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RESEARCH ARTICLE

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Executive compensation and sustainable business practices: The moderating role of sustainability-based compensation

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Abstract

This study seeks to contribute to the extant business strategy and the environment literature by investigating the effect of CEO pay and executive compensation (EC) on sustainable business practice (*SBPs*). It also distinctively ascertains whether the pay-for-sustainability sensitivity (*PSS*) is reinforced in firms with sustainability-based compensation (*SBC*) policy. Using a sample of 262 UK listed firms from 2009 to 2018, our findings are threefold. First, the findings reveal that both CEO pay and EC variables have positive effect on all *SBP* measures, except CO_2 reduction performance where the link is negative. Second, the study shows that the *PSS* is reinforced for firms that implement *SBC* policy. Finally, we detect that both the *PSS* and the moderation effect of *SBC* on the *PSS* are higher in the symbolic construct of *SBPs* than the actual measures. The results support insights drawn from neo-institutional theory. The findings have key implications for regulators and policy makers.

KEYWORDS
environmental policy and stakeholder engagement, executive compensation, sustainable business practices, sustainable development

1 | INTRODUCTION

This paper examines the effect of CEO pay and executive compensation (EC) on sustainable business practices (*SBPs*) in UK FTSE 350 firms. To do this, the study distinctively explores the probable moderating effect of sustainability-based compensation (*SBC)* on the pay-for-sustainability sensitivity (*PSS*). Additionally, the study explores these relationships in both substantive measures and symbolic construct of *SBPs*. The empirical investigation is mainly informed by theoretical insights drawn from neo-institutional theory (*NIT*) (Haque & Ntim, 2020; Karyawati et al., 2020; Shahab & Ye, 2018).

Global attempts that seek to minimize global climatic disruption and enhance climate change through the design and adoption of sustainable corporate, national, and international strategies have been deepened over the past three decades (Brooks & Schopohl, 2019). Notably, corporate sustainable management strategies, particularly those involving environmental performance and greenhouse gas (*GHG*) emission abatement initiatives, have been intensified in the last decade (Haque & Ntim, 2020; Lu & Herremans, 2019; Sovacool et al., 2021). For instance, regulators, governments, supranational bodies, and climate scientists are increasingly exhibiting greater concerns about the risks of severe climate crisis on the environment (Choi & Luo, 2021; Cordeiro et al., 2020; Gerged et al., 2021; Haque & Ntim, 2018; Shah & Soomro, 2021). Organizations including European Union (EU) and the United Nations (UN) have published guidelines concerning the disclosure of information that incorporates *SBPs*. For example, the new EU directive 2014/95/EU mandates large public firms who have more than 500 employees to disclose *SBP* information in areas such as environmental, social, and employees (Lagasio & Cucari, 2019; Nuber & Velte, 2021).

Again, responding to this emerging climatic threat, the UN has well-defined sustainable development based on 17 broad "Sustainable

Development Goals" (SDGs), with 2030 set as the time limit for achieving them. Importantly, scholars project the annual worldwide investment requirement needed to attain the SDGs to be approximately US$5–7 trillion (UNCTAD, 2019). Nevertheless, with almost 10 years to the set time limit, advancement is lagging behind schedule (UNCTAD, 2019). Based on the huge financial investment required in attaining the SDGs, the crucial role that firms can play in facilitating and directly pushing for progress with the goals turns out to be even much stronger (Lashitew, 2021; Nwagwu, 2020). As a consequence, several countries and companies are progressively implementing various carbon-related policies to reduce carbon footprints (Baboukardos, 2018; Baboukardos et al., 2021; de Masi et al., 2021; Gerged et al., 2021; Haque & Ntim, 2018). For instance, in the United Kingdom, the Department for Environment, Food and Rural Affairs (DEFRA) acting on behalf of the government issued guidelines on the measurement and reporting of *GHG* emissions in 2009. This was issued to encourage UK firms to limit their contribution to *GHG* emissions and global warming.

In theory, *NIT* posits that institutional forces such as legitimization (symbolic/impression management) and efficiency (substantive/economic) can compel firms to adopt *SBPs* (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977). The legitimization forces include coercive or regulative pressures (government regulations) (Scott, 2001). Efficiency forces include either cognitive/educative/mimetic, which entail learning from or copying other firms, or normative forces (universal standards) (Scott, 2001). Hence, based on legitimization or moral view, firms might symbolically conform with regulative institutional forces as a means of gaining, maintaining, and repairing their institutional legitimacy (Suchman, 1995). Under such circumstances, firms engage in process-oriented[1] *GHG* reduction initiatives (*PGRI*) and *SBPs* as an impression management approach to legitimize their existence by gaining the support of the broader society (Crossley et al., 2021; Lin, 2021; Martins et al., 2021). Noticeably, such process-oriented *GHG* emission actions might not have substantive impact on actual *GHG* emission reduction performance (*GRP*) and *SBPs* (Aguilera et al., 2007).

Alternatively, the efficiency/economic perspective asserts that firms may substantively undertake economically efficient or cost-reducing *GHG* emission-related projects (North, 1991), as a way of protecting the environment and the interests of shareholders which might increase *SBPs*. The resulting improvements in *GHG* emission reduction will be of benefit to shareholders, executives, humanity, and the wider environment (Mazouz & Zhao, 2019). This is critically important within the context of *SBPs* that require substantial long-term investments (Haque & Ntim, 2018; Okafor & Ujah, 2020), which may discourage executives from undertaking actual *GHG* emission reduction projects. In that case, corporate executives may rely on impression management strategies to symbolically improve the impact of firms' activities on climate change (Talbot & Boiral, 2015). These strategies influence the perceptions of stakeholders through the use of diverse *PGRI* disclosures intended to legitimize the impact of firms on climate change (Talbot & Boiral, 2015). Unsurprisingly, a growing wave of scientific evidence reports a sharp upsurge in the generation of *GHGs*, leading to noticeable global warming and possibly climate crisis despite an increase in diverse *PGRI* disclosures (e.g., Ortiz-de-Mandojana et al., 2019).

Arguably, a key approach which can contribute toward achieving the SDGs and global *GHG* emission reduction targets may be to incentivize executives of firms to adopt and implement *GRP* initiatives (Welsh, 2014). Importantly, a useful link of improving corporate accountability for *SBPs* and *GRP* is to tie improvements to EC (Shumsky, 2019). The goal of this strategy is to focus the attention of executives toward *SBPs* by linking their compensation to some form of sustainability targets (Shumsky, 2019; Welsh, 2014). Indeed, several large firms are increasingly linking *SBP* achievements to EC, thereby creating a crucial catalyst to sharpen the focus of corporate executives on *SBP* issues (Al-Shaer & Zaman, 2019; Lothe et al., 1999; Maas & Rosendaal, 2016; Shumsky, 2019). However, a critical policy question is whether such *SBC* strategies, which are progressively being adopted by the board of listed firms, essentially can lead to improvement in *SBPs* and actual reductions in *GHG* emissions (Al-Shaer & Zaman, 2019; Haque & Ntim, 2020).

A small but steadily increasing number of studies have endeavored to investigate this association in business strategy and sustainable development research, from diverse viewpoints (e.g., Cordova et al., 2021; Haque, 2017; Haque & Ntim, 2020; Maas, 2018; Velte, 2016). However, none of these studies examined this link in an all-inclusive and integrated manner. For instance, one strand of the *PSS* investigation has explored the relationship between *ESG* and total EC (e.g., Maas, 2018; Velte, 2016) and reveals that EC enhances *ESG* performance. Similarly, another strand of the *PSS* research has analyzed the relationship between total EC and carbon reduction performance (e.g., Campbell et al., 2007; Haque, 2017; Haque & Ntim, 2020; Ji, 2015; Maas, 2018; Mahoney & Thorn, 2006). Similarly, their results indicate that EC improves carbon reduction performance, albeit with some exceptions (e.g., Ji, 2015).

Notwithstanding the importance of these findings, these prior studies have a number of limitations. Firstly, most of these prior investigations are based on a single measure of carbon reduction performance (absolute measures). In the interim, there is a call for carbon performance-based research to split *GHG* emission reduction performance into process-oriented *GRP* (*PGRI*) and actual *GRP* to enhance the analysis (Haque & Ntim, 2020; Qian & Schaltegger, 2018; Ziegler et al., 2011). Particularly, Haque and Ntim (2020) suggest that employing a single measures of *GRP* may be ambiguous and could provide inconsistent findings. For instance, a symbolic measure of *GRP* alone may not adequately capture whether process-oriented initiatives lead to substantive reduction in *GHG* emissions (Haque & Ntim, 2020; Qian & Schaltegger, 2018). Secondly, most of the prior research (e.g., Haque, 2017; Haque & Ntim, 2020; Maas, 2018) also tends to examine the effect of total EC on *GRP* rather than individual aspects of compensation, such as individual components of CEO pay and EC

[1]Process greenhouse gas reduction initiatives (*PGRI*) denote executives' initiatives including actions, designs, blueprint, disclosures, and strategic policies that can be employed to deal with the severe implications of climate change. In this study, the complete list of provisions that are contained in the *PGRI* index are provided in Appendix A.

(benefits, short-term incentives, and long-term incentives), and consequently, this provides a fertile ground for further investigation.

Finally, prior researchers have primarily conducted a simple one directional analysis of the association between EC and *GRP*. But the associations between EC, *GRP* and *SBC* are debatably very complex and possibly interdependent (Al-Shaer & Zaman, 2019; Haque & Ntim, 2020). Hence, conducting a simple analysis of these complex associations may lead to spurious correlations (Blundell & Bond, 1998). To illustrate, none of the prior research has investigated whether the *PSS* may be moderated by *SBC* policies in the UK context. Thus, altogether, these gaps in the literature have motivated this study to empirically explore both the effect of several compensation measures on *SBPs* and the moderating impact of *SBC* on the *PSS* in a sample of UK listed firms.

Accordingly, this study intends to make a number of new and important contributions to the existing literature. Unlike prior research, this study engages in an integrated investigation that focuses on direct complex and indirect interrelationships among CEO pay, EC, *SBPs*, and *SBC*. Precisely, the study contributes to the literature by first exploring the impact of CEO pay on *SBPs* and subsequently investigating whether *SBC* moderates the CEO pay-for-sustainability sensitivity (*CPSS*). Next, the study contributes to the extant literature by investigating whether EC has any influence on *SBPs* and ascertains whether *SBC* moderates the executive pay-for-sustainability sensitivity (*EPSS*). Unlike prior studies (e.g., Nguyen et al., 2021), the investigation also focuses on all types of listed firms from a wide range of sectors (excluding financial firms) instead of focusing on large companies in polluting industries.

Additionally, the investigations cover various components of CEO pay and EC including benefits, short-term compensation, long-term compensation, total remuneration without pension, and total remuneration with pension. More importantly, this study is one of the first to explore both process-oriented *GRP* (symbolic) and actual *GRP* (substantive), together with their determinants (e.g., CEO pay, EC, and *SBC*) and their effects on *SBPs*, by capturing both direct associations and moderating effects. Therefore, this comprehensive study brings together the various elements of the literature concerning CEO pay, EC, *SBPs*, and *SBC* in a combined empirical research.

The rest of the paper is structured as follows: Section 2 offers a background to the study. Section 3 reviews the theoretical literature. Section 4 reviews the empirical literature and develops hypotheses. Section 5 provides the data and research methodology. Section 6 discusses the empirical results, while the conclusion of the study is provided in section 7.

2 | EXECUTIVE COMPENSATION AND SUSTAINABILITY IN THE UK CORPORATE CONTEXT

Climate scientists continue to report a global increase in temperatures, leading to global warming (Choi & Luo, 2021; Gerged et al., 2021; Haque & Ntim, 2018). Crucially, the rising global temperature is mainly caused by human activities that release *GHGs*. Observably, one key approach to deal with climate change is to limit the emission of *GHGs* (Haque & Ntim, 2020). Accordingly, national governments and international bodies interested in curbing the dangers posed by climate change through the adoption of various *GHG* emission reduction policies (Baboukardos, 2018). For example, in 1997, a formal all-embracing *GHG* emission reduction treaty (the "Kyoto Protocol") was agreed and has become a legally binding global pact that requires ratified nations to improve their energy efficiency to reduce emission of *GHGs* and global climate disruption (Haque & Ntim, 2020; Ju et al., 2021; Tzouvanas et al., 2020).

The United Kingdom has taken considerable steps to conform with the "Kyoto Protocol" by passing the Climate Change Act (CCA) in 2008. The CCA specified four mandatory "carbon budgets" collectively aimed at reducing the generation of *GHGs* spread over 5-year consecutive periods (DECC, 2011, 2015). The first budget started in 2008 and ended in 2012, and the last budget will run from 2023 to 2027 (DECC, 2011, 2015). In doing so, the UK government has put in place key *GHG* emission reduction policies for companies to comply with the *GHG* emission reduction targets as set out by the CCA (Al-Shaer & Zaman, 2019; Haque & Ntim, 2018). Additionally, in 2019, the United Kingdom became the first major economy to legislate to achieve net zero GHG emission. According to the Committee on Climate Change (CCC, 2020), achieving net zero will involve fundamental changes across the UK economy, including how firms operate. Notwithstanding the implementation of the first two "carbon budgets" in the United Kingdom, the CCC (2020) has lately expressed considerable concerns about the slow improvement in limiting *GHG* emission in the country.

Meanwhile, the UK Companies Act (2006) sheds light on "enlightened shareholder value" by indicating that corporate executives should work toward achieving *SBPs* as part of their focus on issues related to sustainability. In response to this, listed UK firms are increasingly recognizing that their day-to-day operations have effect on *GHG* emissions (Al-Shaer & Zaman, 2019). For instance, firms that are conscious of sustainability tend to link EC to sustainability in recognition of the view that executives need to be rewarded for the increased risks associated with sustainability initiatives (Al-Shaer & Zaman, 2019). There is therefore a growing interest in the United Kingdom, especially among the listed firms on incentivizing and rewarding corporate executives for their achievement of reduction of *GHG* emission targets (Al-Shaer & Zaman, 2019).

Accordingly, and with strong regulatory support, more and more UK firms, particularly large listed ones, are linking EC to carbon performance aimed at reducing the level of generation of *GHGs* (Haque, 2017). A critical regulatory question is whether these *GHG* reduction measures, which are progressively being undertaken by remuneration committees of these large UK listed firms, can lead to an improvement in *SBPs* and actual reduction in *GHG* emission or not. Given this background, the study attempts to distinctively ascertain whether incentive arrangements can enhance the UK CEOs and corporate executives' commitment to increase their commitment toward *SBPs* and the reduction of *GHG* emission.

3 | THEORETICAL LITERATURE REVIEW

A number of studies (e.g., Nigam et al., 2018) that have examined the *PSS* have employed economic-based theories, especially agency and resource dependence theories, to explain the *PSS*. Other researchers (e.g., Al-Shaer & Zaman, 2019) have explained the *PSS* with insights drawn from socio-based theories such as legitimacy and stakeholder theories. The theoretical framework adopted for this study is *NIT* for three key reasons. Firstly, *NIT* is a multidimensional theory capable of directly and/or indirectly capturing both economic-based (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Powell & DiMaggio, 1991) and symbolic-based theoretical predictions simultaneously (Suchman, 1995). Secondly, this study examines complex and multidimensional interrelationships among CEO pay, EC, *SBPs*, *PGRI*, actual *GRP*, and *SBC*, which intrinsically encompasses multiple organizations and stakeholders with conflicting interests (Haque & Ntim, 2020). Moreover, this study seeks to conduct extensive analysis involving both substantive (efficiency) and symbolic (legitimization) constructs. As such, this study contends that an all-encompassing theory such as *NIT* is the most suitable theoretical framework. Finally, there have been growing concerns for researchers to adopt alternative theories instead of employing traditional theories (e.g., agency, resource dependence, and stakeholder) in order to offer new insights which can further advance theoretical insights/improvements (e.g., Aguilera, 2005; Aguilera et al., 2007; Haque & Ntim, 2020). This study is therefore a direct response to such increasing calls.

There are two contrasting perspectives of *NIT* (Aguilera et al., 2007; Ashforth & Gibbs, 1990; Scott, 2001). Firstly, the symbolic view of *NIT* suggests that firms seek to gain approval from the wider society through impression management approach ("symbolic/legitimacy") (Ashforth & Gibbs, 1990). For instance, firms may enhance their corporate legitimacy and reputation through superior sustainability disclosures (Aslam et al., 2021; Crossley et al., 2021; Haque & Ntim, 2020; Suchman, 1995). Hence, the achievement of social legitimacy by firms may entail symbolic disclosures (Cüre et al., 2020; Haque & Ntim, 2020), which can be accomplished with minimal effort over a relatively short period. Therefore, firms may respond to external pressures and influence stakeholder perceptions by symbolically disclosing superior *PGRI* which might not necessarily reflect the firms' commitment to actual *GRP* (Talbot & Boiral, 2015).

Secondly, economic-based *NIT* is concerned with economic-efficiency (instrumentality or substantiveness) (Aguilera et al., 2007; Ashforth & Gibbs, 1990; Haque & Ntim, 2020). This perspective maintains that firms seek to gain or make well-informed choices that optimize their financial performance (economic efficiency). Thus, for firms to achieve economic efficiency, they have to engage in substantial ("substantive") efforts over a relatively long period (Dahlmann et al., 2019; Haque & Ntim, 2020).

That being the case, this study extends the application of *NIT* to CEO pay, EC, *SBC*, and *SBPs* focusing on *GRP* guidelines that have been adopted within the global *GHG* emission regulatory framework ("Kyoto Protocol"). The application of *NIT* is also crucial given the 2020 UK CCA, which has been imposed on UK companies by the UK government. In terms of applicability to this study, *NIT* suggests one way by which firms may gain corporate legitimacy is by voluntarily complying with established corporate practices, principles, regulations, and laws (Scott, 2001). In this setting, as economic institutions, UK firms may have to adhere to reduction in *GHG* emission target that may be determined by the UK government (coercive/regulative forces) (Clarkson et al., 2015; Ziegler et al., 2011). The UK firms may also comply with reduction in *GHG* emission targets as a means of adopting best practice from their peer companies (cognitive/educative/mimetic pressures) (Kim et al., 2015). They may also comply with these *GHG* emission targets as part of international norms ("Kyoto Protocol") (Comyns & Figge, 2015; Haque & Ntim, 2018). Conforming with reduction in *GHG* emission regulations of this nature can enhance corporate legitimacy by improving corporate image (Campbell et al., 2007; Haque & Ntim, 2018). In addition, it may lead to gaining economic efficiency by way of flow of critical resources (finance) (Comyns & Figge, 2015). This is because the firms may obtain the support of diverse influential stakeholders including investors, regulators, and governments (Comyns & Figge, 2015; Haque & Ntim, 2018). This practice may substantively decrease actual emission of *GHGs* (Haque & Ntim, 2020).

Alternatively, such institutional pressures might encourage firms in the United Kingdom to adopt impression management strategy in their *GRP* initiatives (Talbot & Boiral, 2015). For instance, firms in the United Kingdom may symbolically design process-oriented *GRP* policy initiatives (Haque & Ntim, 2020; Ziegler et al., 2011). Arguably, this can symbolically enhance the image of the firms and legitimacy in the face of their influential stakeholders (legitimation) (Campbell et al., 2007; Ziegler et al., 2011). Observably, this practice will not lead to substantive decline in the emission of *GHGs*. To summarize, this study applies *NIT* to capture both the *PSS* and *SBC* moderation effect in symbolic *GRP* (process-oriented *GRP*) (legitimization/impression management) and actual *GRP* (substantive/efficiency).

4 | EMPIRICAL LITERATURE AND HYPOTHESIS DEVELOPMENT

4.1 | CEO pay, sustainability, and GHG emission reduction performance

In general, CEOs of firms play vital role when it comes to making choices and the adoption of key decisions that can influence *SBPs* (García-Sánchez & Martínez-Ferrero, 2019; Shahab et al., 2020; Stanwick & Stanwick, 2001). With regard to the implementation of *SBPs*, prior scholars argue that CEOs can encourage stronger executive engagement in *SBPs* (Cordeiro & Sarkis, 2008; Shahab et al., 2020; Shahab, Ntim, Chengang, et al., 2018). This argument is anchored on the presumption that a befitting incentive pay policy can direct CEO's attention toward undertaking *SBPs*, especially *GRP* (Cordeiro & Sarkis, 2008). However, prevailing compensation policies for CEOs continue to focus on financial performance (Haque & Ntim, 2020). Crucially, this practice may not encourage *SBPs*

(Maas, 2018). Meanwhile, such compensation scheme can incentivize CEOs to pursue projects that maximize the firms' value in the long term (Okafor & Ujah, 2020).

Whilst a firm's *SBPs* such as *GRP* abatement initiatives may offer sustainable value creation, such investments are largely considered to be costly (Cordeiro & Sarkis, 2008; Haque, 2017). Arguably, the implementation of such costly initiatives will need the support of influential executives, particularly the CEOs of the firm (Cordeiro & Sarkis, 2008; Haque & Ntim, 2020). Consequently, *NIT* suggests the need for firms to design CEO compensation in such a manner that it can encourage them to engage in *SBPs*, particularly in *GRP* projects (Campbell et al., 2007). Besides enhancing the legitimacy of the firms, investment in *GRP* projects can potentially lead to economic benefits (efficiency) to the firms in areas such as energy efficiency (Mahoney & Thorn, 2006).

Empirically, previous researchers have mainly established positive relationship between CEO pay and *GRP* (e.g., Berrone & Gomez-Mejia, 2009; Cai et al., 2011; Cordeiro & Sarkis, 2008; McGuire et al., 2003; Stanwick & Stanwick, 2001). In particular, Berrone and Gomez-Mejia (2009) observe that CEO pay enhances pollution prevention strategies in a sample made up of polluting firms in the United States. The results of Cordeiro and Sarkis (2008) investigation show a positive link between a firm's environmental risk and CEO pay. Notwithstanding the importance of these studies, the main limitation of these prior research is that they used either total CEO compensation or corporate social responsibility (CSR). This raises concerns about the generalizability of the results of these investigations. The evidence of this study is based on individual components of CEO pay.

Nevertheless, Cordeiro and Sarkis (2008) maintain that powerful executives (especially CEOs) may employ impression management approach. For example, CEOs may utilize *GRP*-based remuneration schemes as symbolic or legitimization approach instead of focusing on substantive or efficiency governance mechanism. In particular, firms' effort to legitimize their operations and improve their image on climate change issues might lead powerful CEOs to embark on impression management strategies such as greenwashing (the transmission of erroneous information on *GRP* in order to positively influence the stakeholders' perceptions and the firm's relationships with them) (e.g., Boiral, 2013; Talbot & Boiral, 2015). From the symbolic perspective of *NIT*, while this may enhance the firms' legitimacy and help maintain good standing with their wider stakeholders, it might not result in substantive actual decline in the emission of *GHGs*. Consequently, the study instinctively expects that the positive effect of CEO pay on *GRP* might be higher for process-oriented *GRP* than actual *GRP*. Thus, the first hypothesis is:

> **H1.** Ceteris paribus, CEO pay is positively associated with sustainable business practices (SBPs) and the reduction in emission of greenhouse gases (GRP) of the firms, and these relationships are greater for process-oriented GRP than actual GRP.

4.2 | Executive compensation, sustainability, and GHG emission performance

From the purview of efficiency *NIT*, key stakeholders such as investors can promote *SBPs* and *GHG* emission abatement initiatives by offering firms with improved *GRP* with superior valuation and financial resources, and vice versa (Choi & Luo, 2021; Haque & Ntim, 2020). Thus, it is expected that well-intentioned firms can employ incentive-based strategies, such as compensation, to encourage corporate executives to engage in *SBPs* including *GRP* initiatives. For example, prior studies (e.g., Haque & Ntim, 2020; Okafor & Ujah, 2020; Tauringana & Chithambo, 2015) suggest that incentive-based strategies can be considered as vital governance mechanism that can improve *SBPs*, particularly *GRP* initiatives by firms.

Crucially, it has been argued that powerful corporate executives might be reluctant to undertake *SBPs* particularly in the area of *GHG* emission reduction projects (Haque, 2017). This is because such projects may require considerable huge outflow amidst unpredictable financial gains at least in the interim (Haque, 2017). Next, an enduring consensus among scholars is the concept that *SBP*-related projects, especially *GHG* emission reduction investments, demand labor-intensive setting and well-grounded employees to design and put into operation (Berrone & Gomez-Mejia, 2009; Haque & Ntim, 2020). Examples of such projects include designing renewable products, green services, and decreasing dangers posed by environmental disasters (Berrone & Gomez-Mejia, 2009). The implication is that firms may have to employ appropriate incentives to attract and/or motivate such skilled employees with high level of expertise and innovative outlook (Haque & Ntim, 2020). Again, other scholars maintain that companies with substantially compensated top managers will conceivably attract more media and public scrutiny (e.g., Haque & Ntim, 2020; Melis et al., 2015). This argument hinges on the premise that firms that provide attractive EC schemes may be subjected to societal pressure to remain active in *GRP* issues in order to minimize the probable negative media publicity and thus can improve corporate legitimacy (Haque & Ntim, 2020; Melis et al., 2015).

Evidently, the extant empirical literature provides indication of positive relationship between EC and *SBPs* (Cordeiro & Sarkis, 2008; Haque, 2017; Haque & Ntim, 2020; Ji, 2015; Maas, 2018). For example, Haque and Ntim (2020) find that EC has a positive impact on *SBPs* measured by carbon performance. Maas (2018) documents that management board remuneration has a positive effect on *ESG*. Further, Ji (2015) observes similar evidence among US firms. Accordingly, the study contends that EC can serve as a key determinant that can influence a firm's *SBP*-related policies. More importantly, from efficiency perspective of *NIT*, the arrangement of EC is driven by economic motivations of both corporate executives and shareholders (Haque, 2017; Haque & Ntim, 2020).

By contrast, from symbolic view of *NIT*, EC can enhance *SBP*-related activities such as *GRP* which can improve corporate legitimacy and *GHG* emission reduction risks. Given that process-oriented *GRP* improves corporate legitimacy which benefits executives and shareholders, the study intuitively proposes that EC will have much higher positive influence on process-oriented *GRP* than substantive *GRP* (actual). Noticeably, this concept is consistent with symbolic or impression management purview of *NIT*. Hence, the second hypothesis of the study is:

> **H2.** Ceteris paribus, executive compensation (EC) is positively associated with sustainable business practices (SBPs) and the reduction in emission of greenhouse gases (GRP) of a firm, and these relationships are expected to be higher for process-oriented GRP than in actual GRP.

4.3 | The CEO pay–SBP sensitivity: The moderating role of SBC

Although firm's *SBPs* and *GHG* emission abatement initiatives tend to generate long-term financial benefit, however, these investments are costly for firms (Cordeiro & Sarkis, 2008). There is therefore a call for influential corporate executives, especially CEOs, to be actively involved in the design and implementation of such costly projects (Haque & Ntim, 2020). Meanwhile, based on *NIT*'s predictions, the remuneration committee can design and employ CEO pay packages to incentivize CEOs to pursue *SBP* projects especially in the area of *GRP*. From *NIT* perspective, this will improve the reputation (legitimacy) of the firm (Campbell et al., 2007), as well as enhancing the firms' economic benefits (efficiency) (Mahoney & Thorn, 2006). Consequently, CEO pay can be regarded as a crucial governance structure which can enhance *SBPs* and an improvement in *GHG* emission abatement. Taking into account the explanation concerning symbolic perspective of *NIT*, firms may adopt impression management strategies which are intended to improve the firm's reputation directly and may be intended to minimize the firm's responsibilities or to justify the adverse impact of climate activities (Bolino et al., 2008; Talbot & Boiral, 2015). Thus, the study instinctively suggests that *SBC* will reinforce the positive relationship between CEO pay and *SBPs*. To a large extent, the research expects that this moderating impact might be higher for process-oriented *GRP* than actual *GRP*.

Available empirical studies tend to examine the direct effect of CEO pay on *SBPs* (e.g., Al-Shaer & Zaman, 2019; Berrone & Gomez-Mejia, 2009; Cordeiro & Sarkis, 2008), without considering the potential moderating effect of *SBC*. Campbell et al. (2007) is of closer relevance to this study. By contrast, Campbell et al. (2007) observe that environmental performance-based EC scheme decreases the environmental exposure premium component of CEO pay in US firms. Noticeably, these previous investigations did not analyze whether *SBC* can reinforce the CEO pay-for-*SBP* sensitivity although *SBC* might influence the CEO pay–*SBP* nexus. Moreover, based on symbolic *NIT* perspective, the study expects that the moderating impact of *SBC* might be higher in process-oriented *GRP* than in actual *GRP*. Hence, the third hypothesis of the study is:

> **H3.** Ceteris paribus, the positive impact of CEO pay on sustainable business practices (SBPs) is higher for firms that implement sustainability-based compensation (SBC) policy, and this moderating impact is superior for process-oriented reduction in emissions of greenhouse gases (GRP) rather than actual GRP.

4.4 | Executive compensation and SBPs: The moderating effect of SBC

Proponents of *SBC* maintain that the mechanism rather than the amount of EC is most effective in aligning the interest of corporate executives with that of the shareholders (e.g., Acharya et al., 2011; Jensen & Murphy, 1990). In that case, the implementation of *SBC* policy can play a crucial role in encouraging top managers to engage in *SBPs* such as *GHG* emission reduction projects which can in turn enhance organizational legitimacy (Haque & Ntim, 2020). In order to create long-term business success and survival, firms are progressively using *SBC* to encourage corporate executives to undertake *SBPs* and *GRP* investments (Haque & Ntim, 2020; Heaps, 2015). For instance, Newsweek's Green Rankings 2015 observe over 50% of US firms and close to 70% of international companies integrate a portion of their EC packages with some sustainability-related targets (Heaps, 2015).

Therefore, in the existence of *SBC* policy, the board may be in a better position to assess *SBPs* and *GRP* risks of a firm (Haque & Ntim, 2020; Maas, 2018). Importantly, this will enable the remuneration committee to implement an all-encompassing EC arrangement, which can improve *SBPs* and *GRP* of firms. However, other researchers (Cordeiro & Sarkis, 2008; Haque & Ntim, 2020) contend that the board may employ *SBPs* and *GRP* disclosures as symbolic or impression management approach instead of substantive or efficiency governance strategy. The main objective of such an approach is to improve the firms' legitimacy or maintain good standing with their stakeholders (Cordeiro & Sarkis, 2008).

Empirically, studies on the moderating impact of *SBC* on the EC–*SBP* nexus are uncommon (Haque & Ntim, 2020; Okafor & Ujah, 2020). In a related study, Haque and Ntim (2020) show that *ESG*-based compensation policy has a positive moderating effect on the relationship between EC and the process-oriented carbon performance in European countries. Based on symbolic *NIT* and the evidence of prior research, this study argues that any symbolic *GRP*, without requiring actual *GHG* emission reduction targets, may improve process-oriented *GRP*, but might not essentially result in an improvement in *GRP*. Thus, the final hypothesis of the study is:

> **H4.** Ceteris paribus, the positive impact of executive compensation (EC) on sustainable business practices (SBPs) is higher for firms that implement sustainability-based compensation (SBC) policy, and this moderating influence is higher in process-oriented reduction in emission of greenhouse gases (GRP) rather than actual GRP.

5 | RESEARCH DESIGN

5.1 | Data and sample

The initial sample is based on 2620 firm-year observations from 262 nonfinancial listed firms from the UK FTSE 350 index over a 10-year period. The FTSE 350 was selected because of its broad-spectrum nature, encompassing a wide collection of industries and also containing large companies that might set the pace for *GHG* disclosure (Brammer & Pavelin, 2006; Tauringana & Chithambo, 2015). The study sourced *SBP* data including *GHG* emission data from the Bloomberg database. The CEO pay and EC (all remuneration paid to all the executives, including CEO pay) data were gathered from the BoardEx database and supplemented with the annual reports of the firms where necessary. Data on corporate governance and *SBC* were manually collected from the annual reports of the firms, and the financial data were obtained from the EIKON database. The study then removed 41 observations based on missing firm-level *SBP* information in the database of Bloomberg. The final sample is based on an unbalanced panel dataset of 2579 firm-year observations, covering a 10-year period (2009–2018). The investigation period covers the time period after the enactment of the UK 2008 CCA, including the first and second UK carbon budgets that operated from 2008 to 2012 and from 2013 to 2017, respectively, as well as part of the third budget (2018–2022). As shown in Table 1, the dominant industry is the service sector which accounted for more than 26% in the final sample employed in the study. Table 1 shows industry-wise distribution of the sample.

5.2 | Variable definition and econometric models

Table 2 summarizes all the variables, which were employed in examining the research hypotheses. Firstly, in line with prior research (e.g., Haque & Ntim, 2020; Qian & Schaltegger, 2018), this study uses five *SBP* measures as the dependent variables, both substantive and symbolic. The study applies economic-based *NIT* by using four substantive (efficiency) *SBP* measures: *ESG* performance (*ESGP*), environmental performance (*ENVP*), greenhouse gas emission reduction performance (*GHGP*), and CO_2 reduction performance (CO_2P). In addition, the study applies symbolic view of *NIT* by employing one symbolic *SBP* construct, a process-oriented greenhouse gas emission reduction performance measure (*PGRI*) (see Appendix A for more details on *PGRI*).

Secondly, CEO pay and EC are the core independent variables. Based on prior literature (e.g., Al-Shaer & Zaman, 2019; Cordeiro & Sarkis, 2008), the study measures CEO pay in five different ways: benefits of CEO (*BCEO*), short-term compensation of CEO (*STCEO*), long-term compensation of CEO (*LTCEO*), total remuneration of CEO without pension (*TRCEO*), and total remuneration of CEO including pension (*TRCEOP*). Similarly, following prior studies (e.g., Haque, 2017; Haque & Ntim, 2020), EC was measured in five ways as follows: total benefits of all executives (*TBEN*), short-term executive compensation (*STCOM*), long-term executive compensation (*LTCOM*), total executive compensation without pension (*TCOM*), and total executive compensation including pension (*TCOMP*). Further, the study measured *SBC* as a dummy variable with a value of 1 if a firm discloses sustainability-linked incentives in its remuneration report and 0 otherwise.

Thirdly, and to test *H3* and *H4* (the moderating effect of *SBC* on the *PSS*), the study creates interaction variables between the *SBC* and the individual components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) and the *SBC* and the various measures of executive pay (*TBEN*, *STCOM*, *LTCOM*, *TCOM*, and *TCOMP*) variables. Finally, following prior research (e.g., Grey et al., 2013, 2020; Gujarati, 2009; Nguyen et al., 2021), the study includes board size (*BSIZE*), presence of sustainability committee (*SCOM*), firm size (*FSIZE*), audit firm size (*AFS*), age (*AGE*), leverage (*LEV*), and capitalization (*CAP*) as control variables as explained in Table 2 in order to limit possible omitted variables bias (Gujarati, 2009; Shahab, Ntim, Chengang, et al., 2018).

TABLE 1 Distribution of the sample based on industry

	Firms	Obs.	Percent (%)
Distribution of the sample by industry			
Communications	14	139	5.39
Consumer discretionary	56	541	20.98
Consumer staples	21	210	8.14
Energy	12	119	4.61
Services	68	681	26.41
Health care	9	90	3.49
Industrial sector	30	289	11.21
Materials	26	254	9.85
Technology	15	148	5.74
Utilities	11	108	4.19
Total	262	2579	100.00

5.3 | Research models

Following a well-established line of research (e.g., Elmagrhi et al., 2019; Nguyen et al., 2021; Shahab, Ntim, & Ullah, 2018), the study uses ordinary least squares regression (OLS) models to examine the hypotheses. The first model examines the impact of CEO pay on *SBP* proxies together with the control variables and dummies (year and industry). The first equation is captured below:

$$\mathrm{SBPs}_{\mathrm{it}} = +\alpha_0 + \beta_1 \mathrm{CEO\ pay}_{\mathrm{it}} + \beta_2 \mathrm{Controls}_{\mathrm{it}} + \beta_3 \mathrm{Year}_{\mathrm{it}} + \beta_4 \mathrm{Industry}_{\mathrm{it}} + \varepsilon_{\mathrm{t}} \quad (1)$$

where *SBPs* is the sustainable business practices measures depending on the specification, which is either *ESGP*, *ENVP*, *GHGP*, CO_2P, or *PGRI*. Similarly, CEO pay denotes CEO pay measures, depending on the specification, which is either *BCEO*, *STCEO*, *LTCEO*, *TRCEO*, or *TRCEOP*.

TABLE 2 Variable definitions

Variables	Symbols	Descriptions
Substantive SBP measures		
ESG score	ESGP	Actual ESG score of the firms
Environmental score	ENVP	Actual environmental score
GHG emissions	GHGP	Actual GHG emission performance as measured by the natural log of total actual GHG emissions in tons
CO_2 emissions	CO_2P	Actual CO_2 emission performance as measured by the natural log of total actual CO_2 emissions in tons
Symbolic SBP construct		
GHG reduction initiatives	PGRI	PGR index which is obtained by summing 21 dummy variables that measure a company's level of engagement in climate protection initiatives. A higher score shows greater commitment to GHG emission-based activities by a firm. Please refer to the Appendix (Supporting Information) for additional details. Thus, a firm's performance can span from a minimum of 0 (zero or no institution of GHG reduction initiatives) to a maximum of 21(complete or 100% institution of initiatives to reduce GHG emission)
Sustainability-based compensation	SBC	1 if a firm discloses sustainability/long-term linked incentives in its remuneration report and 0 otherwise
Long-term CEO compensation	LTCEO	The natural log of CEO equity-based compensation representing long-term CEO compensation-total stock, option, and other long-term incentives
Short-term CEO compensation	STCEO	The natural log of CEO's bonus payments in compensation and other short-term incentives
Benefits of CEO	BCEO	The natural log of benefit of CEO is measured by CEO salary
Total CEO remuneration of without pension	TRCEO	The natural log of total remuneration paid to the CEO without pension
Total CEO remuneration of with pension	TRCEOP	The natural log of total remuneration paid to the CEO including the CEO's pension payments
Total short-term executive compensation	STCOM	The natural log of total bonus payments and other short-term incentives paid to all senior executives scaled by total number of executive directors
Total long-term executive compensation	LTCOM	The natural log of total equity-based compensation paid to all senior executives scaled by total number of executive directors
Total benefits of executives	TBEN	The natural log of total benefit paid to all executives is measured by the total executive's salary scaled by total number of executive directors
Total executive remuneration without pension	TCOM	The natural log of total remuneration paid to all executives without pension scaled by total number of executive directors
Total executive remuneration with pension	TCOMP	The natural log of total remuneration paid to all executives including pension payments scaled by total number of executive directors
Firm-specific control variables		
Board size	BSIZE	The natural log of the number of board members
Presence of sustainability committee	SCOM	1 if sustainability committee is present and 0 otherwise
Firm size	FSIZE	The natural log of total assets of a firm
Leverage	LEV	The ratio of total debt to total assets
Age	AGE	The natural log of the age of the firm since inception
Capitalization	CAP	Equity capital divided by total assets
Audit firm size	BIG4	1 if a firm is audited by the big four audit firm (PricewaterCoopers, Deloitte & Touche, Ernest & Young and KPMG) and 0 otherwise.
Industry dummy	IND	Industry dummy. Grouping industries based on Bloomberg industry classification, creating 11 groups
t		Year, 2009–2018

The second model investigates the effect of EC on *SBPs* together with the firm-specific control and the dummy variables. The second investigation is estimated as below:

$$SBPs_{it} = \alpha_0 + \beta_1 EC_{it} + \beta_2 Controls_{it} + \beta_3 Year_{it} + \beta_4 Industry_{it} + \varepsilon_t \quad (2)$$

where *SBPs* refers to the five *SBP* measures as specified in Equation 1. EC denote executive compensation measures, depending on the specification, which is either *TBEN*, *STCOM*, *LTCOM*, *TCOM*, or *TCOMP*.

The third model investigates the moderating effect of *SBC* on the association between CEO pay and *SBPs* in the existence of all the firm-specific control and the dummy variables. The third equation is stated below:

$$SBPs_{it} = \alpha_0 + \beta_1 \text{CEO pay}_{it} + \beta_2 (\text{CEO pay}_{it} * SBC_{it}) + \beta_3 SBC_{it} + \beta_4 Controls_{it} + \beta_5 Industry_{it} + \beta_6 Year_{it} + \varepsilon_t \quad (3)$$

where $\textit{CEO pay}_{it} * SBC_{it}$ is the interaction variable between CEO pay and *SBC*, depending on the model which is either $BCEO_{it} * SBC_{it}$, $STCEO_{it} * SBC_{it}$, $LTCEO_{it} * SBC_{it}$, $TRCEO_{it} * SBC_{it}$, or $TRCEOP_{it} * SBC_{it}$. All other variables remain same as specified in Equation 1.

The final model investigates the moderating impact of *SBC* on the EC–*SBP* sensitivity along with the firm-specific control variables as well as year and industry dummies. The final specification is stated as follows:

$$SBPs_{it} = \alpha_0 + \beta_1 EC_{it} + \beta_{2^*} (EC_{it} * SBC_{it}) + \beta_3 SBC_{it} + \beta_4 Controls_{it} + \beta_5 Year_{it} + \beta_6 Industry_{it} + \varepsilon_t \quad (4)$$

where $EC_{it} * SBC_{it}$ is the interaction variable between EC and *SBC*, depending on the model which is either $TBEN_{it} * SBC_{it}$, $STCOM_{it} * SBC_{it}$ $LTCOM_{it} * SBC_{it}$, $TRCOM_{it} * SBC_{it}$, or $TRCOMP_{it} * SBC_{it}$. All other variables remain same as specified in Equation (2).

The research follows, among others, Grey et al. (2020), Nguyen et al. (2021), and Mohmed et al. (2019), employing a number of firm features as control variables. They include, *BSIZE*, SCOM, *FSIZE*, *AFS*, *AGE*, *LEV*, and *CAP*. Table 2 defines all the variables included in the empirical specifications together with information on reduction of *GHG* emission-related initiatives employed in constructing the *PGRI* index.

6 | EMPIRICAL RESULTS AND DISCUSSION

6.1 | Descriptive statistics and univariate analysis

Table 3 displays the summary statistics of the variables included in the analysis. The results in the table reveal that the *PGRI* index figures span from 5 to 20, with an average figure of 12.93 and a standard deviation (SD) of 2.79. This indicates that the *PGRI* data seem to be less spread (more clustered) around the average. In addition, *ESGP* figures span from 0 to 70.12%, with an average figure of 29.53%, while *ENVP* with a mean of 20.71%, values span from 0% to 74.42%. Table 3 also shows that the average figure of *GHGP* is 4.49, with an SD of 2.77, while CO_2P has an average of 2.28 and an SD of 10.31. The mean value of *SBC* is 56.20 and indicates over 50% of the firms in the sample disclose the inclusion of *SBC* targets in their CEO pay and EC contracts. The average board size is close to 10, which is similar to the evidence of Al-Shaer and Zaman (2019) and Haque and Ntim (2018). Table 3 also shows that firms with sustainability committees are approximately 70%, which is consistent with the results of Al-Shaer and Zaman (2019).

Table 4 provides the results of bivariate correlations among the variables. It is apparent that *SBP* variables including the *PGRI* have positive relations with the proxies of CEO pay and EC. Further, *SBC* has a positive association with the *PGRI* and *SBPs*. Generally, these are consistent with the four hypotheses. More importantly, the findings in the table demonstrate that the correlation coefficients among the explanatory variables are relatively low, except for the components of pay and total pay, which is expected. A weak correlation of the explanatory variables is desirable since it suggests that multicollinearity is not a major problem (Liu et al., 2014). Overall, the results suggest that all the variables appear to be appropriate for OLS regression.

6.2 | Multivariate results and discussion

6.2.1 | The influence of CEO pay on SBPs

Table 5 reports the results of the impact of the five individual components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, *and TRCEOP*) on *ESGP* and *ENVP*. The results in Table 5 show that all the individual components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) have positive and significant effect on both *ESGP* and *ENVP*, implying that *H1* is strongly supported. It depicts that CEO pay is crucial determinant of *ESGP* and *ENVP* of UK listed firms. The positive effect of CEO pay variables on *ESGP* and *ENVP* is also consistent with the findings of prior studies (Berrone & Gomez-Mejia, 2009; Cordeiro & Sarkis, 2008), and the theoretical predictions of economic view of *NIT* that CEO pay can play an important role in enhancing *ESGP* and *ENVP* by encouraging CEOs to pursue projects that enhance *SBPs* and environmental performance of firms (Haque & Ntim, 2020; Okafor & Ujah, 2020). In particular, the evidence supports Cordeiro and Sarkis (2008) suggestion that a befitting incentive pay policy can direct CEOs attention toward undertaking *SBPs*, especially environmental performance (Cordeiro & Sarkis, 2008). By contrast, this finding contradicts the results of studies that document negative link between CSR and CEOs salaries and bonuses (e.g., Cai et al., 2011; McGuire et al., 2003).

In addition, Table 6 provides the results of the impact of the various components of CEO pay (i.e., *BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) on firms' actual *GRP* (*GHGP* and CO_2P) and process-oriented *GRP* (*PGRI*). First, the results in Table 6 reveal that all the individual

TABLE 3 Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
Substantive measures (SBPs)					
ESGP (%)	2,579	29.53	17.17	0	70.12
ENVP (%)	2,579	20.71	16.67	0	74.42
GHGP (in)	2,579	4.49	2.77	2.63	11.36
CO_2P (in)	2,579	2.28	10.31	0	86
BCEO (in)	2,579	6.56	0.63	1.09	10.28
STCEO (in)	2,579	5.02	2.85	0	9.37
LTCEO (in)	2,579	5.93	3.17	1.35	11.56
TRCEO (in)	2,579	6.67	2.17	0.33	11.63
TRCEOP (in)	2,579	6.56	2.16	0	11.63
TBEN (in)	2,579	8.39	2.59	0	12.26
STCOM (in)	2,579	7.06	3.49	0	12.24
LTCOM (in)	2,579	8.05	3.69	0	14.14
TCOM (in)	2,579	8.94	2.78	0	13.78
TCOMP (in)	2,579	8.86	2.77	0	13.08
Symbolic construct (SBPs)					
PGRI (absolute score)	2,579	12.93	2.79	5	20
SBC (%)	2,579	56.20	28.9	0	100
Control variables					
BSIZE	2,579	9.76	2.69	4	24
SCOM	2,579	0.70	0.46	0	1
BIG4	2,579	0.98	0.12	0	1
AGE	2,579	0.76	31.12	10	134
FSIZE	2,579	20.38	4.93	0	28.62
LEV	2,579	0.22	0.24	0	3.29
CAP	2,579	0.42	0.31	2.51	1.99

Note: Please see Table 2 for variable definitions.

components of CEO pay have positive and significant effect on *GHGP*, except *BCEO* which has a positive but insignificant association with *GHGP*, and thus, *H1* is partly supported. The findings are consistent with the economic view of *NIT*, suggesting that firms might design CEO pay in such a manner that it can encourage CEOs to adopt and implement *SBPs* particularly in *GHG* emission reduction projects (Campbell et al., 2007). The findings support the argument that because the CEO is the locus of control, CEO's pay can be structured based on factors such as *GHGP* (Haque & Ntim, 2020; Stanwick & Stanwick, 2001). For example, incentive pay policy can encourage CEOs to allocate resources toward clean and efficient energy which can reduce *GHG* emissions (Aslam et al., 2021; Okafor & Ujah, 2020). Empirically, the obtained result for the link between *BCEO* and *GHGP* provides empirical support for the results of Frye et al. (2006) who document similar evidence.

Second, the results in Table 6 reveal that *LTCEO* is positively associated with CO_2P, implying *H1* is empirically supported. This evidence suggests that *LTCEO* is influential in encouraging CEOs to engage in effective CO_2 emission reduction initiatives as predicted by economic view of *NIT*. Further, our findings extend the work of Deckop et al. (2006) who observe that long-term CEO pay is positively associated with corporate social performance in US firms. By contrast, the results in Table 6 suggest that *STCEO*, *TRCEO*, and *TRCEOP* are negatively associated with CO_2P, implying that *H1* is rejected. This suggests that the payment of bonuses and other short-term incentives to CEOs reduce *GHG* emission reduction initiatives. This evidence corroborates the findings of prior studies that document similar negative relationship (Cai et al., 2011; Deckop et al., 2006; McGuire et al., 2003). In particular, Deckop et al. (2006) observe that a short-term CEO pay is negatively related to corporate social performance in US firms.

Moreover, the negative impact of *STCEO*, *TRCEO*, and *TRCEOP* on actual CO_2P offers support to the theoretical predictions of *NIT* that boards of firms may utilize linkages between CEO pay and CO_2 emission reduction initiatives as a form of impression management strategy rather than substantive management to maintain their standing

TABLE 4 Correlation matrix

Variable	1	2	3	4	5	6	7	8	9	10	11
ESGP (1)	1.00										
ENVP (2)	0.46	1.00									
GHGP (3)	0.53*	0.52*	1.00								
CO2P (4)	0.37*	0.36*	0.54*	1.00							
PGRI (5)	0.57*	0.41*	0.51*	0.35*	1.00						
SBC (6)	0.11*	0.08*	0.06*	0.04	0.13*	1.00					
BCEO (7)	0..29*	0.28*	0.33*	0.01*	0.27*	0.02	1.00				
STCEO (8)	0.05	0.05	−0.01	0.04	0.05*	0.04	0.12*	1.00			
LTCEO (9)	0.22*	0.22*	0.22*	0.07*	0.22*	0.04	0.26*	0.13*	1.00		
TRCEO (10)	0.24*	0.22*	0.22*	0.07*	0.22*	0.03	0.75*	0.44*	0.23*	1.00	
TRCEOP (11)	0.20*	0.19*	0.20*	0.05*	0.19*	0.04	0.73*	0.44*	0.19*	0.56*	1.00
TBEN (12)	0.36*	0.35*	0.15*	0.21*	0.33*	0.06	0.45*	0.07*	0.23*	0.33*	0.29*
STCOM (13)	0.04	0.05	0.38*	0.09*	0.04	0.06	0.01	0.83*	0.11*	0.28*	0.28*
LTCOM (14)	0.19*	0.18*	−0.01	0.07*	0.19*	0.05	0.15*	0.09*	0.83*	0.13*	0.09*
TCOM (15)	0.30*	0.29*	0.17*	0.18*	0.28*	0.08*	0.34*	0.29*	0.19*	0.47*	0.42*
TCOMP (16)	0.27*	0.27*	0.24*	0.16*	0.25*	0.07	0.29*	0.28*	0.17*	0.41*	0.38*
SCOM (17)	−0.02	−0.01	−0.08*	−0.22*	−0.01	−0.05*	0.10*	−0.03	−0.01	0.06	0.07*
BSIZE (18)	0.38*	0.38*	0.33*	0.21*	0.35*	0.01	0.26*	0.07*	0.18*	0.25*	0.22*
BIG4 (19)	−0.02	−0.06	0.04	0.02	−0.02	−0.03	0.03	−0.02	0.01	0.01	0.01
AGE (20)	0.08*	0.09*	0.05*	−0.07*	0.07*	−0.07*	0.15*	−0.01	0.08*	0.09*	0.09*
FSIZE (21)	0.46*	0.43*	0.36*	0.26*	0.43*	0.07*	0.38*	0.01	0.19*	0.30*	0.28*
LEV (22)	0.154*	0.16*	1.19*	0.04	0.15*	0.08*	0.13*	−0.01	0.09*	0.05	0.03
CAP (23)	−0.18*	−0.16*	−0.23*	−0.04	−0.17*	−0.07*	−0.24*	−0.11*	−0.11*	−0.19*	−0.17

Notes: Asterisks indicate statistical significance at either 1%, 5%, or 10% level. Please we used a single "*" to represent 1%, 5%, or 10% because of space limitation. Please see Table 2 for variable definitions.

with stakeholders who may be concerned with environmental performance (Cordeiro & Sarkis, 2008; Haque & Ntim, 2020). Further, the evidence in Table 6 offers no empirical support for *H1*, as there is insignificant relationship between *BCEO* and CO_2P. This weak link between *BCEO* and CO_2P is also consistent with the findings of prior studies (Frye et al., 2006; Miles & Miles, 2013). Together, these findings offer empirical support for the call for CEO remuneration to focus on the design of befitting long-term compensation packages to CEOs as a way of encouraging them to increase their commitment toward reducing CO_2 emissions (Maas & Rosendaal, 2016).

Third, Table 6 also shows the regression findings concerning the effect of various components of CEO pay on the *PGRI*. It is evident that all the individual components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) have positive and significant relationships with the *PGRI*, as expected and predicted by symbolic *NIT* view. The findings indicate that *H1* is strongly supported. The findings lend weight to the importance of the legitimization or impression management view of *NIT* in accounting for direct relationship between CEO pay and the *PGRI*. Finally, and more importantly, the results captured in Table 6 reveal that the positive link between the individual components of CEO pay and *GRP* is higher for symbolic *GRP* (*PGRI*) than substantive or actual *GRP* (*GHGP* and CO_2P). This evidence lends support to legitimization view of *NIT* that CEO's engagement in *GRP* projects might be influenced by economic and symbolic motivations, and thus, incentive-based strategies can substantially improve process-oriented *GRP* than actual *GRP*, as the former leads to higher corporate legitimacy (Haque & Ntim, 2020; Qian & Schaltegger, 2018).

6.2.2 | The influence of executive compensation on SBPs

Tables 7 and 8 depict the findings of the impact of the various components of EC (*TBEN*, *STCOM*, *LTCOM*, *TCOM*, and *TCOMP)* on the five dimensions of *SBPs (ESGP*, *ENVP*, GHGP, CO_2P, *and PGRI)* in addition with firm-specific control variables and the dummy variables for year and industry. The results in Table 7 show that all the various components of EC as measured by *TBEN*, *STCOM*, *LTCOM*, *TCOM*, and *TCOMP* have positive and significant associations with *ESGP*. The results suggest that *H2* is accepted. It depicts that EC is influential in improving *ESG* performance of UK listed firms. Similarly, Table 7 reports the evidence of positive and significant relationship between

TABLE 4 (Continued)

Variable	12	13	14	15	16	17	18	19	20	21	22	23
ESGP (1)												
ENVP (2)												
GHGP (3)												
CO2P (4)												
PGRI (5)												
SBC (6)												
BCEO (7)												
STCEO (8)												
LTCEO (9)												
TRCEO (10)												
TRCEOP (11)												
TBEN (12)	1.00											
STCOM (13)	0.19*	1.00										
LTCOM (14)	0.29*	0.14*	1.00									
TCOM (15)	0.08*	0.42*	0.25*	1.00								
TCOMP (16)	0.77*	0.39*	0.21*	0.94*	1.00							
SCOM (17)	0.01	−0.06	0.01	−0.03	−0.09	1.00						
BSIZE (18)	0.40*	0.08*	0.16*	0.37*	0.02	−0.06	1.00					
BIG4 (19)	0.02	−0.01	0.01	0.02	0.41	0.04	−0.09	1.00				
AGE (20)	0.03	−0.03	0.07*	0.02	0.01	0.08*	0.02*	0.05	1.00			
FSIZE (21)	0.37*	−0.01	0.17*	0.29*	0.26*	0.06	0.41*	0.01	0.14	1.00		
LEV (22)	0.05	−0.02	0.07*	−0.02	−0.02	0.01	0.03	0.04	0.02	0.13	1	
CAP (23)	−0.24*	−0.01	−0.11	−0.18*	−0.16	−0.07	−0.21	−0.06	0.04	0.36	0.12	1

Notes: Asterisks indicate statistical significance at either 1%, 5%, or 10% level. Please we used a single "*" to represent 1%, 5%, or 10% because of space limitation. Please see Table 2 for variable definitions.

all the five components of EC and *ENVP*, implying that *H2* is accepted. The evidence suggests that all the various components of EC can encourage corporate executives to undertake projects that enhance the environmental performance of the firms. Together, these findings offer strong empirical support for *H2* and the theoretical prediction of efficiency view of *NIT*. According to efficiency view of *NIT*, firms can employ incentive-based strategies, such as EC, to encourage corporate executives to engage in *ESG* and environmental projects (Haque & Ntim, 2020), thereby increasing firms' *ESG* and environmental performance.

These findings partly corroborate prior research (Berrone & Gomez-Mejia, 2009; Deckop et al., 2006; Haque, 2017; Haque & Ntim, 2020; Mahoney & Thorn, 2006) that document a positive association between EC and, *ESGP*, and *ENVP*, although most of these studies did not use individual components of EC. In particular, Deckop et al. (2006) observe that long-term EC incentives are positively associated with CSR in US firms.

Next, Table 8 provides the regression findings concerning the impact of individual components of EC on *GHGP* in the presence of all control variables. Specifically, the results in Table 8 indicate that *TBEN*, *LTCOM*, *TCOM*, and *TCOMP* have positive and significant associations with *GHGP*, thereby offering empirical support for *H2*. The estimation results further suggest that an increase in *TBEN*, *LTCOM*, *TCOM*, and *TCOMP* improves actual *GHGP* in the form of reduced *GHG* emissions. By contrast, the study finds that *STCOM* has no influence (though the coefficient is positive) on *GHGP*, which does not offer support for *H2*. These results partly corroborate the findings of few prior studies which find a positive relationship between EC and carbon reduction performance (e.g., Haque & Ntim, 2020).

Further, Table 8 provides estimation results of CO_2 reduction initiatives (CO_2P) against the individual components of EC and the control variables. The estimated results in Table 8 show that, *TBEN*, *STCOM*, *TCOM*, and *TCOMP* are negatively and significantly associated with CO_2P. These findings imply that *H2* is rejected. The evidence show that *TBEN*, *STCOM*, *TCOM*, and *TCOMP* decrease CO_2P reduction initiatives, an evidence that partly lends support to the results of Deckop et al. (2006) which show an inverse relationship between short-term EC and CSR in US firms. The negative associations offer empirical support to the notion that powerful corporate executives might be reluctant to undertake *GHG* emission reduction particularly in the area of CO_2 emission reduction initiatives due to it demand for labor-intensive setting and well-grounded employees (Berrone &

TABLE 5 Impact of the various components of CEO pay on the actual ESG score and the actual environmental performance score

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables										
BCEO	5.132*** (1.221)					4.181*** (1.338)				
STCEO		0.642*** (0.081)					0.410*** (0.090)			
LTCEO			0.779*** (0.074)					0.657*** (0.082)		
TRCEO				1.463*** (0.118)					0.858*** (1.131)	
TRCEOP					1.439*** (0.114)					0.877*** (0.127)
BSIZE	13.305*** (0.929)	12.917*** (0.927)	12.106*** (0.922)	12.414*** (0.908)	12.377*** (0.907)	15.822*** (1.019)	15.651*** (1.022)	14.802*** (1.018)	15.363*** (1.016)	15.313*** (1.015)
SCOM	0.774* (0.421)	0.916** (0.418)	0.896** (0.413)	0.621 (0.410)	0.617 (0.409)	0.212 (0.461)	0.323 (0.460)	0.309 (0.456)	0.145 (0.458)	0.137 (0.458)
BIG4	4.076*** (1.924)	4.102*** (1.909)	3.890** (1.891)	3.589* (1.875)	3.454* (1.874)	0.088 (2.108)	0.117 (2.105)	0.061 (2.087)	0.182 (2.095)	−0.277 (2.094)
AGE	3.159*** (0.316)	3.088*** (0.314)	2.887*** (0.312)	2.668*** (0.311)	2.643*** (0.311)	3.011*** (0.347)	2.976*** (0.347)	2.779*** (0.345)	2.738*** (0.348)	2.711*** (0.348)
FSIZE	0.675*** (0.053)	0.680*** (0.052)	0.655*** (0.051)	0.622***(0.051)	0.622*** (0.051)	0.591*** (0.058)	0.598*** (0.058)	0.574*** (0.057)	0.565*** (0.057)	0.563*** (0.057)
LEV	−2.025* (1.204)	−1.100 (1.197)	−0.926 (1.184)	−0.219 (1.178)	−0.259 (1.176)	−1.564 (1.321)	−0.843 (1.322)	−0.637 (1.309)	−0.437 (1.319)	−0.427 (1.316)
CAP	−0.632 (0.929)	−0.268 (0.923)	0.189 (0.912)	−0.053 (0.903)	−0.034 (0.902)	−2.063*** (1.018)	−1.751* (1.018)	−1.379** (1.007)	−1.658* (1.009)	−1.640* (1.008)
Constant	−78.487*** (2.063)	−60.253*** (1.972)	−25.046*** (1.855)	−60.115*** (1.761)	−59.628*** (1.752)	−49.616*** (1.218)	−58.917*** (3.388)	−33.412*** (3.408)	−35.564*** (3.435)	−35.367*** (3.429)
No. of obs.	2579	2579	2579	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	55.9	55.6	57.4	58.1	58.2	44.5	44.3	45.2	44.8	44.9

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5%.
***Statistical significance at 1% level.

TABLE 6 Impact of the various components of CEO pay on the actual GHG and CO_2 emission reduction and process-oriented GHG reduction performance scores

Dep. variable	GHGP	GHGP	GHGP	GHGP	GHGP	CO_2P	CO_2P
Ind. variables							
BCEO	0.309 (0.256)					−0.092 (0.230)	
STCEO		0.034^{**} (0.017)					-0.090^{***} (0.015)
LTCEO			0.119^{***} (0.015)				
TRCEO				0.114^{***} (0.025)			
TRCEOP					0.111^{***} (0.024)		
BSIZE	2.776^{***} (0.195)	2.748^{***} (0.196)	2.570^{***} (0.195)	2.702^{***} (0.195)	2.699^{***} (0.195)	1.626^{***} (0.175)	1.710^{***} (0.175)
SCOM	−0.147 (0.088)	−0.139 (0.089)	−0.136 (0.087)	-0.160^{*} (0.088)	-0.160^{*} (0.088)	-0.247^{***} (0.079)	-0.255^{***} (0.079)
BIG4	0.498 (0.404)	0.499 (0.404)	0.462 (0.400)	0.459 (0.403)	0.449 (0.403)	−0.384 (0.363)	−0.380 (0.360)
AGE	0.335^{***} (0.067)	0.332^{***} (0.066)	0.290^{***} (0.066)	0.297^{***} (0.067)	0.294^{***} (0.067)	-0.281^{***} (0.059)	-0.265^{***} (0.059)
FSIZE	0.114^{***} (0.011)	0.115^{***} (0.011)	0.109^{***} (0.010)	0.109^{***} (0.011)	0.109^{***} (0.011)	0.005 (0.009)	0.007 (0.009)
LEV	-0.649^{***} (0.253)	-0.610^{**} (0.254)	-0.509^{**} (0.251)	-0.514^{**} (0.253)	-0.517^{**} (0.253)	-0.447^{**} (0.227)	-0.536^{**} (0.226)
CAP	-1.035^{***} (0.195)	-1.021^{***} (0.195)	-0.936^{***} (0.193)	-0.995^{***} (0.194)	-0.993^{***} (0.194)	-1.421^{***} (0.175)	-1.441^{***} (0.174)
Constant	-10.084^{***} (1.122)	-8.961^{***} (0.651)	-5.383^{***} (0.654)	-8.976^{***} (0.647)	-9.331^{***} (0.647)	-0.804^{*} (1.005)	-1.111^{**} (0.580)
No. of obs.	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	41.4	41.4	42.7	41.9	41.9	33.7	34.6

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 6 (Continued)

Dep. variable	CO_2P	CO_2P	CO_2P	PGRI	PGRI	PGRI	PGRI	PGRI
Ind. variables								
BCEO				8.937*** (2.498)				
STCEO					1.136** (0.168)			
LTCEO	0.027* (0.014)					1.492*** (0.152)		
TRCEO		−0.132*** (0.023)					2.382*** (0.243)	
TRCEOP			−0.132*** (0.022)					2.379*** (0.235)
BSIZE	1.673*** (0.177)	1.728*** (0.174)	1.733*** (0.174)	27.220*** (1.902)	26.557*** (1.900)	24.879*** (1.889)	25.793*** (1.877)	25.702*** (1.875)
SCOM	−0.249*** (0.080)	−0.226** (0.079)	−0.225** (0.078)	1.183 (0.861)	−1.429* (0.855)	1.403* (0.846)	0.945 (0.846)	0.933 (0.845)
BIG4	−0.375 (0.362)	−0.335 (0.361)	−0.322 (0.360)	7.088* (3.934)	7.139* (3.912)	6.723* (3.873)	6.301 (3.872)	6.063 (3.869)
AGE	−0.271*** (0.059)	−0.232*** (0.059)	−0.229*** (0.059)	5.945*** (0.647)	5.811*** (0.645)	5.413*** (0.640)	5.155*** (0.642)	5.100*** (0.643)
FSIZE	0.006 (−0.481)	0.011 (0.009)	0.012 (0.009)	1.291*** (0.107)	1.300*** (0.106)	1.250*** (0.105)	1.210*** (0.106)	1.207*** (0.105)
LEV	−1.445*** (0.174)	−0.589** (0.226)	−0.588** (0.226)	−3.533 (2.465)	−1.876 (2.456)	−1.447 (2.429)	−0.560 (2.435)	−0.589 (2.431)
CAP	−1.455*** (0.175)	−1.452*** (0.173)	−1.454*** (0.174)	−3.444* (1.899)	−2.742 (1.891)	−1.921 (1.868)	−2.471 (1.865)	−2.430 (1.863)
Constant	−3.523*** (0.592)	−1.139*** (0.578)	−1.184*** (0.578)	−87.390*** (1.602)	−117.218*** (6.296)	−52.761*** (6.324)	−58.712*** (6.349)	−58.041*** (6.334)
No. of obs.	2579	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	33.7	34.5	34.6	52.3	53.1	54.0	53.9	54.1

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 7 Impact of the various components of executive compensation on the actual ESG score and the actual environmental performance score

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP
Ind. variables					
TBEN	1.103*** (0.097)				
STCOM		0.446*** (0.067)			
LTCOM			0.684*** (0.065)		
TCOM				1.035*** (0.090)	
TCOMP					1.019*** (0.091)
BSIZE	12.043*** (0.918)	12.774*** (0.931)	11.783*** (0.925)	11.980*** (0.918)	12.022*** (0.919)
SCOM	0.675 (0.412)	0.946** (0.419)	0.756* (0.412)	0.725* (0.412)	0.727* (0.412)
BIG4	3.519* (1.885)	4.116** (1.915)	3.626* (1.887)	3.599* (1.884)	3.622* (1.885)
AGE	2.746*** (0.312)	3.116*** (0.316)	2.925*** (0.312)	2.768*** (0.311)	2.786*** (0.312)
FSIZE	0.656*** (0.051)	0.689*** (0.052)	0.667*** (0.051)	0.650*** (0.051)	0.653*** (0.051)
LEV	−0.639 (1.181)	−1.419 (1.198)	−0.958 (1.181)	−0.551 (1.182)	−0.590 (1.182)
CAP	−0.311 (0.907)	−0.436 (0.924)	−0.065 (0.909)	−0.315 (0.907)	−0.332 (0.908)
Constant	−59.763*** (3.025)	−26.303*** (3.135)	−58.038*** (3.037)	−59.717*** (3.025)	−59.782*** (3.027)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y
R-squared (%)	57.8	56.4	57.6	57.7	57.7

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

Gomez-Mejia, 2009; Haque, 2017; Haque & Ntim, 2020). By contrast, the results in Table 8 suggest that *LTCOM* has strong positive relationship with CO_2P. The strong positive link between *LTCOM* and CO_2P is consistent with efficiency view of *NIT*. It also corroborates the findings of Grey et al. (2020) who observe that companies that employ *LTCOM* such as stock awards to compensate executives make greater distributions across all channels. This stems from the fact that correlating executive's wealth with long-term sustainable performance should encourage them to think like shareholders (Grey et al., 2020). In addition, its supports Maas and Rosendaal (2016) suggestion that long-term incentives motivate executives to consider and enhance firms' long-term performance.

Finally, Table 8 shows estimation results of the individual components of EC on process-oriented *GRP* initiatives (*PGRI*) along with the control variables. Consistent with symbolic view of *NIT*, the results in Table 8 indicate that *TBEN*, *STCOM*, *LTCOM*, *TCOM*, and *TCOMP* have positive and significant associations with *PGRI*, indicating that *H2* is strongly supported. Crucially, and as predicted by the symbolic view of *NIT*, the results also reveal that the relationships between the individual components of EC and the *PGRI* are much higher for the symbolic construct of *GRP* (*PGRI*) than the (substantive) actual measures of *GRP* (*GHGP* and CO_2P). These findings offer empirical support for *H2* and the symbolic view of *NIT*. The results are also in line with the suggestion of Cordeiro and Sarkis (2008) that the remuneration committee might use EC arrangements as symbolic or impression management strategy to enhance corporate legitimacy rather than focusing on actual reduction in the emission of *GHGs*.

6.2.3 | The moderating role of SBC on the CPSS

Tables 9 and 10 report the findings of the moderating role of *SBC* on the relationship between individual components of CEO pay and the individual measures of *SBPs* (*ESGP*, *ENVP*, *GHGP*, CO_2P, *and PGRI*) including the control variables. From Table 9, it is evident that the interaction variables *BECO**SBC*, *LTCEO**SBC*, and *TRCEOP**SBC* have positive relationship with *ESGP* and *ENVP*. The evidence suggests that the setting of sustainability targets in CEO pay packages positively moderates the CEO pay-for-*ESGP*/*ENVP* sensitivity, thus offering strong empirical support for *H3*. The findings lend support to the theoretical predictions of economic view of *NIT* which suggests that firms can design and employ sustainability targets in CEO pay packages as instruments to incentivize them to pursue *ESG* and environmental projects. From economic *NIT* perspective, this will improve the reputation (legitimacy) of the firms (Campbell et al., 2007), as well as enhancing the firms' economic benefits (efficiency) (Mahoney & Thorn, 2006). A potential explanation could also be that the use of sustainability targets in CEO pay directs CEO's attention toward

TABLE 7 (Continued)

Dep. variable	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables					
TBEN	0.591*** (0.108)				
STCOM		0.247*** (0.074)			
LTCOM			0.512*** (0.072)		
TCOM				0.556*** (0.101)	
TCOMP					0.544*** (0.102)
BSIZE	15.230*** (1.023)	15.606*** (1.026)	14.696*** (1.025)	15.192*** (1.024)	15.221*** (1.025)
SCOM	0.188 (0.459)	0.354 (0.461)	0.195 (0.456)	0.215 (0.459)	0.217 (0.459)
BIG4	−0.190 (2.101)	0.129 (2.109)	−0.250 (2.087)	0.149 (2.100)	0.134 (2.101)
AGE	2.809*** (0.348)	2.979*** (0.348)	2.858*** (0.345)	2.819*** (0.348)	2.831*** (0.348)
FSIZE	0.584*** (0.057)	0.603*** (0.057)	0.584*** (0.057)	0.583*** (0.057)	0.584*** (0.057)
LEV	−0.729 (1.319)	−1.073 (1.321)	−0.711 (1.308)	−0.679 (1.319)	−0.705 (1.319)
CAP	−1.809* (1.012)	−1.862** (1.017)	−1.621* (1.006)	−1.811* (1.011)	−1.820* (1.012)
Constant	−35.236*** (3.444)	−34.145*** (3.453)	−57.174*** (3.3612)	−35.259*** (3.445)	−35.230*** (3.445)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y
R-squared (%)	44.5	44.1	45.1	44.5	44.4

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

making greater commitments to strong *ESG* and environmental investments (Maas & Rosendaal, 2016). These key *ESG*/environmental-related investments tend to enhance the operational efficiency of firms as it reduces operational costs and optimizes the consumption of energy with positive impact on financial performance (Alhossini et al., 2021; Maas & Rosendaal, 2016). However, the results contained in Table 9 indicate that the interaction variables *STCEO*SBC* and *TRCEO*SBC* have positive but weak associations with both *ESGP* and *ENVP*, which do not offer empirical support for *H3*.

Similarly, the results in Table 10 reveal that the moderation variables *BCEO*SBC*, *LTCEO*SBC*, and *TRCEO*SBC* have positive and significant impact on *GHGP*, while *STCEO*SBC*, *LTCEO*SBC*, and *TRCEO*SBC* have positive moderating effect on CO_2P. These findings suggest that *H3* is accepted. The findings also offer support to the theoretical prediction of economic perspective of *NIT* that *SBC* can serve as a crucial instrument that can drive CEOs to engage in *GHGs* and CO_2 emission reduction initiatives. For example, by linking CEO pay to *SBP* targets, CEOs will commit to greater environmental management practices which can increase the firms' environmental performance in areas such as reduction in pollution, GHG, and CO_2 emissions (Maas & Rosendaal, 2016). But the results in Table 10 show that the interaction variables *STCEO*SBC* and *TRCEOP*SBC* have positive but weak moderation impact on *GHGP*. Likewise, the interaction variables *BCEO*SBC* and *TRECEOP*SBC* also have positive but insignificant influence on CO_2P. These results imply that *H3* is rejected. Altogether, the estimated results show that *SBC* has positive moderating impact on the link between CEO pay and actual *GRP* (*GHGP and* CO_2P). This evidence offers strong empirical support for *H3*. The findings suggest that CEO pay incentives can be regarded as crucial governance mechanisms that can enhance *SBPs* and an improvement in *GHG* emission abatement. This evidence corroborates the results of Cordeiro and Sarkis (2008), who investigate companies in the United States and report a positive link between CEO pay and *ENVP* for US companies that implement environmental performance-based pay scheme. The implication is that *SBC* enhances the link between the various components of CEO pay and *ESGP*, ENVP, *GHGP*, *and* CO_2P, thereby offering empirical support to the theoretical prediction of efficiency view of *NIT* that the remuneration committee might use sustainability-based targets in CEO contracts, as a substantive management strategy to enhance firms' legitimacy (Cordeiro & Sarkis, 2008).

Furthermore, the results in Table 10 indicate that remuneration-based strategies such as *SBC* positively moderate the CEO pay–*PGRI* nexus, as the interaction variables *BCEO*SBC*, *LTCEO*SBC*, and *TRCEOP*SBC* have positive and significant moderating impact on the *PGRI*. However, the moderating impact for *STCEO*SBC* and *TRCEO*SBC* on *PGRI* is insignificant although the coefficients are positive. These results are in line with the predictions of symbolic

TABLE 8 Impact of the various components of executive compensation on the actual GHG and CO_2 emission reduction and PGRI performance scores

Dep. variable	GHGP	GHGP	GHGP	GHGP	GHGP	CO_2P	CO_2P
Ind. variables							
TBEN	0.071*** (0.021)					−0.079*** (0.019)	
STCOM		0.002 (0.014)					−0.070*** (0.013)
LTCOM			0.071*** (0.014)				
TCOM				0.062*** (0.019)			
TCOMP					0.059*** (0.020)		
BSIZE	2.693*** (0.197)	2.781*** (0.197)	2.604*** (0.197)	2.697*** (0.197)	2.704*** (0.197)	1.733*** (0.175)	1.736*** (0.175)
SCOM	−0.153* (0.088)	−0.132 (0.088)	−0.153* (0.087)	−0.149* (0.088)	−0.149 (0.088)	−0.234** (0.079)	−0.254*** (0.079)
BIG4	0.462 (0.404)	0.505 (0.405)	0.445 (0.403)	0.470 (0.403)	0.473 (0.404)	−0.340 (0.361)	−0.378 (0.361)
AGE	0.308*** (0.067)	0.333*** (0.067)	0.309*** (0.067)	0.312*** (0.067)	0.314*** (0.067)	−0.248*** (0.059)	−0.269*** (0.059)
FSIZE	0.112*** (0.011)	0.115*** (0.011)	0.112*** (0.010)	0.112*** (0.011)	0.112*** (0.011)	0.008 (0.009)	0.006 (0.009)
LEV	−0.561** (0.253)	−0.623** (0.253)	−0.554** (0.252)	−0.562** (0.253)	−0.566** (0.253)	−0.532** (0.226)	−0.501*** (0.225)
CAP	−1.015*** (0.194)	−1.005*** (0.195)	−0.999*** (0.194)	−1.016*** (0.194)	−1.017*** (0.194)	−1.428*** (0.174)	−1.397*** (0.174)
Constant	−8.954*** (0.648)	−5.374*** (0.662)	−8.753*** (0.648)	−8.953*** (0.649)	−8.958*** (0.649)	−1.163** (0.580)	−3.314*** (0.591)
No. of obs.	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	41.7	41.4	42.0	41.7	41.6	34.1	34.4

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 8 (Continued)

Dep. variable	CO_2P	CO_2P	CO_2P	PGRI	PGRI	PGRI	PGRI	PGRI
Ind. variables								
TBEN				1.717*** (0.201)				
STCOM					0.744*** (0.138)			
LTCOM	0.039*** (0.012)					1.268*** (0.132)		
TCOM		−0.082*** (0.017)					1.618*** (0.188)	
TCOMP			−0.081*** (0.017)					1.582*** (0.188)
BSIZE	1.713*** (0.177)	1.748*** (0.176)	1.745*** (0.175)	25.319*** (1.895)	26.349*** (1.909)	24.409*** (1.897)	25.207*** (1.896)	25.291*** (1.897)
SCOM	−0.245*** (0.080)	−0.237*** (0.079)	−0.237*** (0.078)	1.051 (0.850)	1.488* (0.858)	1.128 (0.845)	1.127 (0.849)	1.132 (0.850)
BIG4	−0.362 (0.362)	−0.343 (0.361)	−0.344 (0.361)	6.234* (3.890)	7.157* (3.927)	6.231* (3.865)	6.355 (3.888)	6.397* (3.891)
AGE	−0.261*** (0.059)	−0.247*** (0.059)	−0.248*** (0.060)	5.315*** (0.644)	5.882*** (0.648)	5.533*** (0.639)	5.346*** (0.644)	5.379*** (0.644)
FSIZE	0.007 (0.009)	0.008 (0.010)	0.008 (0.009)	1.266*** (0.106)	1.316*** (0.107)	1.271*** (0.105)	1.257*** (0.106)	1.261*** (0.106)
LEV	−0.499** (0.226)	−0.546** (0.227)	−0.543** (0.226)	−1.294 (1.441)	−2.469 (2.459)	−1.528 (2.423)	−1.147 (2.442)	−1.222 (2.443)
CAP	−1.459*** (0.175)	−1.428*** (0.174)	−1.427*** (0.173)	−2.887 (1.872)	−3.107 (1.893)	−2.442 (1.864)	−2.895 (1.872)	−2.921 (1.873)
Constant	−1.23^6** (0.583)	−1.169** (0.579)	−1.164** (0.579)	−58.033*** (0.377)	−54.876*** (0.427)	−13.120*** (0.223)	−58.104*** (0.376)	−58.020*** (0.381)
No. of obs.	2579	579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	33.9	34.2	34.2	53.6	52.8	54.0	53.6	53.5

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 9 The effect of sustainability targets on the impact of the various components of CEO pay on the actual ESG score and the actual environmental performance score

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP
Ind. variables					
BCEO	−3.472 (2.650)				
BCEO*SBC	10.429*** (2.862)				
SBC	−40.637*** (11.528)	0.586 (1.359)	−2.845** (1.362)	−5.426*** (1.898)	−4.806** (2.054)
STCEO*SBC		0.104 (0.252)			
STCEO		0.543*** (0.238)			
LTCEO*SBC			0.712*** (0.216)		
LTCEO			0.146 (0.205)		
TRCEO*SBC				0.503 (1.05)	
TRCEO				0.554** (0.267)	
TRCEOP*SBC					1.941*** (0.307)
TRCEOP					0.618** (0.289)
BSIZE	13.325*** (0.928)	12.871*** (0.928)	12.116*** (0.921)	12.285*** (0.907)	12.296*** (0.906)
SCOM	0.749* (0.420)	0.943*** (0.418)	0.961*** (0.413)	0.664* (0.409)	0.658* (0.409)
BIG4	4.120*** (1.921)	4.201*** (1.912)	3.818*** (1.890)	3.404* (1.874)	3.354* (1.873)
AGE	3.250*** (0.318)	3.132*** (0.317)	2.943*** (0.314)	2.727*** (0.313)	2.714*** (0.313)
FSIZE	0.675*** (0.052)	0.681*** (0.052)	0.661*** (0.052)	0.622*** (0.051)	0.622*** (0.051)
LEV	−1.973* (1.203)	−1.139 (1.200)	−0.968 (1.183)	−0.075 (1.177)	−0.121 (1.178)
CAP	−0.549 (0.927)	−0.242 (0.926)	0.307 (0.911)	0.191 (0.903)	0.1736 (0.904)
Constant	−4.201*** (1.854)	−6.862*** (3.291)	−3.066*** (3.314)	−5.153*** (3.472)	−5.457*** (3.515)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y
R-squared (%)	56.2	56.6	57.6	58.4	58.4

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

or impression management view of *NIT* as discussed earlier and hence indicate that *H3* is accepted, in that *SBC* strengthens the positive connection between CEO pay and *GRP*. In addition, the findings demonstrate that the moderating influence is much better for the symbolic *GRP* construct (*PGRI*) than actual measures of *GRP* (*GHGP and* CO_2P). The findings offers further support to *H3* and also partly validate the evidence of Haque and Ntim (2020), who document that *ESG*-based compensation reinforces the relationship between compensation and process-oriented carbon reduction performance.

6.2.4 | The moderating role of SBC on executive PSS

Tables 11 and 12 report the findings of the moderating role of *SBC* on the association between individual components of EC and the individual measures of *SBPs* (*ESGP*, *ENVP*, *GHGP*, CO_2P, and *PGRI*) along with the control variables. Observably, the results in Table 11 indicate that the interaction variables *TBEN*SBC*, *LTCOM*SBC*, *TCOM*SBC*, and *TCOMP*SBC* have positive and significant moderation impact on *ENVP*, implying that *H4* is accepted. Also, the findings in Table 11 show that the moderation variables *TBEN*SBC*, *LTCOM*SBC*, *TCOM*SBC*, and *TCOMP*SBC* have positive and significant moderating effect on *ENVP*, suggesting that *H4* is accepted. The findings support theoretical prediction of efficiency view of *NIT*, which posits that the implementation of *SBC* policy in EC can play a crucial role in encouraging top managers to engage in *ESG* and environmental projects which can in turn enhance organizational legitimacy (Haque & Ntim, 2020). The results suggest that the adoption of *SBC* policy by firms can reinforce the link between EC and, *ESGP*, and *ENVP*. By contrast, the *STCOM*SBC* moderation variable has insignificant influence on both *ESGP* and *ENVP*, implying that *H4* is partly rejected.

TABLE 9 (Continued)

Dep. variable	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables					
BCEO	−5.113* (2.905)				
BCEO*SBC	11.267*** (3.137)				
SBC	−43.93*** (12.636)	0.848 (1.499)	−2.427 (1.505)	−4.781** (2.123)	−3.787* (2.297)
STCEO*SBC		0.084 (0.278)			
STCEO		0.328 (0.262)			
LTCEO*SBC			0.659*** (0.239)		
LTCEO			0.071 (0.225)		
TRCEO*SBC				0.249 (1.185)	
TRCEO				0.014 (0.299)	
TRCEOP*SBC					0.805*** (0.343)
TRCEOP					0.173 (0.324)
BSIZE	15.849*** (1.018)	15.598*** (1.024)	14.804*** (1.017)	15.236*** (1.015)	15.228*** (1.014)
SCOM	0.188 (0.461)	0.354 (0.461)	0.376 (0.456)	0.190 (0.458)	0.182 (0.458)
BIG4	0.136 (2.105)	0.237 (2.108)	−0.105 (2.087)	−0.339 (2.096)	−0.328 (2.095)
AGE	3.108*** (0.348)	3.028*** (0.349)	2.838*** (0.346)	2.801*** (0.349)	2.785*** (0.349)
FSIZE	0.591*** (0.058)	0.598*** (0.058)	0.579*** (0.056)	0.564*** (0.057)	0.563*** (0.057)
LEV	−1.504 (1.319)	−0.896 (1.325)	−0.686 (1.308)	−0.317 (1.318)	−0.328 (1.319)
CAP	−1.974* (1.016)	−1.729* (1.021)	−1.271 (1.006)	−1.432 (1.010)	−1.463 (1.010)
Constant	−4.209*** (1.998)	−5.505*** (3.706)	−5.474*** (3.593)	−3.525*** (3.944)	−3.377*** (3.993)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y
R-squared (%)	44.4	44.3	45.4	54.9	45.0

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

Further, the results in Table 12 reveal that the interaction variable *LTCOM*SBC* has a positive and significant moderating impact on the *LTCOM–GHGP* nexus, thereby offering empirical support for *H4*. The evidence is consistent with efficiency view of *NIT* which suggests that firms can direct the attention of corporate executives toward greater commitment to reduce *GHG* emission by linking long-term executive pay with performance in *GHG* emission reduction. The evidence confirms the findings of prior studies that observe that long-term incentives motivate corporate executives to focus and enhance long-term performance of firms (Maas & Rosendaal, 2016). However, the results in Table 12 suggest that the other interaction variables (*TBEN*SBC*, *STCOM*SBC*, *TCOM*SBC*, and *TCOMP*SBC*) do not appear to have any significant effect on *GHGP*, implying that *H4* is partly rejected.

Similarly, the results in Table 12 show that the interaction variables *STCOM*SBC* and *LTCOM*SBC* have positive impact on CO_2P, implying *H4* is accepted. The findings lend support to the theoretical prediction of economic view of *NIT* that *SBC* can serve as a crucial mechanism that can push corporate executives to engage in CO_2 emission reduction initiatives. The evidence also corroborates the findings of prior studies that show that the inclusion of monetary incentives in remuneration schemes of corporate executives can increase their commitment toward CO_2 emission reduction performance (Haque & Ntim, 2020) and hence could serve as an appropriate means to align the interests of corporate executives and stakeholders (Maas & Rosendaal, 2016). However, the table shows that the other interaction variables *TBEN*SBC*, *TCOM*SBC*, and *TCOMP*SBC* have no significant moderating impact on CO_2P, suggesting that *H4* is rejected.

Likewise, the findings in Table 12 indicate that *SBC* enhances the relationship between the various components of EC and *PGRI*, offering strong empirical support to *H4*. Specifically, the results in Table 12 reveal that the interaction variables *TBEN*SBC*, *LTCOM*SBC*, *TCOM*SBC*, and *TRCOMP*SBC* are positively and significantly associated

TABLE 10 The effect of sustainability targets on the impact of various components of CEO pay on the actual GHG and CO_2 emission reduction and PGRI performance scores

Dep. variable	GHGP	GHGP	GHGP	GHGP	GHGP	CO_2P	CO_2P
Ind. variables							
BCEO	−1.001* (0.558)					−0.769 (0.501)	
BCEO*SBC	1.592*** (0.602)					0.829 (0.541)	
SBC	−6.366*** (2.427)	−0.049 (0.288)	−0.275 (0.289)	−0.757* (0.408)	−0.591 (0.442)	−3.547 (2.177)	−0.670*** (0.256)
STCEO*SBC		0.016 (0.053)					0.112** (0.047)
STCEO		0.019 (0.050)					−0.189*** (0.044)
LTCEO*SBC			0.779* (0.043)				
LTCEO			0.078* (0.045)				
TRCEO*SBC				0.437* (0.228)			
TRCEO				0.009 (0.057)			
TRCEOP*SBC					0.097 (0.066)		
TRCEOP					0.027 (0.062)		
BSIZE	2.788*** (0.195)	2.748*** (0.197)	2.575*** (0.195)	2.684 *** (0.195)	2.695*** (0.195)	1.646*** (0.175)	1.729*** (0.175)
SCOM	0.154* (0.088)	−0.139 (0.089)	−0.134 (0.087)	0.155* (0.088)	−0.159* (0.088)	−0.256*** (0.079)	−0.256*** (0.078)
BIG4	0.489 (0.404)	0.501 (0.405)	0.448 (0.401)	0.445 (0.404)	0.429 (0.403)	−0.412 (0.363)	−0.404 (0.360)
AGE	0.342*** (0.067)	0.332*** (0.067)	0.289*** (0.067)	0.302 *** (0.067)	0.297*** (0.068)	−0.289*** (0.059)	−0.279*** (0.059)
FSIZE	0.113*** (0.011)	0.115*** (0.011)	0.109*** (0.010)	0.109 *** (0.011)	0.109*** (0.011)	0.005 (0.009)	0.008 (0.009)
LEV	−0.632*** (0.253)	−0.607*** (0.254)	−0.505** (0.250)	−0.493* (0.253)	−0.497* (0.254)	−0.423* (0.227)	−0.493** (0.226)
CAP	−1.022*** (0.195)	−1.017*** (0.196)	−0.928*** (0.193)	−0.967*** (0.195)	−0.972*** (0.194)	−1.414*** (0.175)	−1.409*** (0.175)
Constant	−4.863*** (2.285)	−8.923*** (0.698)	−5.156*** (0.702)	−8.328 *** (0.747)	−8.419*** (0.757)	−0.249* (2.067)	−0.539* (0.620)
No. of obs.	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	41.6	41.4	42.7	41.9	41.9	33.7	34.7

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 10 (Continued)

Dep. variable	CO_2P	CO_2P	CO_2P	PGRI	PGRI	PGRI	PGRI	PGRI
Ind. variables								
BCEO				−9.010* (5.416)				
BCEO*SBC				21.734*** (5.849)				
SBC	−0.471* (0.261)	−0.145*** (0.051)	−0.310 (0.395)	−83.835*** (3.560)	2.001 (2.784)	−5.976** (2.788)	−10.915*** (3.917)	−9.924** (4.239)
STCEO*SBC		−0.334 (0.364)			0.248 (0.515)			
STCEO					0.898* (0.487)			
LTCEO*SBC	0.521* (0.041)					1.671*** (0.442)		
LTCEO	−0.072* (0.039)					0.004 (0.418)		
TRCEO*SBC		0.697*** (0.203)					0.049 (2.186)	
TRCEO							0.400 (0.552)	
TRCEOP*SBC			0.019 (0.059)					2.100*** (0.633)
TRCEOP			−0.147*** (0.055)					0.543 (0.597)
BSIZE	1.686*** (0.176)	1.722*** (0.174)	1.743*** (0.174)	27.221*** (1.898)	26.424*** (1.902)	24.876*** (1.885)	25.492*** (1.873)	25.481*** (1.872)
SCOM	−0.251*** (0.079)	−0.225* (0.078)	−0.229*** (0.079)	1.156 (0.859)	1.508* (0.856)	1.576* (0.845)	1.051 (0.845)	1.045 (0.845)
BIG4	−0.408 (0.363)	−0.326 (0.360)	−0.345 (0.361)	7.270* (3.925)	7.438* (3.915)	6.629* (3.867)	5.935 (3.868)	5.925 (3.866)
AGE	−0.280*** (0.060)	−0.234*** (0.060)	−0.238*** (0.060)	6.172*** (0.649)	5.943*** (0.649)	5.574*** (0.642)	5.309*** (0.645)	5.293*** (0.645)
FSIZE	0.007 (0.009)	0.012 (0.009)	0.011 (0.010)	1.292*** (0.107)	1.301*** (0.107)	1.263*** (0.105)	1.207*** (0.105)	1.206*** (0.105)
LEV	−0.465** (0.227)	−0.576*** (0.226)	−0.571*** (0.227)	−3.473 (2.461)	−2.004 (2.462)	−1.586 (2.424)	−0.293 (2.432)	−0.328** (2.432)
CAP	−1.435*** (0.174)	−1.440*** (0.173)	−1.449*** (0.174)	−3.273* (1.894)	−2.679 (1.896)	−1.648 (1.864)	−1.942 (1.864)	−1.970 (1.864)
Constant	−3.093*** (0.636)	−2.991*** (0.677)	−2.926*** (0.687)	−9.995* (2.371)	−8.0601*** (2.885)	−9.211*** (6.658)	−9.455*** (7.276)	−5.189*** (7.367)
No. of obs.	2579	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	33.8	34.8	34.6	52.8	53.1	54.3	54.3	54.4

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 11 The effect of sustainability targets on the impact of various components of executive compensation on the actual ESG score and actual environmental performance score

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP
Ind. variables					
TBEN	0.447* (0.236)				
TBEN*SBC	0.761*** (0.251)				
SBC	−5.002** (2.109)	0.981 (1.420)	−2.884* (1.475)	−4.376** (2.022)	−5.147*** (2.076)
STCOM*SBC		−0.009 (0.196)			
STCOM		0.447** (0.184)			
LTCOM*SBC			0.546*** (0.180)		
LTCOM			0.202 (0.169)		
TCOM*SBC				0.639*** (0.228)	
TCOM				0.484** (0.215)	
TCOMP*SBC					0.734*** (0.235)
TCOMP					0.383* (0.221)
BSIZE	11.971*** (0.917)	12.732*** (0.932)	11.725*** (0.924)	11.924*** (0.918)	11.924*** (0.918)
SCOM	0.721* (0.411)	0.968** (0.932)	0.814* (0.412)	0.767* (0.411)	0.766* (0.411)
BIG4	3.405* (1.884)	4.209** (1.917)	3.539* (1.886)	3.521* (1.885)	3.521* (1.885)
AGE	2.813*** (0.314)	3.159*** (0.318)	2.978*** (0.313)	2.830*** (0.313)	2.831*** (0.313)
FSIZE	0.657*** (0.051)	0.687*** (0.052)	0.674*** (0.051)	0.653*** (0.051)	0.654*** (0.051)
LEV	−0.503 (1.182)	−1.482 (1.200)	−0.9849 (1.180)	−0.437 (1.183)	−0.435 (1.183)
CAP	−0.105 (0.908)	−0.439 (0.925)	0.046 (0.909)	−0.136 (0.908)	−0.136 (0.909)
Constant	−5.515*** (3.539)	−7.332*** (3.379)	−5.682*** (3.301)	−5.093*** (3.487)	−5.093*** (3.515)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y
R-squared (%)	57.9	56.4	57.7	57.9	57.9

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

with the *PGRI*. In line with the prediction of symbolic view of *NIT*, the findings show that the moderating impact of *SBC* on the executive pay-for-sustainability is much better for the symbolic *GRP* construct (*PGRI*) than actual measures of *GRP* (*GHGP* and CO_2P). The findings offer further support to *H4* and also confirm the evidence prior studies (Haque & Ntim, 2020; Maas, 2018; Okafor & Ujah, 2020). In particular, Haque and Ntim (2020) observe that *ESG*-based executive compensation positively moderates the link between total compensation paid to executives and process-oriented carbon reduction performance construct. However, the positive moderating effect does not hold for *STCOM*SBC–PGRI* nexus. Altogether, the estimated results (shown in Tables 11 and 12) offer strong support for *H4* in that *SBC* has a positive moderating effect on the association between EC and *SBPs* and that these associations are enhanced in the symbolic *GRP* (*PGRI*) than actual *GRP* (*GHGP* and CO_2P). Overall, the estimation results suggest that the adoption or an increase in SBC for corporate executives might improve actual *GRP* in the form of reduced *GHG* emissions.

6.3 | Sensitivity analysis and endogeneity check

We conduct a number of further analyses to ascertain the robustness of our results. Firstly, to resolve issues of potential endogeneity and reverse causality among CEO pay, EC, and *SBPs*, we run Equations 1 and 2 employing a dynamic two-step system generalized method of moments (GMM), as proposed by Blundell and Bond (1998). We include year and industry dummies in all our models to control for year/industry-level fixed effects. In our GMM regression models, we follow Nguyen et al. (2021) and Haque and Ntim (2020) by using the first lags of all explanatory variables as instruments in all the specifications. The validity of the instruments is tested using Arellano–Bond test of the absence of serial autocorrelation and Hansen test of over-identifying restrictions (Haque & Ntim, 2020). In all our GMM models, the values of AR and Hansen tests imply that all the model specifications pass the autocorrelation test for the validity of the instruments.

TABLE 11 (Continued)

Dep. variable	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables					
TBEN	0.065 (0.263)				
TBEN*SBC	0.607** (0.280)				
SBC	−3.563 (2.353)	1.715 (1.564)	−2.010 (1.634)	−3.045 (2.256)	−3.734* (2.316)
STCOM*SBC		−0.091 (0.216)			
STCOM		0.318 (0.203)			
LTCOM*SBC			0.465** (1.199)		
LTCOM			0.100 (0.187)		
TCOM*SBC				0.511** (0.255)	
TCOM				0.114 (0.240)	
TCOMP*SBC					0.596** (0.263)
TCOMP					0.025 (0.247)
BSIZE	15.156*** (1.023)	15.556*** (1.027)	14.633*** (1.024)	15.130*** (1.024)	15.153*** (1.025)
SCOM	0.236 (0.459)	0.379 (0.462)	0.257 (0.456)	0.261 (0.459)	0.265 (0.460)
BIG4	−0.235 (2.103)	0.256 (2.112)	−0.276 (2.088)	−0.162 (2.102)	−0.174 (2.102)
AGE	2.881*** (0.350)	3.037*** (0.350)	2.922*** (0.347)	2.889*** (0.350)	2.900*** (0.350)
FSIZE	0.587*** (0.057)	0.601*** (0.058)	0.589*** (0.056)	0.585*** (0.057)	0.586*** (0.058)
LEV	−0.645 (1.321)	−1.169 (1.324)	−0.759 (1.308)	−0.614 (1.321)	−0.609 (1.322)
CAP	−1.645* (1.013)	−1.889* (1.019)	−1.529 (1.006)	−1.668* (1.013)	−1.644 (1.013)
Constant	−3.525*** (4.009)	−5.823*** (3.722)	−5.598*** (3.654)	−3.027*** (3.955)	−3.410*** (3.983)
No. of obs.	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y
R-squared (%)	44.6	44.2	45.2	44.6	44.6

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

Regarding the effect of the individual components of CEO pay on *SBPs*, the estimation results of the GMM models shown in Tables 13 and 14 suggest no significant difference from the reported findings in the main regression analysis in Tables 5 and 6, respectively. For example, results in Table 13 show that all the individual components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) have positive and significant impact on both *ESGP* and *ENVP*.

Similarly, the estimation results in Table 14 are comparable to the findings reported in Table 6. For instance, all the various components of CEO pay (*BCEO*, *STCEO*, *LTCEO*, *TRCEO*, and *TRCEOP*) have positive impact on *GHGP* and *PGRI*. The results in Table 14 also show that *STCEO*, *TRCEO*, and *TRCEOP* have negative effect on CO_2P, while *LTCEO* has positive impact of CO_2P.

Also, the GMM regression results of Tables 15 and 16 are similar to those reported in Tables 7 and 8. Specifically, the estimated results contained in Table 15 show that all the individual components of EC (*TBEN*, *STCOM*, *LTCOM*, *TCOM*, and *TCOMP*) are positively and significantly associated with both *ESGP and ENVP*. These results are consistent with the findings in Table 7.

Again, the estimated results in Table 16 also offer further support to the main findings reported in Table 8. For example, *TBEN*, *LTCOM*, *TCOM*, and *TCOMP* have positive and significant association with *GHGP*, while *STCOM* has insignificant link with *GHGP*. In addition, the results in Table 16 indicate that all the EC variables are positively linked with *PGRI*. By contrast, all the individual components of EC have negative and significant impact on CO_2P, except *LTCOM* where the association is positive.

Similarly, the study carried out additional test to check the robustness of the results of the moderating effect of *SBC* on the *PSS*. Specifically, the study estimated GMM models, which for brevity not reported, but will be available upon request. The results of these investigations were consistent with the earlier findings. Finally, to assess the sensitivity of our results to lagged effect between the compensation variables and the *SBP* measures, we include a 1-year time

TABLE 12 Effect of sustainability targets on the impact of the various components of executive compensation on actual GHG and CO_2 emission reduction performance scores

Dep. variable	GHGP	GHGP	GHGP	GHGP	GHGP	CO_2P	CO_2P
Ind. variables							
TBEN	0.022 (0.050)					0.107^{**} (0.045)	
TBEN*SBC	0.057 (0.053)					0.033 (0.048)	
SBC	−0.435 (0.452)	0.117 (0.300)	−0.259 (0.315)	−0.330 (0.434)	−0.484 (0.445)	−0.448 (0.405)	-0.794^{***} (0.267)
STCOM*SBC		−0.013 (0.041)					0.108^{***} (0.037)
STCOM		0.012 (0.038)					-0.163^{***} (0.034)
LTCOM*SBC			0.353^{*} (0.038)				
LTCOM			0.040 (0.036)				
TCOM*SBC				0.041 (0.049)			
TCOM				0.026 (0.046)			
TCOMP*SBC					0.060 (0.051)		
TCOMP					0.007 (0.047)		
BSIZE	2.690^{***} (0.196)	2.779^{***} (0.196)	2.604^{***} (0.197)	2.696^{***} (0.197)	2.701^{***} (0.197)	1.742^{***} (0.176)	1.745^{***} (0.175)
SCOM	-0.152^{*} (0.087)	−0.132 (0.088)	-0.150^{*} (0.089)	-0.1480^{*} (0.088)	-0.146^{*} (0.088)	-0.238^{***} (0.079)	-0.252^{***} (0.078)
BIG4	0.447 (0.404)	0.510 (0.405)	0.432 (0.403)	0.460 (0.404)	0.457 (0.405)	−0.368 (0.362)	−0.401 (0.360)
AGE	0.311^{***} (0.067)	0.336^{***} (0.067)	0.309^{***} (0.067)	0.313^{***} (0.068)	0.316^{***} (0.067)	-0.256^{***} (0.060)	-0.282^{***} (0.059)
FSIZE	0.112^{***} (0.011)	0.115^{***} (0.011)	0.113^{***} (0.011)	0.112^{***} (0.010)	0.113^{***} (0.011)	0.007 (0.009)	0.008 (0.009)
LEV	-0.547^{***} (0.254)	-0.628^{***} (0.253)	-0.551^{**} (0.252)	-0.551^{**} (0.253)	-0.549^{*} (0.254)	-0.051^{**} (0.227)	-0.464^{**} (0.225)
CAP	-1.000^{***} (0.194)	-1.009^{***} (0.195)	-0.991^{***} (0.194)	-1.004^{***} (0.195)	-0.999^{***} (0.195)	-1.418^{***} (0.174)	-1.364^{***} (0.174)
Constant	-8.579^{***} (0.759)	-5.477^{***} (0.714)	-8.531^{***} (0.705)	-8.674^{***} (0.748)	-8.547^{***} (0.754)	-2.864^{***} (0.690)	-2.644^{***} (0.635)
No. of obs.	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	41.7	41.4	41.9	41.6	41.6	33.7	34.6

Note: Robust standard errors reported in parentheses.
[*]Statistical significance at 10% level.
[**]Statistical significance at 5% level.
[***]Statistical significance at 1% level.

TABLE 12 (Continued)

Dep. variable	CO_2P	CO_2P	CO_2P	PGRI	PGRI	PGRI	PGRI	PGRI
Ind. variables								
TBEN				0.296 (0.486)				
TBEN*SBC				1.640*** (0.518)				
SBC	−0.636** (0.283)	−0.506 (0.388)	−0.505 (0.398)	−9.819** (4.351)	3.376 (2.911)	−6.029** (3.020)	−7.908** (4.173)	−9.857** (4.284)
STCOM*SBC					−0.072 (0.403)			
STCOM					0.786** (0.378)			
LTCOM*SBC	0.068* (0.034)					1.295*** (0.369)		
LTCOM	−0.097*** (0.032)					0.122 (0.347)		
TCOM*SBC		0.039 (0.043)					1.316*** (0.472)	
TCOM		−0.114*** (0.041)					0.478 (0.443)	
TCOMP*SBC			0.039 (0.045)					1.557*** (0.486)
TCOMP			−0.114*** (0.042)					0.227 (0.457)
BSIZE	1.717*** (0.177)	1.756*** (0.176)	1.753*** (0.176)	25.122*** (1.893)	26.222*** (1.910)	24.247*** (1.893)	25.046*** (1.894)	25.114*** (1.894)
SCOM	−0.244*** (0.079)	−0.240*** (0.079)	−0.240*** (0.079)	1.175 (0.849)	1.556* (0.859)	1.286 (0.843)	1.241 (0.849)	1.256 (0.849)
BIG4	−0.401 (0.362)	−0.371 (0.362)	−0.373 (0.361)	6.092 (3.888)	7.461** (3.929)	6.111 (3.861)	6.312 (3.888)	6.279 (3.889)
AGE	−0.269*** (0.060)	−0.255*** (0.061)	−0.256*** (0.060)	5.504*** (0.647)	6.022*** (0.652)	5.696*** (0.642)	5.526*** (0.647)	5.557*** (0.647)
FSIZE	0.008 (0.010)	0.009 (0.010)	0.008 (0.009)	1.267*** (0.105)	1.313*** (0.107)	1.287*** (0.105)	1.263*** (0.106)	1.266*** (0.106)
LEV	−0.484** (0.227)	−0.522*** (0.226)	−0.519** (0.227)	−1.055 (2.443)	−2.676 (2.463)	−1.638 (2.419)	−0.975 (2.444)	−0.967 (2.444)
CAP	−1.443*** (0.175)	−1.416*** (0.174)	−1.415*** (0.175)	−2.445 (1.874)	−3.127* (1.896)	−2.184 (1.861)	−2.526 (1.874)	−2.462 (1.875)
Constant	−0.677** (0.634)	−2.799*** (0.680)	−2.799*** (0.685)	−5.498*** (7.412)	−5.357*** (6.924)	−10.315*** (6.756)	−5.284*** (7.314)	−5.541*** (7.368)
No. of obs.	2579	2579	2579	2579	2579	2579	2579	2579
No. of firms	262	262	262	262	262	262	262	262
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Industry fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
R-squared (%)	33.9	34.2	34.2	53.8	52.9	54.3	53.8	53.8

Note: Robust standard errors reported in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

TABLE 13 GMM regression results of the impact of the various components of CEO pay on the actual ESG performance score and the actual environmental performance score

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP
Ind. variables					
BCEO	6.416*** (1.437)				
STCEO		1.371*** (0.174)			
LTCEO			1.407*** (0.149)		
TRCEO				2.622*** (0.225)	
TRCEOP					2.726*** (0.229)
BSIZE	14.743*** (1.013)	13.644*** (1.034)	12.260*** (1.044)	12.948*** (0.987)	12.700*** (0.994)
SCOM	0.897* (0.466)	1.087** (0.467)	1.164** (0.460)	0.567 (0.449)	0.519 (0.450)
BIG4	4.905** (2.086)	4.860** (2.092)	4.481** (2.064)	4.350** (2.005)	4.228** (2.012)
AGE	3.446*** (0.340)	3.199*** (0.344)	2.849*** (0.343)	2.470*** (0.338)	2.343*** (0.341)
FSIZE	0.845*** (0.059)	0.838*** (0.060)	0.802*** (0.058)	0.744*** (0.057)	0.734*** (0.058)
LEV	−1.589 (1.292)	−0.121 (1.302)	−0.114 (1.280)	1.013 (1.254)	1.074 (1.258)
CAP	0.037 (1.008)	0.259 (1.014)	1.194 (0.998)	0.559 (0.966)	0.607 (0.969)
Constant	−59.029*** (6.542)	−36.666*** (3.457)	−33.825*** (3.388)	−40.387*** (3.333)	−39.650*** (3.333)
No. of obs.	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y
AR1 (Prob)	0.003	0.000	0.076	0.006	0.002
AR2 (Prob)	0.464	0.291	0.184	0.398	0.247
Hansen J (Prob)	0.535	0.489	0. 509	0.401	0.336

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

TABLE 13 (Continued)

Dep. variable	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables					
BCEO	4.970*** (1.586)				
STCEO		1.008*** (0.193)			
LTCEO			1.257*** (0.166)		
TRCEO				1.652*** (0.256)	
TRCEOP					1.784*** (0.259)
BSIZE	17.714*** (1.117)	16.934*** (1.143)	15.447*** (1.159)	16.637*** (1.123)	16.418*** (1.128)
SCOM	0.312 (0.514)	0.465 (0.516)	0.528 (0.511)	0.123 (0.510)	0.080 (0.511)
BIG4	0.272 (2.301)	0.233 (2.311)	0.098 (2.290)	−0.077 (2.280)	−0.171 (2.282)
AGE	3.288*** (0.375)	3.124*** (0.380)	2.746*** (0.381)	2.681*** (0.385)	2.574*** (0.387)
FSIZE	0.749*** (0.065)	0.744*** (0.065)	0.709*** (0.065)	0.690*** (0.065)	0.680*** (0.065)
LEV	−1.272 (1.428)	−0.067 (1.441)	0.015 (1.423)	0.422 (1.427)	0.514 (1.428)
CAP	−1.728 (1.112)	−1.498 (1.121)	−0.735 (1.107)	−1.351 (1.098)	−1.316 (1.099)
Constant	−61.383*** (7.218)	−44.081*** (3.821)	−41.790*** (3.760)	−46.049*** (3.790)	−45.719*** (3.780)
No. of obs.	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y
AR1 (Prob)	0.072	0.001	0.002	0.053	0.010
AR2 (Prob)	0.314	0.122	0.172	0.423	0.128
Hansen J (Prob)	0.128	0.230	0.299	0.605	0.312

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

TABLE 14 GMM regression results of the impact of the various components of CEO pay on actual GHG emission, CO_2 emissions, and process-oriented GHG reduction scores

Dep. variable	GHGP	GHGP	GHGP	GHGP	GHGP	CO_2P	CO_2P
Ind. variables							
BCEO	0.5485* (0.303)					−0.149 (0.274)	
STCEO		0.110*** (0.036)					−0.162*** (0.033)
LTCEO			0.237*** (0.031)				
TRCEO				0.275*** (0.049)			
TRCEOP					0.275*** (0.049)		
BSIZE	3.111*** (0.214)	3.007*** (0.218)	2.661*** (0.222)	2.915*** (0.216)	2.915*** (0.216)	1.857*** (0.193)	2.006*** (0.196)
SCOM	−0.158* (0.098)	−0.145* (0.098)	−0.124 (0.097)	−0.196** (0.098)	−0.196** (0.098)	−0.292*** (0.089)	−0.299 (0.088)
BIG4	0.626 (0.441)	0.619 (0.442)	0.550 (0.439)	0.568 (0.439)	0.569 (0.439)	−0.364 (0.399)	−0.357 (0.398)
AGE	0.368*** (0.071)	0.346*** (0.072)	0.267*** (0.073)	0.265*** (0.074)	0.267*** (0.074)	−0.312*** (0.065)	−0.279*** (0.065)
FSIZE	0.140*** (0.012)	0.141*** (0.012)	0.130*** (0.012)	0.129*** (0.012)	0.129*** (0.012)	0.007 (0.011)	0.012 (0.011)
LEV	−0.696*** (0.273)	−0.602** (0.275)	−0.478* (0.272)	−0.430** (0.274)	−0.431 (0.275)	−0.604** (0.247)	−0.739** (0.247)
CAP	−1.067*** (0.213)	−1.072*** (0.214)	−0.899*** (0.212)	−1.019** (0.211)	−1.019*** (0.212)	−1.618*** (0.192)	−1.616*** (0.193)
Constant	−9.030*** (1.383)	−7.047*** (0.731)	−6.873*** (0.720)	−7.558*** (0.730)	−7.558*** (0.730)	−3.258*** (1.251)	−3.495** (0.658)
No. of obs	2261	2261	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y	Y	Y
AR1 (Prob)	0.002	0.036	0.001	0.005	0.006	0.001	0.025
AR2 (Prob)	0.173	0.323	0.138	0.241	0.357	0.105	0.175
Hansen J (Prob)	0.401	0.367	0.466	0.387	0.526	0.556	0.281

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

TABLE 14 (Continued)

Dep. variable	CO_2P	CO_2P	CO_2P	PGRI	PGRI	PGRI	PGRI	PGRI
Ind. variables								
BCEO				11.357*** (2.952)				
STCEO					2.606*** (0.359)			
LTCEO	0.007* (0.029)					2.715*** (0.308)		
TRCEO		−0.159*** (0.044)					4.497*** (0.471)	
TRCEOP			−0.173*** (0.044)					4.736*** (0.477)
BSIZE	1.860*** (0.202)	1.983*** (0.194)	2.004*** (0.195)	30.622*** (2.080)	28.545*** (2.128)	25.767*** (2.147)	27.544*** (2.061)	27.060*** (2.071)
SCOM	−0.296*** (0.089)	−0.266** (0.088)	−0.262** (0.089)	1.377 (0.957)	1.722* (0.961)	1.875* (0.946)	0.816 (0.936)	0.721 (0.938)
BIG4	−0.362 (0.399)	−0.330 (0.395)	−0.320 (0.395)	8.679** (4.283)	8.605** (4.302)	7.864* (4.240)	7.720* (4.182)	7.495* (4.190)
AGE	−0.311*** (0.066)	−0.251*** (0.066)	−0.240*** (0.067)	6.428*** (0.699)	5.939*** (0.708)	5.264*** (0.706)	4.761*** (0.706)	4.518*** (0.712)
FSIZE	0.007 (0.011)	0.014 (0.011)	0.015 (0.011)	1.613*** (0.121)	1.593*** (0.121)	1.528*** (0.120)	1.442*** (0.119)	1.422*** (1.120)
LEV	−0.618** (0.247)	−0.748*** (0.247)	−0.758** (0.246)	−2.805 (2.657)	−0.012 (2.681)	0.030 (2.635)	1.671 (2.618)	1.823 (2.622)
CAP	−1.631*** (0.193)	−1.637*** (0.190)	−1.640*** (0.190)	−2.432 (2.070)	−1.931 (2.086)	−0.257 (2.051)	−1.523 (2.015)	−1.437 (2.019)
Constant	−3.835*** (0.655)	−3.457*** (0.657)	−3.487*** (0.654)	−19.832*** (3.435)	−75.820*** (7.110)	−70.139*** (6.961)	−81.514*** (6.952)	−80.373*** (6.941)
No. of obs	2261	2261	2261	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262	262	262	262
Year dummy	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummy	Y	Y	Y	Y	Y	Y	Y	Y
AR1 (Prob)	0.097	0.002	0.001	0.017	0.000	0.001	0.008	0.005
AR2 (Prob)	0.260	0.314	0.254	0.273	0.368	0.182	0.157	0.178
Hansen J (Prob)	0.437	0.411	0.547	0.536	0.413	0.528	0.359	0.540

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

TABLE 15 GMM regression results of the impact of the various components of executive compensation on the actual ESG and the actual environmental performance scores

Dep. variable	ESGP	ESGP	ESGP	ESGP	ESGP
Ind. variables					
TBEN	1.772*** (0.175)				
STCOM		0.832***(0.127)			
LTCOM			1.172*** (0.115)		
TCOM				1.659*** (0.164)	
TCOMP					1.663*** (0.166)
BSIZE	12.937*** (0.994)	13.755*** (1.028)	12.103*** (1.033)	12.850*** (0.995)	12.872*** (0.997)
SCOM	0.771 (0.448)	1.189** (0.465)	0.943* (0.454)	0.854* (0.447)	0.852* (0.448)
BIG4	4.138** (2.007)	4.982** (2.081)	3.994* (2.039)	4.271* (2.005)	4.301** (2.009)
AGE	2.697*** (0.336)	3.271*** (0.343)	3.003*** (0.337)	2.736*** (0.335)	2.757*** (0.335)
FSIZE	0.816*** (0.056)	0.864*** (0.058)	0.822*** (0.057)	0.811*** (0.056)	0.813*** (0.056)
LEV	0.288 (1.248)	−0.763 (1.289)	−0.113 (1.264)	0.461 (1.250)	0.421 (1.251)
CAP	0.313 (0.967)	0.146 (1.007)	0.764 (0.984)	0.326 (0.966)	0.294 (0.967)
Constant	−40.264*** (3.347)	−36.611*** (3.443)	−34.209*** (3.349)	−40.328*** (3.346)	−40.383*** (3.354)
No. of obs	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y
AR1 (Prob)	0.001	0.004	0.002	0.018	0.067
AR2 (Prob)	0.358	0.128	0.226	0.288	0.247
Hansen J (Prob)	0.516	0.247	0.308	0.543	0.524

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

lag between the compensation variables and the *SBP* measures where the current years' compensation is associated with the following years' *SBPs* in all the regression models (Ntim & Soobaroyen, 2013). The results (for brevity, not reported but available on request) suggest that our findings are largely robust to estimating lagged models. Overall, the findings of these additional analyses indicated that the results were not driven by any potential endogeneity and sample selection bias problems.

7 | CONCLUSION

Globally, the development and implementation of SBPs that can enhance sustainability and reduce *GHG* emission remains pressing issues. In particular, the past 30 years have witnessed the design and adoption of extensive initiatives by supranational bodies, national governments, regulators, environmental activists, and public corporations toward reducing global climate disruption by decreasing *GHG* emissions. In the United Kingdom, this goal has been achieved largely through the 2008 CCA. Consequently, policy makers and companies are increasingly focusing on these topical issues and the need to align the corporate world with sustainability goals. This study explores the alignment of executive awards, and sustainability practice and disclosures, by examining interrelationships among CEO pay, EC, and *SBPs*. This study, therefore, contributes to the extant literature on business strategy and sustainability in developed countries in a number of ways.

First, the results contribute to the extant literature by showing that firms' symbolic (process-oriented) *GHG* emission abatement initiatives are higher than their actual (substantive) reduction in *GHG* emission projects in the UK listed firms. Second, the study extends the extant literature by offering insight on the impact of various components of CEO pay and executive compensation on SBPs in the UK listed firms. Finally, the study distinctively offers insight on the crucial role of SBC policy on the PSS in the UK listed firms.

Crucially, the study employs *NIT* to explain the complex interrelationships amongst symbolic and substantive features, and performance of firms in the area of reduction in emission of *GHGs*, together with CEO and executive pay. The findings are in line with legitimization aspect of *NIT*, as the firms seem to symbolically rely on process-

TABLE 15 (Continued)

Dep. variable	ENVP	ENVP	ENVP	ENVP	ENVP
Ind. variables					
TBEN	0.989*** (0.199)				
STCOM		0.514*** (0.141)			
LTCOM			0.904*** (0.128)		
TCOM				0.937*** (0.186)	
TCOMP					0.931*** (0.189)
BSIZE	16.805*** (1.131)	17.212*** (1.140)	15.670*** (1.150)	16.741*** (1.133)	16.764*** (1.134)
SCOM	0.273 (0.509)	0.544 (0.515)	0.330 (0.506)	0.319 (0.509)	0.318 (0.509)
BIG4	−0.151 (2.283)	0.317 (2.306)	−0.455 (2.271)	−0.080 (2.282)	−0.061 (2.283)
AGE	2.881*** (0.382)	3.156*** (0.380)	2.984*** (0.376)	2.899*** (0.381)	2.914*** (0.382)
FSIZE	0.738*** (0.064)	0.764*** (0.065)	0.728*** (0.064)	0.735*** (0.064)	0.736*** (0.064)
LEV	−0.122 (1.422)	−0.585 (1.430)	−0.091 (1.410)	−0.015 (1.424)	−0.044 (1.425)
CAP	−1.497 (1.099)	−1.583 (1.116)	−1.180 (1.096)	−1.490 (1.099)	−1.508 (1.100)
Constant	−45.534*** (3.808)	−43.773*** (3.816)	−42.189*** (3.731)	−45.610*** (3.808)	−45.612*** (3.813)
No. of obs	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y
AR1 (Prob)	0.009	0.082	0.008	0.001	0.029
AR2 (Prob)	0.285	0.218	0.245	0.267	0.287
Hansen J (Prob)	0.376	0.383	0.389	0.336	0.391

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.
*Statistical significance at 10% level.
**Statistical significance at 5% level.
***Statistical significance at 1% level.

oriented *GHG* disclosures as a means of improving their corporate legitimacy and investors' perceptions. Meanwhile, this might not lead to actual reduction in the emission of *GHGs*, as it is the implementation of actual *GRP* initiatives that might lead to substantial reduction in the emission of *GHGs* (Haque & Ntim, 2020).

The findings have a number of policy and regulatory implications. Firstly, to ensure that *SBPs* are sufficiently integrated into the core business of companies, firms ought to consider *SBP*-related targets in compensation contracts which will motivate boards and executives to achieve such goals. Secondly, it can be inferred from the findings of the study that firms may focus on showing superior symbolic *GHG* emission abetment disclosures as a way of enhancing their environmental legitimacy; however, this will not lead to actual reduction in *GHG* emission. Consequently, there is the need for regulators and environmental activists to embark on creating awareness among investors on the harmful effect of climate disruption and the need to encourage firms to disclose their actual *GHG* emission reduction projects. This calls for rating agencies and analysts to shift from traditional approach of relying on symbolic *GHG* emission indicators. In rating firms, they ought to measure their actual *GHG* emission performance and advise investors and the general public accordingly for them to make well-informed investment decisions. In particular, policy makers should demand independent external assurance over the sustainability reports of firms to enhance the quality of *SBP* reporting (Al-Shaer & Zaman, 2019).

Thirdly, cash compensation such as bonuses seem to be less effective in increasing firm *SBPs* than long-term EC; hence, firms ought to pay much attention to long-term compensation. To stimulate *GHG* emission reduction, substantial amount of long-term EC should be linked to the achievement of *GHG* emission reduction targets. Fourth, because *SBC* seems to moderate influential executives to engage in *SBPs* and reduce *GHG* emission, this should motivate the firms to learn from the experience of others using *SBP* performance in their compensation policy. In particular, the findings of the study should also encourage firms to use *GHGs* emission reduction targets in CEO pay, as such targets need the commitment of powerful executives. Further, a symbolic adoption of *GHG* emission reduction by firms seems unlikely to improve actual *GRP*. Therefore, policy makers need to design well-defined guidelines on *SBP* policy with mandatory *GHG* emission targets. Additionally, given that *GHG* reduction

TABLE 16 GMM regression results of the impact of various components of executive compensation on actual GHG and CO_2 emission reduction and PGRI performance scores

Dep. variable (Model)	GHGP (1)	GHGP (2)	GHGP (3)	GHGP (4)	GHGP (5)	CO_2P (6)	CO_2P (7)
Ind. variables							
TBEN	0.151*** (0.038)					−0.066* (0.034)	
STCOM		0.035 (0.027)					−0.097*** (0.024)
LTCOM			0.111*** (0.024)				
TCOM				0.131*** (0.036)			
TCOMP					0.129*** (0.036)		
BSIZE	2.957*** (0.217)	3.070*** (0.218)	2.852*** (0.222)	2.964*** (0.218)	2.970*** (0.218)	1.931*** (0.197)	1.980*** (0.196)
SCOM	−0.169* (0.098)	−0.133 (0.098)	−0.155* (0.097)	−0.1612* (0.098)	−0.161 (0.098)	−0.285** (0.088)	−0.302*** (0.089)
BIG4	0.561 (0.439)	0.635 (0.442)	0.534 (0.438)	0.576 (0.439)	0.580 (0.439)	−0.335 (0.397)	−0.366 (0.397)
AGE	0.304*** (0.073)	0.361*** (0.072)	0.327*** (0.072)	0.312*** (0.073)	0.317*** (0.073)	−0.283*** (0.066)	−0.286*** (0.065)
FSIZE	0.138*** (0.012)	0.143*** (0.012)	0.139*** (0.012)	0.137*** (0.012)	0.138*** (0.012)	0.009 (0.011)	0.007 (0.011)
LEV	−0.535* (0.273)	−0.647** (0.273)	−0.558** (0.272)	−0.530** (0.274)	−0.537* (0.274)	−0.669** (0.247)	−0.667*** (0.246)
CAP	−1.044*** (0.211)	−1.023*** (0.214)	−1.014*** (0.212)	−1.042*** (0.211)	−1.044*** (0.211)	−1.624*** (0.191)	−1.564*** (0.192)
Constant	−7.425*** (0.733)	−6.985*** (0.731)	−6.914*** (0.720)	−7.394*** (0.733)	−7.387*** (0.734)	−3.608** (0.663)	−3.518*** (0.657)
No. of obs	2261	2261	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y	Y
AR1 (Prob)	0.002	0.081	0.005	0.002	0.001	0.060	0.005
AR2 (Prob)	0.119	0.168	0.194	0.412	0.371	0.143	0.123
Hansen J (Prob)	0.323	0.125	0.347	0.503	0.368	0.498	0.411

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

TABLE 16 (Continued)

Dep. variable (Model)	CO_2P (8)	CO_2P (9)	CO_2P (10)	PGRI (11)	PGRI (12)	PGRI (13)	PGRI (14)	PGRI (15)
Ind. variables								
TBEN				2.941*** (0.366)				
STCOM					1.482*** (0.262)			
LTCOM	0.049*** (0.022)					2.187*** (0.237)		
TCOM		−0.074** (0.032)					2.774*** (0.343)	
TCOMP			−0.074** (0.033)					2.767*** (0.348)
BSIZE	1.962*** (0.202)	1.951*** (0.197)	1.950*** (0.197)	27.689*** (2.077)	28.836*** (2.119)	25.751*** (2.122)	27.515*** (2.079)	27.568*** (2.083)
SCOM	−0.295*** (0.088)	−0.287*** (0.087)	−0.287*** (0.088)	1.186 (0.936)	1.898* (0.958)	1.430 (0.934)	1.322 (0.934)	1.319 (0.935)
BIG4	−0.338 (0.398)	−0.335 (0.397)	−0.337 (0.397)	7.410* (4.192)	8.796** (4.287)	6.937* (4.189)	7.623* (4.188)	7.677* (4.193)
AGE	−0.283*** (0.066)	−0.279*** (0.066)	−0.280*** (0.066)	5.193*** (0.703)	6.150*** (0.707)	5.656*** (0.694)	5.250*** (0.700)	5.290*** (0.701)
FSIZE	0.009 (0.011)	0.009 (0.011)	0.010 (0.011)	1.567*** (0.118)	1.647*** (0.121)	1.562*** (0.118)	1.557*** (0.118)	1.561*** (0.118)
LEV	−0.660** (0.247)	−0.688** (0.248)	−0.686** (0.247)	0.401 (2.611)	−1.307 (2.660)	−0.003 (2.601)	−0.707 (2.614)	0.631 (2.617)
CAP	−1.665*** (0.192)	−1.624*** (0.191)	−1.622*** (0.191)	−1.931 (2.019)	−2.280 (2.076)	−1.139 (2.022)	−1.910 (2.017)	−1.964 (2.020)
Constant	−3.812** (0.654)	−3.560** (0.662)	−3.560** (0.663)	−80.971*** (6.990)	−75.226*** (7.095)	−71.200*** (6.881)	−81.153*** (6.987)	−81.199*** (7.002)
No. of obs	2261	2261	2261	2261	2261	2261	2261	2261
No. of firms	262	262	262	262	262	262	262	262
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y	Y	Y
AR1 (Prob)	0.011	0.080	0.010	0.001	0.007	0.008	0.000	0.001
AR2 (Prob)	0.139	0.155	0.149	0.277	0.267	0.166	0.147	0.183
Hansen J (Prob)	0.266	0.321	0.220	0.574	0.346	0.445	0.268	0.248

Notes: This table is based on a generalized method of moments (GMM) panel data estimator, as proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The standard errors are shown in parentheses.

*Statistical significance at 10% level.

**Statistical significance at 5% level.

***Statistical significance at 1% level.

investments entail substantial capital investment over a long period of time, voluntary regulatory policies may not be enough to compel executives to commit to such projects. Hence, regulators should put in place suitable enforcement structures to ensure strict compliance with set *GHG* emission reduction targets.

Finally, although the findings are robust and crucial, there were a number of limitations inherent in this study that should be recognized. Like most archival research of this kind, the measures for CEO pay, EC, *SBC*, and *SBPs* might or might not reflect actual corporate practice. Therefore, future research could provide new insights by conducting in-depth case studies and interviews with diverse stakeholders about their views concerning these issues. Again, future studies may apply this empirical framework to other countries that have also ratified the "Kyoto Protocol" in a single country or cross-country analysis, which could improve the generalizability of the findings.

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APPENDIX A: PROCESS-ORIENTED GREENHOUSE GAS REDUCTION INITIATIVES INDIVIDUAL ITEMS (THE *PGRI* INDEX)

No.	Process-oriented greenhouse gas reduction initiative	Score
1.	Does the firm engage any emission trading initiative?	0 or 1
2.	Does the firm report on initiatives to recycle, reduce, reuse, substitute, treat, or phase out total waste, hazardous waste or wastewater?	0 or 1
3.	Does the firm describe, claim to have, or mention processes in place to improve its water efficiency?	0 or 1
4.	Does the firm report on initiatives to reduce, substitute, or phase out ozone-depleting substances?	0 or 1
5.	Does the firm make use of renewable energy?	0 or 1
6.	Does the firm report on initiatives to reduce, reuse, or recycle water?	0 or 1
7.	Does the firm have environmentally friendly or green sites or offices?	0 or 1
8.	Does the firm report on initiatives to reduce the environmental impact on land owned, leased, or managed for production activities or extractive use?	0 or 1
9.	Does the firm report on initiatives to reduce, reuse, substitute, or phase out toxic chemicals or substances?	0 or 1
10.	Does the firm have a policy to improve its use of sustainable packaging?	0 or 1
11.	Does the firm use environmental criteria (e.g., ISO 14000) in the selection process of its suppliers or sourcing partners?	0 or 1
12.	Does the firm show an initiative to reduce, reuse, recycle, substitute, phased out, or compensate CO2 equivalents in the production process?	0 or 1
13.	Does the firm report or show to be ready to end a partnership with a sourcing partner, if environmental criteria are not met?	0 or 1
14.	Does the firm have a policy for reducing the impact of its operations on biodiversity?	0 or 1
15.	Does the firm report on initiatives to recycle, reduce, reuse, or phase out fluorinated gases such as hydrofluorocarbons, perfluorocarbons, or sulfur hexafluoride?	0 or 1
16.	Does the firm describe, claim to have, or mention processes in place to reduce its impact on biodiversity?	0 or 1
17.	Does the firm report on initiatives to restore or protect native ecosystems or the biodiversity of protected and sensitive areas?	0 or 1
18.	Does the firm report on initiatives to reduce its impact on native ecosystems and biodiversity?	0 or 1
19.	Does the firm evaluate the commercial risks and/or opportunities in relation to climate change?	0 or 1
20.	Does the firm claim to use key performance indicators or the balanced scorecard to monitor its impacts on biodiversity?	0 or 1
21.	Does the firm have processes in place to improve its energy efficiency?	0 or 1
	Possible total score of a firm	0 or 21

Source: Based on the UK 2009 guidance of the Department for Environment, Food & Rural Affairs (DEFRA, 2009) on greenhouse gas (GHG) disclosures as applied by Haque and Ntim (2020) and Tauringana and Chithambo (2015).