality* (Mahmoudian et al., 2022; Nandy et al., 2023; Radu & Smaili, 2022, based on sustainability board committees as a mediator; Lu & Wang, 2021). This is in line with our stakeholder agency-theoretical framework. Moreover, SREC leads to increased *long-term orientation* in annual reports (Flammer et al., 2019), *integrated reporting quality* (Velte, 2022; Wang et al., 2020), sustainable supply chain reporting (Velte, 2023a, 2023b, 2023c), and *carbon reporting* (Park et al., 2023; Luo et al., 2021; Cordova et al., 2021, based on scopes 1 and 2). Carbon reduction management was not affected (Cordova et al., 2021). Moreover, Garcia-Sanchez et al. (2023) did not find any impact on climate reporting.

4.3.2 | Financial consequences

Based on the business case argument for sustainability (Schaltegger et al., 2019) and stakeholder agency theory, SREC positively affects financial outputs. However, the following results are inconclusive. Regarding ROE and ROA as *accounting-based performance*, there is no significant effect of SREC at the executive level (Cavaco et al., 2020; D'Apolito et al., 2019) or CEO level (Khenissi, Hamrouni, & Farhat, 2022). Bachmann et al. (2020) only found a positive association with ROA for quantitative and long-term compensation targets. Tsang et al. (2021) found that SREC and ROA volatility are positively related.

Inconclusive results were also observed for Tobin's Q and shareholder return as *market-based financial performance*. Positive (Abdelmotaal & Abdel-Kader, 2016; Flammer et al., 2019), negative (Liu et al., 2023; Khenissi, Hamrouni, & Farhat, 2022, based on CEO compensation), and insignificant results (Cavaco et al., 2020) were found in the literature. Khenissi, Jahmane, and Hofaidllaouni (2022) reported a negative impact of SREC on *earnings management*.

Other financial consequences

Regarding *firm risk*, Uyar et al. (2023) observed a positive effect of SREC, interacted with CSR performance. According to Gao et al. (2023), SREC reduces firm risk, if it was above the optimal level. Chouaibi et al. (2021) did not find any impact of SREC on the *cost of equity*. Adu et al. (2022) reported a positive influence of SREC on *pay-for-sustainability performance sensitivity*, while D'Apolito et al. (2019) found a negative impact on *non-performing loans and price volatility*. Two studies examined CEO compensation. Qin and Yang (2022) found that SREC leads to increased *non-transient institutional ownership and shareholder voting support* as well as lower CEO performance-induced *turnover*. Cohen et al. (2023) documented a positive relationship between SREC and engagement, support, and the ratio of institutional ownership. Finally, CEO bonus pay sensitivity to *shareholder returns* increased (Cho et al., 2019). The included studies of this literature review are summarized in the appendix table.

4.4 | Summary

In summary, most of the studies included in this review analyzed the effect of SREC on *corporate sustainability performance* as firm consequences (see Table 3). Due to the voluntary implementation of SREC in most regimes, studies on governance, financial, and sustainability determinants are also important. Previous research was either too low in number or showed inconclusive results. Thus, there were no clear indications of which firm and/or country characteristics drive the motivation of the boards to include SREC. Whether regulatory or stakeholder pressure has a significant impact on sustainable corporate governance, remains unclear.

Regarding the consequences for firm value, based on the studies reviewed, there are clear indications that SREC significantly promotes *corporate sustainability performance*, consistent with our stakeholder agency-theoretical framework. However, this is not true for financial performance. Although this contradicts the business case argument for sustainability (Schaltegger et al., 2019), firms include SREC to push future corporate sustainability performance and attract stakeholders. In accordance with stakeholder agency theory, the recognition of sustainability goals in executive compensation decreases conflicts of interest and information asymmetries between top managers and stakeholders. Consequently, SREC can guarantee incentive alignment between firms and related stakeholders, leading to increased stakeholder trust and firm reputation. This was also supported by other researchers (e.g., Winschel & Stawinoga, 2019).

However, as most included studies referred to a dummy variable without any variation in SREC, these studies are not able to differentiate between *symbolic and substantive CSR policies*. On the one hand, firms may implement SREC as one part of a sound and holistic sustainable management system, assuming a sustainable business

TABLE 3 Summary of research recommendations.

Content-related aspects	Methodological aspects
• Research on stakeholder pressure and stakeholder reactions on the voluntary implementation of SREC, for example, suppliers, customers, and NGOs • Differentiation between qualitative and quantitative goals in SREC, based on certain subpillars of environmental and/or social aspects (e.g., climate neutrality) • Interaction between SREC and other sustainable corporate governance attributes, for example, board gender diversity, sustainability board expertise, and sustainable institutional ownership	• Endogeneity checks by advanced regression models, for example, difference-in-difference approach, GMM, PSM, or 2SLS/IV • Content analyses of compensation, corporate governance, and sustainability reports to generate innovative SREC variables, based on symbolic or substantive use of SREC (e.g., critical mass of sustainability goals in comparison to financial goals)

transformation and increased stakeholder value (Haque & Ntim, 2020). On the other hand, in contrast to stakeholder demands, SREC may be regarded as a marketing tool to attract new stakeholders without any consequences for overall business strategies and processes (Haque & Ntim, 2020). This opportunistic management perspective can also be realistic. In view of these research results, we address the key limitations of previous research and present useful research recommendations in the next chapter.

5 | IMPLICATIONS

5.1 | Limitations of previous studies and research recommendations

5.1.1 | Content-related aspects

Based on our conceptual framework and stakeholder agency theory, future studies should include a broad range of stakeholders, such as top managers, employees, shareholders, customers, suppliers, NGOs, or regulatory bodies, to address the degree of stakeholder and regulatory pressure on firms' decision to include SREC. As previous research focused on the consequences for firm value, we know little about the effect of stakeholder pressure on SREC. Although few studies have concentrated on capital providers (e.g., Focke, 2022; Hong et al., 2016), other stakeholders could also pressure boards of directors to implement SREC or to increase the ambitiousness of the sustainability targets. Specifically, future studies should question which sustainability topics are important from stakeholders' views and whether other sustainable corporate governance mechanisms should be jointly included to attain a successful and sustainable transformation. In accordance with stakeholder-related determinants, stakeholder reactions to SREC should be reflected more in future research. In view of the dominant use of sustainability performance measures, we know little about the inclusion of SREC in the decision-making processes of specific stakeholder groups.

Recently, some regulators (e.g., the EU Commission) have discussed the mandatory inclusion of carbon targets in variable remuneration for PIEs. Few studies have differentiated between qualitative (soft) and quantitative (hard) sustainability goals (e.g., Haque & Ntim, 2020), while most social goals are not easily monetarized compared with environmental goals (e.g., CO_2 emissions). Thus, it is questionable whether the inclusion of quantitative (hard) targets can automatically realize the substantial use of SREC. As the non-executive board members must supervise the achievement of these goals of the executive directors, they may also fear quantitative figures because they increase their monitoring duties. The inclusion of qualitative goals (e.g., those related to unspecified targets) may be easier for them to report on supervision tasks. However, qualitative social goals are also needed for sustainable business transformation and should be included in compensation reporting.

Moreover, future studies should analyze the interactions between SREC and related sustainable corporate governance attributes, especially board gender diversity, sustainability board expertise, and sustainable investors (Velte, 2023a, 2023b, 2023c). Board gender diversity refers to the inclusion of female directors, either as executives or non-executives within the board of directors. Sustainability board expertise is mainly connected to an institutionalized integration of environmental and social competence through sustainability board committees or a Chief Sustainability Officer (CSO). Sustainable investors, especially those focused on institutional investors, request the inclusion of either long-term or sustainability goals in the investment decisions of shareholders (Velte, 2023a, 2023b, 2023c). From an international perspective, in accordance with SREC, these sustainable corporate governance attributes are also voluntary for firms in many countries (Adu et al., 2022). However, many countries have implemented mandatory gender quotas on the board of directors for specific firms (e.g., Norway and the UK). Moreover, regarding the European Green Deal project and related sustainable corporate governance, reporting and finance regulations, investors in the EU must include ESG criteria in their investment decisions and report on these issues. Future researchers should analyze a possible complementary versus substitutive relationship between SREC, other sustainable board attributes, and sustainable ownership. This mainly relates to cross-country studies with mandatory or voluntary inclusion of sustainable corporate governance.

5.1.2 | Methodological aspects

From a methodological perspective, previous archival research on SREC has been confronted with massive endogeneity concerns, such as omitted variable bias and reversed causality. Most studies in our literature review only measured correlation but not causality. While most studies assumed and analyzed the impact of SREC on financial and sustainability consequences, there may be an inverse or even bidirectional relationship. The interdependency of financial and sustainability aspects as possible drivers and consequences of SREC were also stated in our conceptual framework. Regarding finance journals, in recent years, an increased number of researchers have included causality tests using quasi-natural experiments based on the difference-in-difference approach (DiD) as a complement to 2-stage least squares (SLS) models and instrumental variables (IVs) in SREC research. This relates to Liu et al. (2023), Fiechter et al. (2022), Liao et al. (2021) or Gull et al. (2023) in our literature review. These studies on SREC often used modified (lagged or mean-related) dependent or independent variables as IV. This "easy" selection of IVs is not valid and thus be extended up more "creative" and innovative instruments Table 1.

As a quasi-experimental research design, the DiD is a useful strategy for studying causal relationships. The DiD approaches in prior research on SREC are few and have mainly been related to finance journals (e.g., Liu et al., 2023). As (non) financial performance may represent either a driver or a consequence of SREC, advanced regression models, such as the DiD approach can prove a causal relationship and not a reversed causality, leading to more valid regression results.

Although archival research represents the dominant research method in this field, we emphasize the need for additional qualitative research or mixed method designs. Regarding SREC, we found a very low number of eight qualitative studies, addressing the *content analysis* of compensation and business reports (Eccles et al., 2014; Hartikainen et al., 2021; Maas & Rosendaal, 2016; Nigam et al., 2018; Winschel, 2021), *case studies* (Cavallaro et al., 2018; Kolk & Perego, 2014), and *interviews* (Emerton & Jones, 2019). As the majority of studies included in this review used SREC as a dummy variable (1 = yes, 0 = no), the content analyses of compensation, corporate governance, and sustainability reports are useful to increase the validity of research on SREC. The dominant use of SREC as a dummy variable cannot differentiate between the symbolic and substantive use of sustainable corporate characteristics on the one hand and specific sustainability topics on the other hand. First, inspired by critical mass theory (Kanter, 1977) and related empirical quantitative studies on board gender diversity (Nuber & Velte, 2021), future studies should analyze whether a critical mass of environmental and/or social goals compared with financial issues (at least 30%) can be recognized as SREC.

Second, as sustainability-contingent components in management pay are heterogeneous, researchers should reflect on the specific dimensions of SREC, differentiating between *environmental, social and governance issues and its sub-pillars*. In this context, a clear separation between major environmental topics, such as climate change, biodiversity, and the circular economy, should be realized in future designs. Moreover, sustainability-contingent components in management pay may also refer to financial topics in line with the triple bottom line of CSR. If firms only include sustainable financial goals without recognizing environmental or social issues, stakeholder needs will not be addressed properly. SREC can be classified as a "low-hanging fruit" then and can be used for symbolic reasons, if only one component of the CSR concept in line with the triple bottom line is addressed.

5.2 | Summary

Since the financial crisis of 2008–09, firms have been massively criticized for their short-term and financially oriented compensation for their executive directors (Mahoney et al., 2013). In accordance with stakeholder agency theory (Hill & Jones, 1992), the voluntary recognition of SREC can lead to incentive alignment between top managers and a broad range of stakeholders (Jensen & Meckling, 1976; Ross, 1973). Consistent with with board gender diversity, board sustainability expertise and sustainable ownership, SREC represents a major sustainable corporate governance mechanism that should lead to positive consequences for firms (Velte, 2023a, 2023b, 2023c). Due to the voluntary implementation of SREC in most regimes, stakeholders are interested in possible factors that promote extrinsic motivations of boards of directors to link sustainability to executive pay. Moreover, many regulators currently discuss the mandatory inclusion of SREC to increase the degree of sustainable business transformation (e.g., the EU Commission as part of the ambitious Green Deal project). Thus, SREC may be associated with positive financial and sustainability consequences for firms.

Based on the practical and regulatory relevance of sustainable corporate governance, an increased number of empirical studies have analyzed SREC at the CEO and total executive levels (Liu et al., 2023). Compared with qualitative designs (e.g., Winschel, 2021), most researchers referred to quantitative archival studies and found heterogeneous results. In the current study, we conducted a structured literature review of 66 peer-reviewed studies on the main determinants of SREC and its consequences for firms. We mainly contribute to a previous literature review (Winschel & Stawinoga, 2019) as follows. First, unlike Winschel and Stawinoga (2019), we clearly distinguished between the CEO and the executive level of SREC. Second, we focused on CSR targets as SREC and deleted pure financial goals in executive compensation in comparison to Winschel and Stawinoga (2019) to increase the comparability of research. Third, restricting on archival studies increases the comparability of the results. Fourth, the determinants were categorized into governance, financial and sustainability aspects. Only a few studies have analyzed potential determinants compared with consequences for firm value. While many results on included categories were inconclusive or too low in number, we found clear tendencies of a *positive* effect of SREC on *sustainability performance*. As SREC may be either a symbolic or a substantive corporate governance tool, there seems to be an adequate probability that firms will use the voluntary implementation of SREC as a successful sustainability driver. In accordance with stakeholder agency theory, SREC represents a successful corporate governance tool for substantive sustainability and stakeholder management. However, this is not true for financial performance in contrast to the business case argument (Schaltegger et al., 2019). Thus, the association between financial and sustainability-related compensation items and the overall reactions of capital providers remain questionable. The integration of financial and sustainability KPIs should be improved.

In this literature review, we presented the major limitations and research gaps that should be recognized in future designs. We highlighted the need for a more detailed analysis of the specific dimensions and the ratio of SREC, the association between SREC and other sustainable corporate governance factors, and the differentiation between the symbolic and substantive use of SREC. Based on our conceptual framework and stakeholder agency theory, there should be more emphasis on the effects and consequences of the stakeholder-related aspects on SREC, such as pressure from suppliers, customers, and the media. Possible conflicts of interest between shareholders and other stakeholder groups should be reflected in future research designs. Our results are most important for corporate governance researchers, business practice and regulatory bodies. Due to increased stakeholder and regulatory pressure, we expect a massive awareness of SREC research in the following years from an international perspective. The EU standard setter plans to include mandatory climate-related executive compensation for a wide range of firms to promote the ambitious goals of the EU Green Deal project to reach climate-neutral economy. The EU standard setter assumes that SREC is a successful driver of sustainable business

transformation. However, SREC is only one mechanism in line among many other regulations, such as mandatory sustainability reporting or sustainable supply chain duties. Thus, we emphasize the need for an integrated analysis of sustainability management instead of a single evaluation of SREC.

As a major managerial implication, the board of directors should ensure that SREC is not implemented as a symbolic stakeholder tool, but as a substantive part of a holistic stakeholder management system. Environmental and/or social goals in compensation contracts must also be linked with the overall key performance indicators of the firm and a corporate sustainability strategy. Sustainability targets in SREC should be ambitious and measurable, as the non-executive directors have to supervise the achievement of these goals on an annual basis. As there is an increased awareness of climate-related compensation, other environmental issues (e.g., biodiversity or circular economy) should also be integrated to recognize the major interdisciplinarity between sustainability issues. To decrease information asymmetries between management and stakeholders, a solid compensation report is also important. The voluntary external assurance of these reports (e.g., through the auditors) can increase reliability and lead to increased firm reputation. The massive use of SREC as a simple dummy variable in previous studies shows the low transparency of compensation reports in business practice. Stakeholders should be better informed about the specific dimensions of environmental and/or social targets (Bhuiyan et al., 2021; Cordeiro & Sarkis, 2008; Russo & Harrison, 2005), qualitative (soft) versus quantitative (hard) measures (Bachmann et al., 2020; Maas, 2018; Qin & Yang, 2022), and objective versus subjective measures (Ikram et al., 2019).

ACKNOWLEDGMENT

Open Access funding enabled and organized by Projekt DEAL.

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How to cite this article: Velte, P. (2024). Archival research on sustainability-related executive compensation. A literature review of the status quo and future improvements. *Corporate Social Responsibility and Environmental Management*, *31*(4), 3119–3147. https://doi.org/10.1002/csr.2741

APPENDIX A

TABLE A1 Archival research on sustainability-related executive compensation (SREC).

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
Determinants						
2023	Aresu et al.	Journal of Management	International 2328 firms 2003–15 Probit: logit; Heckman Institutional theory	Country-related social and environmental regulatory pressure (Environmental Performance Index; Human Development Index; CO_2 emissions of the country) moderator: board independence, block holder ownership	SREC for the first time (Refinitiv)	+ Mod: board independence strengthens and block holder weaken the link
2023	Cohen et al.	Journal of Accounting Research	International 2011–2020 4395 firms Agency theory	Environmentally sensitive industry Mandatory ESG reporting in the country Country-related environmental performance Firm size Direct carbon emissions Volatility Financial performance (ROA) Abnormal executive compensation Board independence Institutional ownership SBTI signatures ESG performance Board gender diversity Industry-peers with SREC	SREC (dummy)	+ + + + + + +/− + + + +
2023	Li and Yang	Journal of Business Finance & Accounting	USA 2005–2018 437 firms Logit Institutional theory	directors with experience of using CSR contracting in other firms Moderator: diverse Stakeholders with varying CSR interests; operation in Unpredictable market environments; peers in the same industry have adopted CSR contracting	CSR-related CEO compensation for the first time (dummy; **majority of quantitative targets**)	+ Mod: more pronounced

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2023	Liu et al.	Journal of International Financial Markets, Institutions and Money	International 41,236 firm-year observations 2002–18 Linear probability; logit; 2SLS/IV; diff-in-diff Principal agent theory/ resource dependence theory	Board gender diversity (ratio); female executives; female independent members; at least two (critical mass); female chair; female CEO; female compensation committee member; Moderator: countries with greater gender equity for senior positions (World Bank); countries with lower masculine culture (Hofstede)	SREC (Refinitiv)	+ Moderator: more pronounced
2023	Ratti et al.	Journal of Cleaner Production	Italy 2021 158 firms Logit Agency theory	Sustainability plan for environmental performance (dummy) Declaration of carbon Neutrality goals and target-related year (dummy) Environmental report (dummy)	**Environmental-related CEO compensation (dummy; short-term and/or long-term; ratio)**	+ + +/−
2023	Yang	Journal of Management Accounting Research	USA 2005–2018 6227 firm-year observations OLS; 2SLS/IV Stakeholder theory	Sustainability expertise of the sustainability board committee (hand-collected)	**SREC (quality; hand-collected)**	+
2022	Fiechter	Journal of Accounting Research	EU versus USA 2011–18 Diff-in-diff n.A.	NFRD came into effect 2018 4608 EU-firm years and 4608 US-firm years Moderator: previously low levels of CSR reporting and performance	CSR-related governance (CSR committees; E or S trainings; SREC)	+
2022	Focke	Corporate Social Responsibility and Environmental Management	International (Europe) 5979 firm-year observations 2010–17 Logit; PSM; granger causality Principal agent theory	Sustainable institutional investors (PRI signatures) Long-term institutional investors	SREC (Refinitiv)	+
2021	Liao et al.	Corporate Governance	International 2002–11 3514 firms Diff-in-diff Stakeholder theory	Board regulations during 2003–07	SREC (Refinitiv)	+

(Continues)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2020	Bachmann et al.	Journal of Business Finance & Accounting	Australia 2004–16 1085 firm-year observations OLS; Heckman 2 stage; PSM Principal agent theory/ managerial power theory	CEO power (index; Finkelstein 1992)	**CSR-related executive cash bonus (self-created; ratio; qualitative, Undefined, quantitative, CSR)**	+
2019	Al-Shaer and Zaman	Journal of Business Ethics	UK 2011–15 1345 firm-year observations Logit; Heckman 2 stage; 2SLS/ IV Principal agent theory	CSR committees CSR assurance (big four) Moderator: sustainability sensitive industry	SREC (Refinitiv)	+ + (but not joint effect) Mod: more pronounced
2019	Cho et al.	Corporate Governance	UK 2007–13 204 firms Panel; 2SLS/IV Principal agent theory/ managerial power theory	CEO power (index; Finkelstein 1992) Moderator: compensation committee monitoring (independence; chair independence, size)	**CSR-related CEO bonus (self-created; dummy; ratio)**	- Moderator: weakened
2019	Ikram et al.	Journal of Banking & Finance	USA S&P 500 2009–2013 OLS; Granger causality; GMM; logit; PSM Principal agent theory/ managerial power theory/ stakeholder theory	Industry (Mining and Minerals, Oil and Petroleum Products, construction/Materials, Steel Works, and Utilities) Firm size Board independence Board size Lower classified boards Lower board cooption Lower CEO duality	**SREC (dummy; self-created; objective as formulaic relationship between CSR and executive compensation vs. subjective)**	+ (dummy) + (objective: lower earnings volatility, lower Tobin's Q, lower CSR performance, board independence, board size, lower board cooption and lower CEO duality)
2016	Abdelmotaal and Abdel-Kader	Journal of Applied Accounting Research	UK 2009–11 350 firms Logit Principal agent theory/ stakeholder theory	firm size compensation committee independence CSR committee CSR performance resource efficiency policy ownership structure product and service quality policy earnings volatility growth rate product life cycle	SREC (Refinitiv)	+ + + + + + +/− +/− +/− +/− +/−

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2016	Hong et al.	Journal of Business Ethics	USA 2012–13 2561 executive-level observations OLS Social network theory	Board independence block ownership Managerial ownership	SREC (self-created)	+ + -
2009	Schiehll and Bellavance	Corporate Governance	Canada 2000–1 132 firms Logit Principal agent theory	Board independence CEO ownership Moderator: market to book ratio; R&D intensity; Fisher z score	**CSR-related CEO bonus (self-created)**	+ + Mod: + (market to book)
2005	HassabElnaby et al.	Journal of Management Accounting Research	USA 1993–98 91 firms Panel Principal agent theory	Financial performance (change in stock returns)	SREC (dummy)	+
1997	Ittner et al.	The Accounting Review	USA 1993–94 317 firms PLS Principal agent theory	Industry (telecom. and utilities) Innovation-oriented strategy Strategic quality initiatives (Noise in) financial performance CEO power (score; Finkelstein 1992)	**CSR-related CEO bonus (ratio; self-created)**	+ + + + +/−
Consequences						
2023	Almici	Meditari Accountancy Research	Italy 2016–20 400 observations OLS; 2SLS/IV Stakeholder agency theory	**Environmental-related executive compensation; social-related executive compensation (self-created; automated textual analysis)** Moderator: board independence; compensation committee independence; gender diversity; board size; non CEO duality; CSR committee	CSR performance	+ + Moderator: (board size and social)
2023	Al-Shaer et al.	Review of Quantitative Finance and Accounting	UK 2011–19 1540 firm-year observations OLS; GMM; 2SLS/IV; PSM; Heckman 2 step Managerial power theory/ stakeholder theory	SREC (Refinitiv) Moderator: board gender diversity; board independence; sustainability sensible industries; non-loss making firms; older years and recent years	Environmental performance and sub-pillars (emission, environmental practices; Refinitiv)	+ Mod: non-loss making firms +

(Continues)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2023	Birindelli and Palea	Corporate Governance	International 2010–19 94 banks Logit Institutional theory	CSR-related executive compensation (Refinitiv)	Environmental product innovation strategy (dummy; Refinitiv)	−(!)
2023	Gao et al.	International Journal of Managerial Finance	USA 2010–20 1382 firms OLS; panel; 2SLS/IV; PSM; difference-in-difference Principal agent theory/ stakeholder theory	risk-taking incentives provided in executive compensation (vega) SREC (also as moderator; Bloomberg)	Firm risk (total and idiosyncratic)	+ −(only when risk is above the optimal level: no effect when risk is below the optimal level) Mod: mitigates
2023	Garcia-Sanchez et al.	Business Strategy and the Environment	International 2015–20 8963 firm-year observations Tobit Signaling theory	Analyst coverage SREC (also as moderator; Refinitiv)	Climate reporting (also change; Refinitiv)	+ +/− Mod: +/−
2023	Gull et al.	The British Accounting Review	International 2002–17 10.484 and 11.178 firms OLS; PSM; Heckman; 2SLS/IV; diff-in-diff Critical mass theory	Board gender diversity (ratio; at least two; female independence) **Moderator**: SREC (Refinitiv)	Waste management (Refinitiv)	+ Mod: +
2023	Keddie and Magnan	Sustainability Accounting, Management and Policy Journal	USA 2022 firm-year observations 2015–20 Managerial power theory OLS	SREC Moderator: CEO duality; CSR committee; long-term institutional investors (pension funds)	excess annual cash bonus compensation	− Mod: more pronounced
2023	Liu et al.	Journal of International Financial Markets, Institutions and Money	International 41,236 firm-year observations 2002–18 Linear probability; logit; 2SLS/IV; diff-in-diff Principal agent theory/ resource dependence theory	SREC (Refinitiv) Moderator: Board gender diversity (ratio)	CSR performance (Refinitiv) Financial performance (Tobin's Q)	+ − (mod: +)
2023	Nandy et al.	Journal of Applied Accounting Research	International 2002–19 29,054 firm-year observations Logit; OLS; 2SLS/IV Stakeholder theory/upper echelons theory	SREC (Refinitiv) CSR reporting (GRI adoption) Moderator: SREC (Refinitiv)	CSR reporting (GRI adoption) Financial performance (Tobin's Q)	+ + (2002–2010) −(2011–19) Mod: +

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2023	Park et al.	Journal of Contemporary Accounting and Economics	Korea 2011–19 1537 firm-year observations Logit n.A.	SREC (dummy; Refinitiv)	Carbon reporting (dummy; scope 1, 2 and 3)	+
2023	Simic et al.	International Journal of Auditing	UK 1326 firm-year observations 2010–18 Probit; logit; Heckman 2 stage Stakeholder theory	SREC (Refinitiv) Moderator: mandatory greenhouse gas emissions reporting mandate, no-carbon intensive industry, board gender diversity	Carbon assurance (dummy)	+ Mod: more pronounced (except for diversity)
2023	Uyar et al.	Journal of Cleaner Production	International 43,803 observations 2002–19 GMM; PSM; 2SLS/IV Principal agent theory/ stakeholder theory	aggressive CSR performance (residual; Refinitiv) **Moderator**: SREC (Refinitiv)	Firm risk (Altman's z-score; Zmijewski score)	+ Mod: weakened
2023a, 2023b, 2023c	Velte	Business Strategy and the Environment	International (Europe) 2014–21 2630 firm-year observations Panel; 2SLS/IV Stakeholder theory	SREC (Refinitiv)	Environmental performance and subpillars (carbon, emissions reduction, biodiversity, resource use, and water performance)	+(except for biodiversity and water)
2023a, 2023b, 2023c	Velte	Journal of Strategy and Management	International (Europe) 2017–21 1577 firm-year observations Logit Stakeholder theory/critical mass theory	SREC (Refinitiv)	sustainable supply chain reporting (score)	+
2023	Yang	Journal of Management Accounting Research	USA 2005–2018 6227 firm-year observations OLS; 2SLS/IV Stakeholder theory	**SREC (quality; hand-collected)** Moderator: Sustainability expertise of the sustainability board committee	CSR performance (database)	+
2022	Adu et al.	Business Strategy and the Environment	UK 2009–2018 262 firms OLS; GMM Institutional theory	CSR-related executive compensation (self-created) CEO and executive pay Moderator: SREC (hand-collected)	Pay-for-sustainability sensitivity ESG performance Substantive versus symbolic environmental (carbon) activities (process-oriented CO_2 emissions reductions versus actual CO2 emissions; Bloomberg)	+ + (moderator: more pronounced by symbolic activities)

(Continues)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2023	Cohen et al.	Journal of Accounting Research	International 2011–2020 4395 firms OLS Agency theory	SREC (dummy; Refinitiv)	Engagement, voting support and ratio of institutional ownership Change of carbon emissions Change in ESG performance Change in financial performance (ROA, stock return)	+ − + +/−
2022	Khenissi et al.	Finance Research Letters	France 102 firms 2014–19 GMM; instrumental quantile regression Principal agent theory/ stakeholder	CSR-related CEO compensation (**ratio; self-created**)	Financial performance (Tobin's Q; ROE) ESG performance (Refinitiv; also E, S, G score)	−(Tobin's Q) +
2022	Khenissi et al.	Finance Research Letters	France 106 firms 2014–19 Panel Principal agent theory/ legitimacy theory	CSR-related CEO compensation **(ratio; self-created)**	Earnings management (discretionary accruals and real earnings management) Moderator: ownership concentration	− Mod: weakened
2022	Mahmoudian et al.	Corporate Governance	International 2010–16 9059 firm-year observations 3SLS n.A.	SREC (Sustainalytics)	Environmental performance Sustainability reporting (GRI levels)	+/− +
2022	Minciullo et al.	Sustainability	Europe (United Kingdom, Germany, Spain, France, and Italy) 2020 185 firms OLS Resource dependence theory/ stakeholder agency theory	SREC (dummy; **quantitative; self-created**)	ES performance (Refinitiv)	+ (only quantitative)
2022	Radu and Smaili	Journal of Business Ethics	Canada 2012–18 952 firms-year observations OLS Stakeholder theory	CSR committee (Bloomberg) **Mediator**: SREC (Bloomberg)	Environmental reporting Social reporting (Bloomberg)	+ + (both direct and indirect effect on environmental performance; only indirect effect on social performance)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2022	Qin and Yang	Journal of Corporate Finance	USA 433 firms 2004–18 Probit; 2SLS/IV n.A.	**CSR-related CEO compensation (dummy; number of dimensions; ratio; majority of quantitative measures; self-created)** Moderator: CEO power, during and after the global financial crisis, CSR performance, CEO ability	CEO performance-induced turnover Non-transient institutional ownership shareholder voting support	− Moderator: more pronounced (except for CEO power) +
2022	Velte	Sustainable Development	International 2014–19 672 firm-year observations panel Stakeholder theory	SREC (Refinitiv) Moderator: CEO power	Integrated reporting (materiality disclosure quality; score)	+ Mod: weakened
2022	Wasiuzzaman et al.	Managerial and Decision Economics	International 2013–19 20,016 firm-year observations Panel Principal agent theory/ institutional theory/slack resources theory	Financial slack (liquidity) SREC (also as moderator; Refinitiv)	CSR performance (Refinitiv)	+/− + Mod: +/−
2021	Ben-Amar et al.	Corporate Social Responsibility and Environmental Management	International 1272 firms 2014 OLS; SEM Institutional theory	SREC (Sustainalytics) **Mediator: CSR incentives**; CSR governance; country-related stakeholder orientation	CSR performance (Sustainalytics)	+ Mediator: +
2021	Bhuiyan et al.	Journal of Cleaner Production	International (Europe) 2001–15 330 firm-year observations OLS; PSM Principal agent theory/ stakeholder theory	**Environmental**-related executive compensation (Bloomberg)	Environmental investments (Bloomberg)	+
2021	Chouaibi et al.	Sustainability	France 154 firms 2015–20 Panel Stakeholder theory	SREC (Refinitiv)	Cost of equity (ex ante implicit)	+/−
2021	Cordova et al.	Corporate Governance	International 2251 firm-year observations 2013–18 Logit; panel; GMM	SREC (Refinitiv)	Carbon reporting (dummy; Refinitiv) Carbon reduction management (delta)	+ (scope 1, scope 2) +/−

(Continues)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
			Stakeholder theory/legitimacy theory			
2021	Derchi et al.	Journal of Business Ethics	USA 746 firms 2002–13 Panel Principal agent theory	SREC (Refinitiv) Moderator: CSR committee; CSR reporting; CSR assurance (dummy; Refinitiv)	CSR performance (KLD; E and S strengths and concerns)	+ (after third year adoption) (environmental and social concerns were reduced, but only environmental strengths were increased) Moderator: + (CSR committee; CSR reporting)
2021	Lu and Wang	Journal of International Financial Markets, Institutions & Money	International 12,218 firm-year observations 2010–17 SEM/3SLS Voluntary disclosure theory/ legitimacy theory	SREC (Sustainalytics)	CSR reporting Carbon performance (Sustainalytics)	+ +/−
2021	Luo et al.	Journal of International Accounting Research	International 6976 firms 2007–2015 OLS; panel; 2SLS/IV Stakeholder agency theory	SREC (Refinitiv) Moderator: code law system; inefficient rule of law, strong norms toward climate change, collectivist societies, long-term orientation (culture)	Carbon reporting (dummy; CDP) Carbon reporting (CDP climate disclosure leadership score)	+
2021	Tsang et al.	Journal of Corporate Finance	International 2004–15 17,855 firm-year observations OLS; diff-in-diff; Heckman 2 stage Stakeholder theory	SREC (Refinitiv; Sustainalytics) Moderator: countries with weak stakeholder orientation, weak legal environments and without mandatory CSR reporting rules	Firm innovation (patents; citations on patents) Employee innovation productivity ROA volatility R&D investment	+ Mod: more pronounced + + +
2021	Ullah and Nasim	Journal of Environmental Management	International (BRICS)202 firms 2009–18 Probit Stakeholder theory/ institutional theory	Sustainability targets **Moderator**: SREC (Bloomberg)	Environmental innovation (dummy; Bloomberg)	+ Mod: +/−
2020	Bachmann et al.	Journal of Business Finance & Accounting	Australia 2004–16 1085 firm-year observations OLS; Heckman 2 stage; PSM Principal agent theory/ managerial power theory	**CSR-related executive cash bonus (self-created; ratio; qualitative, undefined, quantitative)**	Financial performance (ROA)	+ (quantitative targets; long-term), − (undefined)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2020	Cavaco et al.	Industrial Relations	International 4000 firms 2004–18 OLS; 2SLS/IV; Diff-in-Diff Principal agent theory	SREC (Vigeo Eiris) Mediator: code law	E, S, performance (Vigeo) Financial performance (ROA, ROE, Tobin's Q)	+ +/− Mediator: +
2020	Garcia Martin and Herrero	Corporate Social Responsibility and Environmental Management	International (EU) 644 firms 2002–2017 Panel Principal agent theory/ stakeholder theory	SREC (Refinitiv)	Environmental performance (Refinitiv; resource use; water, energy, emission)	+ (E score, but not subpillars)
2020	Haque and Ntim	British Journal of Management	International (Europe) 4379 firm-year observations 2002–16 Panel; GMM Institutional theory	Total compensation **Moderator**: SREC (Refinitiv)	Carbon performance (process oriented as symbolic; CO_2 emissions as substantive; Refinitiv)	+(symbolic) Moderator: + (symbolic)
2020	Wang et al.	European Accounting Review	South Africa 111 firms 2012–2015 Logit/OLS/PSM/Heckman two stage Principal agent theory	SREC (self-created)	CSR assurance (dummy) CSR assurance (score) Integrated reporting (score; EY ranking)	+
2019	Baraibar-Diez et al.	Corporate Social Responsibility and Environmental Management	International (EU) 1697 firm-year observations 2005–2015 Panel Stakeholder theory/ institutional theory	SREC (Refinitiv) Moderator: CSR committee	E, S, G performance (Refinitiv) Financial performance (Refinitiv)	+/− Moderator: only by CSR committees + +/−
2019	Cho et al.	Corporate Governance	UK 2007–13 204 firms Panel; 2SLS/IV Principal agent theory/ managerial power theory	**CSR-related CEO bonus compensation (self-created; dummy; ratio)**	CEO bonus pay sensitivity to shareholder returns	+
2019	D'Apolito et al.	Journal of Financial Management, Markets and Institutions	International (Europe) 42 banks 2013–17 Panel Principal agent theory	SREC (**ratio; self-created**)	CSR performance (Refinitiv) Financial performance (ROA; ROE) Riskiness profile (non-performing loans; price volatility)	+ +/− −

(Continues)

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2019	Flammer et al.	Strategic Management Journal	USA 4533 firm-year observations 2004–2013 Panel; 2SLS/IV Principal agent theory	SREC (dummy; **ratio**; self-created)	Long-term orientation (textual analysis) Financial performance (Tobin's Q) CSR performance (KLD) Toxic emission reduction (U.S. Environmental Protection Agency (EPA)) Green patents	+
2019	Ikram et al.	Journal of Banking & Finance	USA S&P 500 2009–2013 OLS; Granger causality; GMM; PSM Principal agent theory/ stakeholder theory	**SREC (**dummy; self-created; **objective as formulaic relationship between CSR and executive compensation vs. subjective)** Moderator: volatility; corporate governance quality	CSR performance (KLD) and sub-pillars Safety, Health and Environment	+ (objective and subjective) Moderator: corporate governance quality
2018	Maas	Journal of Business Ethics	USA 400 firms 2008–2012 Panel Principal agent theory	SREC (**ratio**; self-created; **quantitative as hard target percentage, amount, or other quantifiable metric versus soft**)	CSR performance (KLD; also delta; strengths and weaknesses)	+ (hard targets) (not bi-directional)
2017	Galbreath	Business Strategy and the Environment	Australia 2012 300 firms OLS n.A.	Board non-independent members **Moderator**: SREC (self-created)	E, S performance (GES database)	– Mod: then positive
2017	Haque	British Accounting Review	UK 256 firms 2002–2014 Panel/2SLS/IV Principal agent theory/ resource dependence theory	SREC (Refinitiv)	Carbon performance (Refinitiv; carbon reduction initiatives index versus GHG emissions)	+ (initiatives but not emissions)
2016	Abdelmotaal and Abdel-Kader	Journal of Applied Accounting Research	UK 2009–11 350 firms Logit Principal agent theory/ stakeholder theory	SREC (Refinitiv)	Shareholder return	+

TABLE A1 (Continued)

Year of publication	Author(s)	Journal	State Sample Year(s) model	Independent variable(s)	Dependent variable (s)	Significant results
2016	Hong et al.	Journal of Business Ethics	USA 2012–13 2561 executive-level observations OLS Social network theory	SREC (self-created)	CSR performance (KLD database)	+
2016	Velte	Problems and Perspectives in Management	Germany 2010–2014 677 firm-year observations OLS Stakeholder agency theory	SREC (**ratio; self-created**)	CSR performance (Refinitiv)	+
2013	Rodrigue et al.	Journal of Business Ethics	USA 219 firm-year observations 2003–08 Logit n.A.	SREC (interviews)	Environmental regulatory performance (KLD) Environmental capital expenditures Pollution prevention performance	+
2008	Cordeiro and Sarkis	Business Strategy and the Environment	USA 207 firms 1996 OLS Principal agent theory	**Environmental**-related executive compensation (**survey**)	Toxics release index (Toxics release inventory) Compliance index Spill index	+/− + (only by absolute performance terms) + (only by absolute performance terms)
2005	Russo and Harrison	Academy of Management Journal	USA 316 facilities (survey) 1999 Tobit Congruence theory	SREC (dummy; **salary of the environmental quality manager or plant manager tied to environmental performance; survey**)	Toxics release index (Toxics release inventory)	+ (only for facility managers, not for environmental quality managers) (also reversed causality)
2003	Said et al.	Journal of Management Accounting Research	USA 1993–98 1441 firm-year-observations Panel Principal agent theory	SREC (dummy)	Financial performance (ROA, stock returns)	+ (market, but not accounting-based)
2000	Banker et al.	The Accounting Review	USA 18 hotels 1991 OLS Principal agent theory	SREC (dummy)	Financial performance (operating profit; revenues) CSR performance (customer return; customer complaints)	+ +