Received 21 March 2024
Revised 12 May 2024
26 July 2024
7 October 2024
Accepted 8 October 2024

Government environmental attention and enterprise greenwashing behavior: evidence from China

Xiaoyu Zheng
School of Management, Hainan University, Haikou, China, and
Wenzhen Li
School of Finance, Jiangxi University of Finance and Economics, Nanchang, China

Abstract

Purpose – This study investigates whether Chinese local governments' environmental attention can mitigate corporate "greenwashing", focusing on the extent of environmental content in annual government work reports as indicative of government environmental attention. This study aims to determine whether enterprises respond to changes in local governmental attention by improving the quality of their environmental information disclosures.

Design/methodology/approach – Data from China's A-share listed companies spanning 2013–2021 were sourced from the CSMAR database and company annual reports. Environmental attention data were manually gathered from local government work reports published on official local government websites by using text analysis methods. These datasets were analyzed empirically to assess the impact of local governments' environmental attention on corporate greenwashing behavior.

Findings – Results show that increased governmental environmental attention significantly reduces corporate greenwashing behavior by alleviating corporate financing constraints, enhancing independent engagement in environmental initiatives and bolstering stakeholder oversight. Moreover, heterogeneity analysis indicates that the influence of government environmental concerns is pronounced in non-state-owned enterprises, firms with subpar audit quality and those exhibiting myopic management tendencies.

Originality/value – This study enriches the existing literature on the government–business nexus. It also introduces methodological innovations by employing a lexical analysis of environmental themes in local government work reports instead of using typical event study approaches. Furthermore, it uses a mediating effect model to identify the mechanisms through which government environmental attention influences corporate greenwashing, namely, government subsidies, corporate environmental initiatives and external stakeholder oversight.

Keywords Greenwashing, Government attention, Green governance, ESG disclosures

Paper type Research paper

1. Introduction

The escalation of global warming and environmental degradation has garnered substantial attention from the international community. Consequently, nations worldwide have formulated a plethora of environmental protection policies to address the pressing environmental challenges. As the world's second-largest economy and a significant emitter of carbon dioxide, China is actively endeavoring to fulfill its role in establishing an ecological

JEL Classification — Q56, Q58, G34, G14

This work is funded by the National Social Science Foundation of China West Project: Research on the mechanism and consequences of Policy tracking Audit on business environment (No: 22XJY041).

Declaration of competing interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability: Data will be made available on request.

Journal of Asian Business and Economic Studies
Vol. 31 No. 5, 2024
pp. 392-403
Emerald Publishing Limited
2515-964X
DOI 10.1108/JABES-03-2024-0144

civilization. Concurrently, the environmental conduct of enterprises, being a pivotal supporting force of national economic development and a central focus in the environmental pollution discourse, is encountering heightened societal scrutiny and legitimacy imperatives. However, excessive investment in environmental protection initiatives may encroach on enterprises' pre-existing strategic resources. Consequently, certain enterprises aspire not only to heed the state's mandate but also to maximize profitability, which prompts them to adopt a low-cost strategy colloquially termed "greenwashing" to cultivate an environmentally conscientious corporate image (Lyon and Maxwell, 2011). The term "greenwashing" denotes the practice adopted by companies to selectively disclose embellished and whitewashed environmental information, thereby enhancing their public image (Walker and Wan, 2012). Notably, China's Ministry of Ecology and Environment issued the 2021 Measures for the Administration of Enterprise Environmental Information Disclosure, mandating enterprises to disclose environmental information in a lawful, truthful, accurate, and comprehensive manner. Disclosed information must be succinct, clear, easily understandable, and devoid of false records, misleading statements, or significant omissions. Despite regulatory efforts aimed at curtailing greenwashing, instances of noncompliance persist among listed companies, as exemplified by the 2022 penalty imposed on Hengsheng Energy for erroneously disclosing greenhouse gas emissions data. This issue underscores the pervasiveness of greenwashing within the environmental protection practices of Chinese enterprises. Effectively addressing such behavior has thus emerged as a critical imperative for fostering the harmonized advancement of ecological sustainability and economic prosperity.

The existing literature has extensively explored the determinants of corporate greenwashing governance by delving into factors such as corporate financial status (Roulet and Touboul, 2015), management characteristics (Yu *et al.*, 2020), and the influence of external stakeholders (Kim and Lyon, 2015). The government plays a key role as the core entity of the public sector and thus exerts a substantial impact on corporate behavior (Dai and Si, 2018). Prior research has examined the effects of local government environmental regulations on incentivizing enterprises to foster green innovation and encouraging heightened investments in green innovation (Borsatto and Bazani, 2020). However, a research gap exists regarding governance implications stemming from government environmental attention concerning corporate greenwashing, along with potential effective governance mechanisms. To bridge this gap, the current study utilizes the environmental protection-related content of urban government work reports from 2013 to 2021 as a benchmark for gauging the government's focus on environmental issues (Fan and Su, 2021). Furthermore, by incorporating data from Chinese A-share listed companies, this study underscores how heightened governmental environmental attention notably restrains the prevalence of greenwashing practices among enterprises.

The primary contributions of this study are as follows. First, this study enhances the existing body of literature on the government–business relationship. Our findings demonstrate that increased attention from local governments toward environmental protection is positively associated with greater transparency in corporate environmental disclosures, thereby effectively deterring greenwashing behaviors. Second, this study presents methodological innovations in research. Departing from conventional event study methodologies previously employed to scrutinize the government–business nexus, this study uses a lexical analysis of environmental themes within local government work reports. This approach facilitates the construction of an index indicative of governmental attention toward environmental concerns, thus enabling a comprehensive evaluation of local government performance in environmental stewardship. Third, this study employs a mediating effect model to examine the underlying mechanisms through which government environmental concerns influence corporate greenwashing. Specifically, it identifies three distinct channels: government subsidies, enterprises' autonomous environmental protection initiatives, and external stakeholder oversight. These insights provide valuable contributions to understanding how governments can influence corporate behavior and offer a more nuanced perspective on the government's role in promoting green governance.

The remainder of this paper is structured as follows: Section 2 describes the development of the hypotheses. Section 3 presents the data and methodology employed. Section 4 details the empirical findings. Sections 5 and 6 discuss the mechanisms involved and analyze the heterogeneity, respectively. Finally, Section 7 concludes the study.

2. Institutional background and hypothesis development

2.1 Institutional background

The Chinese government has increasingly prioritized ecological and environmental concerns by instituting a series of policy measures. In 2008, the State Environmental Protection Administration of China issued the *Guiding Opinions on Strengthening Environmental Protection Supervision of Listed Companies*. This directive mandates heavily polluting enterprises to undergo environmental protection audits prior to listing and to rigorously disclose environmental information post-listing. Thus, it signals governmental recognition of the environmental ramifications stemming from corporate activities. In 2015, China enacted the Environmental Protection Law of the People's Republic of China to safeguard and enhance the environment, curb pollution and other public hazards, and safeguard citizen health, thereby solidifying environmental protection efforts at the legislative level (Fan and Su, 2021). In 2016, China introduced the Measures for the Evaluation and Assessment of Ecological Civilization Construction Objectives, which incorporated novel criteria into the evaluation of leading cadres. These measures also included the efficacy of local government environmental governance, thereby delineating the responsibilities of local government officials in environmental stewardship (Cheng and Liu, 2018). During the 75th session of the United Nations General Assembly in 2020, Chinese President Xi Jinping articulated China's commitment to bolstering its nationally determined contributions through the implementation of more robust policies and measures. Specifically, China aims to peak its carbon dioxide emissions before 2030 and achieve carbon neutrality by 2060 (Bao and Liu, 2022).

The preceding discourse elucidates the Chinese government's escalating commitment to ecological and environmental concerns, as reflected in the promulgation of a suite of pertinent policies that influence corporate environmental information disclosure. However, the implementation of these policies and regulations pertaining to corporate environmental protection falls predominantly within the purview of the central government on a national scale. Thus, the efficacy of ensuring the localized enforcement of these policies warrants further deliberation. Within this framework, investigating the influence of local governments' environmental attention on enterprise greenwashing behavior presents a novel perspective that provides deeper insights into the role of local authorities in fostering environmental protection and sustainable development endeavors.

2.2 Hypothesis development

Enterprises' greenwashing behavior is influenced by a multitude of factors. According to impression management theory, enterprises perceive a positive image as a valuable intangible asset and strive to establish a favorable impression that aligns with stakeholder expectations. Consequently, enterprises selectively disclose environmental information as part of their disclosure practices to shape stakeholder perceptions (Lyon and Maxwell, 2011). Similarly, signal transmission theory posits that enterprises utilize environmental information disclosure to convey signals to the market. Enterprises with commendable environmental performance actively disclose environmental information to differentiate themselves from their counterparts. Conversely, enterprises with subpar environmental performance may opt to disclose positive environmental aspects or engage in symbolic greenwashing to project positive signals (Li *et al.*, 2022). Neoclassical economic theory contends that the profitmaximizing nature of capital incentivizes enterprises to pursue profitability. When greenwashing remains undetected or unpunished, the costs associated with greenwashing tend to be low. The ostensible commitment to green practices not only enhances enterprises' environmental image and consumers' purchasing intentions but also yields ancillary benefits, such as favorable policies and streamlined access to financing (Seele and Gatti, 2015).

Simon (1950) posited that decision makers have a finite cognitive and reasoning capacity; hence, attention is a scarce resource. The allocation of this limited resource profoundly impacts an organization's strategy formulation, resource allocation, and subsequent behavioral choices. When local governments prioritize environmental protection, this attention often steers policy formulation, prompting increased resource allocation toward green governance initiatives (Li *et al.*, 2023). On the one hand, heightened governmental environmental attention encourages local environmental protection departments to strictly examine environmental information disclosure and the actual environmental behavior of enterprises through field research and random spot checks. This approach compresses the space for impression management and information transmission through greenwashing. On the other hand, for companies found to engage in greenwashing practices, the government may adopt more stringent punishment measures to increase their violation costs, which exert a deterrent effect on the company. The extant literature indicates that bolstering the government's environmental focus effectively mitigates regional pollution levels (Liu *et al.*, 2023a), encourages green innovation among enterprises in less pollution-intensive industries (Chen *et al.*, 2022) and augments enterprises' environmental, social, and governance (ESG) performance (Liu *et al.*, 2023b). Based on this discussion, we propose hypothesis 1:

H1. Government environmental attention can constrain enterprises' greenwashing behavior.

From the perspective of enterprise resource acquisition, increased government environmental attention results in increased resource allocation, leading to heightened subsidies for enterprises. Environmental protection projects pose challenges, including protracted research and development (R&D) cycles and substantial capital investments (Kim and Lyon, 2015). An increase in environmental subsidies can alleviate the financial constraints faced by enterprises, enabling them to allocate more resources toward environmental protection projects. Consequently, when enterprises disclose environmental information, they can obtain a more authentic and substantive representation of their environmental efforts without resorting to greenwashing practices. Based on the above discussion, we propose hypothesis 2:

H2. Government environmental attention can constrain enterprises' greenwashing behavior by mitigating the challenges of resource acquisition.

From the standpoint of enterprises' independent engagement in environmental protection, their behaviors are inevitably influenced by government policies and institutional shifts (La Porta *et al.*, 1998). As the government prioritizes environmental protection, enterprises vigilantly monitor potential institutional changes and adapt their green governance practices accordingly. Fueled by increased environmental attention, enterprises tend to allocate more resources toward authentic environmental protection initiatives. During environmental information disclosure, genuine environmental protection projects are available for public disclosure, thereby obviating the need to resort to greenwashing tactics for exaggerated green publicity. Based on this discussion, we propose hypothesis 3:

H3. Government environmental attention can constrain enterprises' greenwashing behavior by fostering their increased independent engagement in environmental protection efforts.

With regard to stakeholders' supervision of corporate greenwashing, increased government attention to the environment enhances publicity and education on environmental protection, thus fostering the adoption of sustainable development concepts among the populace (Yue and

Li, 2023). As public environmental attention increases, consumers and investors become inclined to consider the environmental attributes of enterprises when making product choices and evaluating projects. The intensified public focus on the environmental attributes of businesses has elevated the risk of greenwashing, consequently constraining the latitude for businesses to engage in greenwashing practices. Based on this discussion, we propose hypothesis 4:

H4. Government environmental attention can constrain enterprises' greenwashing behavior by amplifying stakeholders' scrutiny and monitoring of enterprises.

3. Research design

3.1 Sample and data source

This study utilized a dataset encompassing China's A-share listed companies for the period of 2013–2021. The dataset was filtered as follows: (1) samples from the financial industry were excluded because of its adherence to unique financial and regulatory standards, which yield disparities in financial data and accounting items compared with those for other enterprises; (2) these enterprises were also excluded as they faced delisting risks and had abnormal financial data and (3) samples containing missing variables were finally excluded. The final dataset consisted of 6,804 observations. To address the potential impact of outliers, this study applied winsorization to all continuous variables, with the boundaries set at the 1st and 99th percentiles. Data pertaining to companies' greenwashing practices were procured from the Bloomberg and Huazheng databases. Local government work reports were obtained from official websites where local governments in China publicly disclose annual work reports that outline their achievements and objectives. Corporate financial information was extracted from the CSMAR database and corporate annual reports. Additionally, data concerning regional economic development and the level of marketization were sourced from the China Statistical Yearbook.

3.2 Variable definition

3.2.1 Corporate greenwashing. Drawing upon the investigations conducted by Yu *et al.* (2020) and Hu *et al.* (2023), this study characterized greenwashing as a strategic maneuver undertaken by enterprises wherein exaggerated or false environmental information is disseminated while the actual environmental performance remains deficient. Consequently, relative indicators can be devised to assess greenwashing by examining the degree of disparity between corporate environmental disclosures and authentic performance levels.

$$GWS_{i,t} = \left(\frac{ESG_{dis\,i,t} - \overline{ESG_{dis}}}{\sigma_{dis}}\right) - \left(\frac{ESG_{per\,i,t} - \overline{ESG_{per}}}{\sigma_{per}}\right) \tag{1}$$

In Formula (2), the terms $ESG_{dis\,i,t}$ and $\overline{ESG_{dis}}$ respectively signify the environmental disclosure score assigned to the ith enterprise by Bloomberg, an independent third-party rating agency, and the average environmental disclosure score of other enterprises within the same industry, excluding the specific enterprise under consideration. Similarly, $ESG_{per\,i,t}$ and $\overline{ESG_{per}}$ respectively denote the environmental performance score of the ith enterprise as evaluated by Huazheng, another independent third-party rating agency and the average environmental performance score of other enterprises in the same industry. The variables σ_{dis} and σ_{per} represent the standard deviation of environmental disclosure and performance scores within the industry, respectively. The quantification of greenwashing involves computing the difference between the standardized value of a company's relative position in the ESG disclosure score and the standardized value of its relative position in the ESG performance score. A larger disparity between these standardized values indicates a greater degree of greenwashing.

3.2.2 Government environmental attention. Following the methodology proposed by Chen *et al.* (2022), we identified 15 specific terms (detailed information has been elaborated in Table A11) [1], including "low carbon", "environmental protection", and "air quality", as key indicators of environmental attention to evaluate the extent of government environmental attention. Text analysis was subsequently employed using the methods outlined by Huang *et al.* (2022) to quantify the frequency of the selected terms within government work reports. The frequency of these predetermined keywords was then normalized by dividing it by the total word count in each report. This normalization process provided a reliable proxy index and thus effectively captured and quantified the level of government environmental attention.

3.2.3 Control variables. The control variables in this study were the ratio of market value to total assets (*TOBINQ*), enterprise size (*Size*), establishment age (*Age*), dual role of general manager and chairman of the board (*Dual*), fixed asset proportion of the company (*TANG*), financial leverage (*Lev*), cash holdings (*CF*), percentage of independent directors (*IND*), industry competition level measured by the Herfindahl–Hirschman Index (*HHI*), return on assets (*Roa*), regional economic development (*LNGDP*), and marketization index (*Market*). The variable definitions are presented in Table A1 [1].

3.3 Regression model

To examine the impact of government attention on enterprises' greenwashing behavior, we constructed the following model:

$$GWS_{i,t} = a_0 + a_1 GEA_{j,t} + a_2 X_{i,t} + \theta_t + \theta_i + \varepsilon_{i,t} \tag{2}$$

In the model, the variables j, t, and i respectively denote the city, year, and company; *GWS* signifies the degree of greenwashing exhibited by enterprises; and *GEA* represents the extent of the government's environmental concern. The variable X encompasses a set of control variables while ε denotes the random error term inherent in the model. Additionally, this study controlled for both firm (θ_i) and year (θ_t) fixed effects.

4. Empirical analysis

4.1 Descriptive statistics

The descriptive statistics presented in Table A2 [1] illustrate notable disparities in greenwashing levels among various companies, ranging from a maximum value of 5.691 to a minimum value of -5.546 (standard deviation $=$ 1.2456). The average value of government environmental attention is 0.0035, suggesting a predominant emphasis on environmental preservation among most local governments. The descriptive statistics for the remaining variables align closely with the findings of prior studies.

Table A3 [1] reports the Pearson cross-correlation coefficients for the selected variables. The results prove a negative relationship between government environmental attention and corporate greenwashing, confirming the main hypothesis of this study. In addition, no strong correlation exists between government environmental attention and the other variables. Hence, the possibility of multicollinearity is reduced to some extent.

To further mitigate the potential issue of multicollinearity, we employ the variance inflation factor (VIF) as a diagnostic tool. A VIF value exceeding 10 is known to indicate multicollinearity. In this study, the results presented in Table A4 [1] demonstrate that all variables exhibit VIF values below 3, with the average VIF value being 1.45. These findings suggest that the proposed model effectively mitigates multicollinearity concerns.

4.2 Baseline result

The baseline model is progressively augmented with control variables and fixed effects; the results are presented in Table A5 [1]. Notably, the coefficient corresponding to government environmental attention is significantly negative at the 5% level and remains robust after considering the control variables and fixed effects. This robustness underscores the fact that heightened government environmental attention distinctly diminishes the greenwashing practices observed within enterprises. Consequently, Hypothesis 1 posited in this study finds empirical support.

4.3 Robustness test

4.3.1 Substitution of dependent variable. Referring to the study of Lin *et al.* (2023), we substitute the ESG performance score obtained from the Huazheng database in Model (2) with that sourced from the WIND database. The recalculated values are subsequently employed in Model (1) for the regression analysis. Additionally, following the approach established by Yue and Li (2023), we classify corporate greenwashing into two types: selective disclosure and symbolic disclosure. The extent of selective disclosure is assessed by calculating the ratio of undisclosed items to the total items that should be disclosed. Similarly, symbolic disclosure is measured by calculating the symbolic disclosure ratio of items disclosed by a company. Finally, we calculate the overall greenwashing level for each enterprise using the geometric mean of these two measures. Columns (1) and (2) of Table A6 [1] show that the regression results remain robust after replacing the dependent variables.

4.3.2 Clustering at province and individual levels. To address the issue of heteroscedasticity, we cluster standard errors at the provincial and firm levels while controlling for fixed effects. Clustering standard errors does not directly impact the regression coefficients but may alter their significance. The adoption of clustered standard errors acknowledges the relevance of residual terms within the regression model at specific levels. The results presented in columns (3) and (4) of Table A6 [1] indicate that the benchmark regression remains robust after accounting for heteroscedasticity.

4.3.3 One-period lag test. To address the potential reverse causality, in which enterprises with lower greenwashing tendencies may strategically locate their offices in cities with heightened environmental attention from local governments, we conduct a regression analysis by lagging the explanatory and control variables in Model (1) by one period. The results presented in Table A7 [1] align with those from the initial analysis, thereby affirming the robustness of our conclusions.

4.3.4 Two-stage least squares method (2SLS). To address endogeneity concerns, we conducted further analysis by employing the 2SLS instrumental variable (IV) method (Huang *et al.*, 2022). The validity of our selected instruments is confirmed by the weak instrumental variable test and unidentifiable test, with a Cragg–Donald Wald F statistic of 123.149 (>10) and a p-value less than 0.01 for the Anderson LM statistic, indicating the absence of weak instrument bias or inadequate identification. Following the control for endogeneity, the regression results from the second stage of Table A8 [1] reveal that the coefficient associated with government environmental attention remains significantly negative, underscoring the robustness of our conclusions.

Referring to the research of John *et al.* (2008), we select the mean value of the degree of environmental attention of local governments in other prefecture-level cities in the same province as the IV. The Chinese government is characterized by a national game of chess. Especially for provincial administrative units, the policy tone of the whole province is basically the same; therefore, the degree of attention of other municipal governments to the environment in the same provincial administrative region will affect the degree of attention of local governments to the environment. A correlation is thus hypothesized. The environmental attention of governments in other prefecture-level cities is not affected by the greenwashing of listed enterprises in the city; therefore, exogeneity is assumed. Similarly, the IV passed the correlation and unidentifiable tests, with the Cragg–Donald Wald F statistic being 119.542 (>10) and with the *p*-value for the Anderson LM statistic being 0.000. The second-stage regression results in Table A8 [1] show that after controlling for reverse causality, the coefficient of environmental attention is still significantly negative, and the benchmark regression results remain robust.

5. Mechanism analysis

5.1 Government environmental subsidies

Government attention is inherently limited. When local governments intensify their focus on environmental concerns, they show a stronger commitment to allocating additional resources for environmental protection initiatives. Consequently, enterprises benefit from additional environmental subsidies, which alleviate their financial constraints and afford them increased capital for authentic environmental projects. The benefits, in turn, contribute to a reduction in the prevalence of greenwashing practices. Bai *et al.* (2019) found that government R&D subsidies significantly improve the green innovation tendency and performance of energy-intensive enterprises. Following the methodology outlined by Hu *et al.* (2021), we utilized the ratio of government environmental subsidies to operating income as a measure of government environmental subsidies. The results in columns (1) and (2) of Table A9 [1] show a statistically significant positive correlation between government attention and subsidies allocated to environmental initiatives. With the incorporation of environmental subsidies into the baseline model, the analysis revealed significantly negative coefficients for both government attention and subsidies, with the Z-value of the Sobel test being statistically significant at the 1% level. These findings underscore the fact that government environmental subsidies serve as a mediating mechanism. Government attention to environmental issues can effectively deter greenwashing behavior by augmenting the financial support provided to enterprises through environmental subsidies.

5.2 Enterprise environmental attention

Businesses are intricately influenced by shifts in government policies and institutional frameworks (La Porta *et al.*, 1998). As enterprises perceive an elevated government focus on environmental issues, they prioritize related domains. The alignment of development strategies with national directives, coupled with ensuring the lawful and compliant disclosure of environmental information, is crucial for enterprises. Following the approach of Bouquet and Birkinshaw (2008), we conduct a textual analysis of word frequency within publicly released corporate social responsibility reports, focusing specifically on quantifying the occurrence of terms associated with environmental protection. Subsequently, we compute the ratio between the frequency of these keywords and the total number of words to provide a metric for enterprises' level of environmental attention. The findings presented in columns (3) and (4) of Table A9 [1] demonstrate a statistically significant positive correlation between government environmental attention and enterprise environmental attention. Upon integrating corporate environmental concerns into the baseline model, both government environmental attention and corporate environmental attention yield significantly negative coefficients. Moreover, the Sobel test indicates a significant Z-value at the 5% level, indicating that corporate environmental attention serves as an intermediary variable. Thus, government environmental attention inhibits corporate greenwashing by fostering heightened corporate environmental concerns.

5.3 Public environmental attention

The heightened governmental focus on environmental issues plays a pivotal role in augmenting public education on environmental protection by fostering the cultivation of a sustainable development mindset and elevating public environmental awareness. This heightened awareness leads investors to consider a company's environmental performance during project evaluation, while consumers prioritize a company's green attributes when selecting products. The existing literature has shown that public environmental concern can foster innovation among heavily polluting enterprises (Du *et al.*, 2019) and enhance their green total factor productivity (Wang *et al.*, 2022). Drawing upon the methodology proposed by Du *et al.* (2019), we employ "pollution" as a primary keyword in the Baidu search index to obtain yearly and regional indices reflecting public environmental concern. The data presented in column (5) of Table A9 [1] highlight a significant positive correlation between government environmental attention and public environmental attention. By integrating public environmental attention into the baseline model, we observe that both government and public environmental attention exert statistically significant inhibitory effects on enterprise greenwashing. The Sobel test yields a statistically significant Z-value at the 1% level, substantiating the intermediary role of public environmental attention. This analysis demonstrates that government environmental attention effectively curbs enterprise greenwashing by enhancing public awareness of environmental protection.

6. Heterogeneity analysis

6.1 Grouping by firm ownership

Enterprises with distinct ownership structures may manifest differences in their operational models and goal priorities, potentially influencing the green governance mechanisms associated with government environmental attention (Zhang *et al.*, 2022). In this context, we categorize the sample enterprises into state-owned enterprises (SOEs) and non-SOEs. The results in columns (1) and (2) of Table A10 [1] reveal that with regard to greenwashing behavior, non-SOEs are more susceptible to the influence of government environmental attention than SOEs. This discernible discrepancy could be attributed to the heightened sense of social responsibility demonstrated by SOEs, leading to relatively lower levels of greenwashing and diminished responsiveness to governmental environmental attention.

6.2 Grouping by corporate audit quality

Accounting firms with higher audit quality conduct stringent examinations of corporate information and encourage enterprises to consciously disclose accurate information (Mali and Lim, 2017). Consequently, audit quality is poised to influence the governance mechanism of government environmental attention on greenwashing behavior, which entails false information disclosure by enterprises. In this study, the sample enterprises are stratified into high- and low-audit-quality categories based on their engagement with the Big Four accounting firms for auditing services. The results in columns (3) and (4) of Table A10 [1] reveal that the coefficient associated with government environmental attention is not statistically significant for the high audit quality group. In the subset characterized by low audit quality, government environmental attention significantly restrains corporate greenwashing.

6.3 Grouping by management myopia

Management driven by short-term gains may take a myopic view, disregard broader national development needs, and engage in deceptive "greenwashing" practices, thereby necessitating external regulations. Consequently, the strategic vision of enterprise management influences the governance mechanism of government environmental attention on greenwashing behavior. The local government's environmental attention, serving as an external regulatory factor, acts as a deterrent to myopic enterprises, resulting in more restrained greenwashing behavior. Through a textual analysis of enterprises' annual reports, we establish the variable of managerial myopia by calculating the ratio of words pertaining to the "short-term horizon" to the total word count. By categorizing the sample enterprises into groups based on the median value and distinguishing between those with myopic and non-myopic management, we find that government environmental attention predominantly diminishes greenwashing among enterprises in the myopic management group. The results are shown in columns (5) and (6) of Table A10 [1]. Conversely, it does not exert a significant impact on samples within the non-myopic management group.

7. Conclusion and implications

The need to address environmental pollution, climate change, and resource depletion has compelled the Chinese government to prioritize sustainable growth, leading to the formulation and implementation of a series of corresponding policies at the national level. Within the realm of local governance, the inclusion of environmental metrics in the performance assessment criteria for government officials requires heightened attention to environmental protection. Conversely, enterprises driven by profit maximization objectives may endeavor to superficially comply with state mandates for environmental protection by adopting low-cost greenwashing practices. Against this backdrop, this study investigates whether enhancements in local governments' environmental attention exert a governance effect on enterprises' greenwashing behavior. Based on data sourced from Chinese A-share listed companies spanning the period of 2013–2021, our empirical analysis reveals that heightened governmental environmental attention effectively mitigates enterprises' greenwashing tendencies. This influence is discernible through heightened environmental consciousness among enterprises and the public and through the provision of environmental subsidies. Furthermore, this study underscores the particularly pronounced inhibitory effect of government attention on greenwashing practices within heavily polluting industries, companies characterized by myopic management practices, and non-state-owned entities.

Based on the empirical findings, we propose several policy recommendations. First, the traditional focus of local government performance evaluations on economic growth, often at the expense of environmental protection assessments, necessitates a paradigm shift. As sustainable development assumes a prominent position on the national agenda, environmental performance must be integrated into government evaluation systems. This shift incentivizes local governments to prioritize environmental protection and implement green governance measures effectively. Specifically, rigorous government supervision can minimize opportunities for enterprises to engage in impression management through greenwashing. Additionally, imposing harsher penalties for violations can significantly diminish incentives for greenwashing aimed at profit maximization. Second, local governments must be encouraged to comprehensively utilize the guiding influence of environmental subsidies while strengthening public environmental education efforts. Environmental subsidies can serve as powerful catalysts, promoting genuinely eco-friendly practices and improving the quality of green information disclosure. Furthermore, cultivating a culture of environmental responsibility through public sustainability education initiatives can enhance the vigilance toward eco-friendly practices and leverage public oversight to identify corporate impression management behaviors and artificially manipulated signaling actions. Ultimately, the government must devise a targeted differentiation strategy to address the greenwashing behaviors exhibited by enterprises, with particular emphasis on sectors characterized by heavy pollution, myopic management practices, and non-state ownership. By leveraging the influence of green governance, the government can effectively shape the information disclosure practices of enterprises that receive heightened governmental attention.

Although this study makes a significant theoretical contribution to the understanding of the government–business relationship, several limitations must be acknowledged. First, this study constructs an index of governmental environmental concern by conducting word frequency statistics on terms related to green environmental protection in annual government work reports. However, simple word frequency statistics may not adequately capture the full content and nuances of government work reports. Future research could employ advanced methodologies such as machine learning, text analysis, and sentiment analysis to analyze the content of these reports more comprehensively. Second, the measurement of enterprises' "greenwashing" levels, despite the various methods proposed in the existing literature, remains fraught with subjectivity and inherent flaws. Future research should focus on developing more accurate and objective indicators to effectively assess the extent of greenwashing among enterprises.

Notes

1. Please see it on the Online Appendix

References

Bai, Y., Song, S., Jiao, J. and Yang, R. (2019), "The impacts of government R&D subsidies on green innovation: evidence from Chinese energy-intensive firms", *Journal of Cleaner Production*, Vol. 233 No. 1, pp. 819-829, doi: 10.1016/j.jclepro.2019.06.107.

Bao, R. and Liu, T. (2022), "How does government attention matter in air pollution control? Evidence from government annual reports", *Resources, Conservation and Recycling*, Vol. 185, 106435, doi: 10.1016/j.resconrec.2022.106435.

Borsatto, J.M.L.S. and Bazani, C.L. (2020), "Green innovation and environmental regulations: a systematic review of international academic works", *Environmental Science and Pollution Research*, Vol. 28 No. 45, pp. 63751-63768, doi: 10.1007/s11356-020-11379-7.

Bouquet, C. and Birkinshaw, J. (2008), "Weight versus Voice: how foreign subsidiaries gain attention from corporate headquarters", *Academy of Management Journal*, Vol. 51 No. 3, pp. 577-601, doi: 10.5465/amj.2008.32626039.

Chen, J., Li, Q. and Wang, X. (2022), "Does the government's environmental attention improve enterprise green innovation?—evidence from China", *Frontiers in Environmental Science*, Vol. 10, pp. 1-17, doi: 10.3389/fenvs.2022.999492.

Cheng, J. and Liu, Y. (2018), "The effects of public attention on the environmental performance of high-polluting firms: based on big data from web search in China", *Journal of Cleaner Production*, Vol. 186 No. 10, pp. 335-341, doi: 10.1016/j.jclepro.20-18.0-3.146.

Dai, W. and Si, S. (2018), "Government policies and firms' entrepreneurial orientation: strategic choice and institutional perspectives", *Journal of Business Research*, Vol. 93, pp. 23-36, doi: 10.1016/j.jbusres.2018.08.026.

Du, Y., Li, Z., Du, J., Li, N. and Yan, B. (2019), "Public environmental appeal and innovation of heavy-polluting enterprises", *Journal of Cleaner Production*, Vol. 222 No. 10, pp. 1009-1022, doi: 10.1016/j.jclepro.2019.03.035.

Fan, Y. and Su, W. (2021), "Impact of media attention on environmental performance in China", *Environmental Challenges*, Vol. 4, 100133, doi: 10.1016/j.envc.2021.100133.

Hu, D., Qiu, L., She, M. and Wang, Y. (2021), "Sustaining the sustainable development: how do firms turn government green subsidies into financial performance through green innovation?", *Business Strategy and the Environment*, Vol. 30 No. 5, pp. 2271-2292, doi: 10.1002/bse.2746.

Hu, S., Wang, A. and Du, K. (2023), "Environmental tax reform and greenwashing: evidence from Chinese listed companies", *Energy Economics*, Vol. 124, 106873, doi: 10.1016/j.eneco.2023.106873.

Huang, S., Ding, Y. and Failler, P. (2022), "Does the government's environmental attention affect ambient pollution? Empirical research on Chinese cities", *Sustainability*, Vol. 14 No. 6, pp. 1-19, doi: 10.3390/su14063242.

John, K., Litov, L. and Yeung, B. (2008), "Corporate governance and risk-taking", *The Journal of Finance*, Vol. 63 No. 4, pp. 1679-1728, doi: 10.1111/J.1540-6261.2008.01372.X.

Kim, E.H. and Lyon, T.P. (2015), "Greenwash vs. brownwash: exaggeration and undue modesty in corporate sustainability disclosure", *Organization Science*, Vol. 26 No. 3, pp. 705-723, doi: 10.2139/ssrn.2546497.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1998), "Law and finance", *Journal of Political Economy*, Vol. 106 No. 6, pp. 1113-1155, doi: 10.1086/250042.

Li, W., Li, W., Seppänen, V. and Koivumäki, T. (2022), "Effects of greenwashing on financial performance: moderation through local environmental regulation and media coverage", *Business Strategy and the Environment*, Vol. 32 No. 1, pp. 820-842, doi: 10.1002/bse.3177.

Li, S., Miao, X., Feng, E., Liu, Y. and Tang, Y. (2023), "Urban governmental environmental attention allocation: evidence from China", *Journal of Urban Planning and Development*, Vol. 149 No. 1, doi: 10.1061/JUPDDM.UPENG-3984.

Lin, X., Zhu, H. and Meng, Y. (2023), "ESG greenwashing and equity mispricing: evidence from China", *Finance Research Letters*, Vol. 58, 104606, doi: 10.1016/j.frl.20-23.104606.

Liu, X., Cifuentes-Faura, J., Zhao, S. and Wang, L. (2023a), "Government environmental attention and carbon emissions governance: firm-level evidence from China", *Economic Analysis and Policy*, Vol. 80, pp. 121-142, doi: 10.1016/j.eap.2023.07.016.

Liu, Z., Tang, Y., Wilson, J., Tao, X., Lv, B., Wang, Z., Xu, Y., Zhang, Z., Zhang, Y. and Zhao, W. (2023b), "Influence of government attention on environmental quality: an analysis of 30 provinces in China", *Environmental Impact Assessment Review*, Vol. 100, 107084, doi: 10.1016/j.eiar.2023.107084.

Lyon, T.P. and Maxwell, J.W. (2011), "Greenwash: corporate environmental disclosure under threat of audit", *Journal of Economics and Management Strategy*, Vol. 20 No. 1, pp. 3-41, doi: 10.1111/j.1530-9134.2010.00282.x.

Mali, D. and Lim, H. (2017), "Conservative reporting and the incremental effect of mandatory audit firm rotation policy: a comparative analysis of audit partner rotation vs audit firm rotation in South Korea", *Australian Accounting Review*, Vol. 28 No. 3, pp. 446-463, doi: 10.1111/auar.12206.

Roulet, T.J. and Touboul, S. (2015), "The intentions with which the road is paved: attitudes to liberalism as determinants of greenwashing", *Journal of Business Ethics*, Vol. 128 No. 2, pp. 305-320, doi: 10.1007/s10551-014-2097-8.

Seele, P. and Gatti, L. (2015), "Greenwashing revisited: in search of a typology and accusation-based definition incorporating legitimacy strategies", *Business Strategy and the Environment*, Vol. 26 No. 2, pp. 239-252, doi: 10.1002/bse.1912.

Simon, H.A. (1950), *Administrative Behavior*, Macmillan, New York, NY.

Walker, K. and Wan, F. (2012), "The harm of symbolic actions and green-washing: corporate actions and communications on environmental performance and their financial implications", *Journal of Business Ethics*, Vol. 109 No. 2, pp. 227-242, doi: 10.1007/s10551-011-1122-4.

Wang, L., Liu, B., He, Y., Dong, Z. and Wang, S. (2022), "Have public environmental appeals inspired green total factor productivity? Empirical evidence from Baidu Environmental Search Index", *Environmental Science and Pollution Research*, Vol. 30 No. 11, pp. 30237-30252, doi: 10.1007/s11356-022-23993-8.

Yu, E.P., Luu, B.C. and Chen, C.H. (2020), "Greenwashing in environmental, social and governance disclosures", *Research in International Business and Finance*, Vol. 52, 101192, doi: 10.1016/j.ribaf.2020.101192.

Yue, J. and Li, Y. (2023), "Media attention and corporate greenwashing behavior: evidence from China", *Finance Research Letters*, Vol. 55, 104016, doi: 10.1016/j.frl.202-3.104016.

Zhang, K., Pan, Z., Janardhanan, M. and Patel, I. (2022), "Relationship analysis between greenwashing and environmental performance", *Environment, Development and Sustainability*, Vol. 25 No. 8, pp. 7927-7957, doi: 10.1007/s10668-022-02381-9.

Supplementary material

The supplementary material for this article can be found online.

Corresponding author

Xiaoyu Zheng can be contacted at: zhengxy@hainanu.edu.cn