

The ESG Credibility Gap: Greenwashing, Fraudulent Practices, and the Implications for Financial Transparency and Sustainable Corporate Performance

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Abstract:

Environmental, social, and governance (ESG) investing has grown from a peripheral ethical consideration into a mainstream determinant of capital allocation, yet the credibility of the disclosures underpinning it remains contested. This paper examines the "ESG credibility gap" the widening disjuncture between corporate sustainability claims and verifiable underlying performance — through an integrative review of the greenwashing, fraud, disclosure, and corporate finance literatures, supplemented by analysis of landmark enforcement cases. Drawing on legitimacy theory, signaling theory, voluntary disclosure theory, and agency theory, the paper develops a conceptual framework that positions greenwashing and ESG fraud along a single continuum of misrepresentation distinguished chiefly by intent and materiality. It shows that structural features of the ESG information ecosystem — rating divergence, assurance gaps, and asymmetric regulatory enforcement — create incentives for symbolic rather than substantive sustainability behaviour. Case analysis of the DWS/Deutsche Bank greenwashing settlement and the Volkswagen "Dieselgate" scandal illustrates how credibility failures translate into capital-market penalties, reputational damage, and erosion of stakeholder trust. The paper further evaluates the European Union's CSRD/SFDR/Taxonomy architecture and the unsettled trajectory of United States climate-disclosure regulation, arguing that convergent, assured, and enforceable disclosure standards are prerequisites for closing the credibility gap and for ESG to function as a reliable signal of sustainable corporate performance rather than a reputational veneer.

Keywords: ESG; greenwashing; corporate fraud; financial transparency; sustainability reporting; disclosure regulation; corporate governance

1. Introduction

Over the past decade, environmental, social, and governance (ESG) criteria have migrated from the margins of corporate social responsibility discourse into the operational core of global finance. Trillions of dollars in assets under management are now screened, tilted, or benchmarked against ESG metrics, and corporate boards routinely report sustainability performance with a rigor once reserved for financial statements. Yet the very success of ESG as an investment paradigm has exposed a fundamental weakness in its architecture: the absence of a stable, verifiable, and comparable basis for the claims on which it depends. Unlike financial reporting, which rests on a century of accounting standardization, audit practice, and legal liability, sustainability reporting remains fragmented across voluntary frameworks, proprietary rating methodologies, and jurisdiction-specific rules, leaving considerable latitude for symbolic compliance, selective disclosure, and outright misrepresentation.

This paper is concerned with what may be termed the ESG credibility gap — the divergence between the sustainability performance that firms claim, or that markets infer from disclosed information, and the performance that firms actually deliver. The gap manifests along a spectrum. At one end lies greenwashing: the exaggeration, vagueness, or selective emphasis of environmental or social claims, typically pursued through legitimate, if ethically dubious, communication strategies (Delmas & Burbano, 2011; de Freitas Netto et al., 2020). At the other end lies outright ESG fraud: deliberate falsification of data, misrepresentation of investment processes, or concealment of known non-compliance, conduct that increasingly attracts securities-law liability and criminal sanction, as illustrated by the Deutsche Bank/DWS enforcement action and the Volkswagen emissions scandal discussed below. Between these poles sits a wide grey zone of ambiguous, aspirational, or unverifiable claims that regulators, courts, and academics alike have struggled to classify with precision.

Accordingly, the paper pursues three interlinked objectives. First, it develops a conceptual framework that situates greenwashing and ESG fraud along a continuum of misrepresentation, grounded in legitimacy theory, signaling theory, voluntary disclosure theory, and agency theory. Second, it examines the structural drivers of the credibility gap — principally ESG rating divergence, the near-absence of mandatory assurance, and uneven regulatory enforcement — drawing on recent empirical literature and two illustrative cases, the Deutsche Bank/DWS greenwashing settlement and the Volkswagen "Dieselgate" scandal. Third, it evaluates the implications of the credibility gap for financial transparency and sustainable corporate performance, and assesses the adequacy of emerging regulatory responses, including the European Union's Corporate Sustainability Reporting Directive (CSRD), Sustainable Finance Disclosure Regulation (SFDR), and Taxonomy Regulation, alongside the more contested trajectory of United States climate-disclosure rulemaking.

The remainder of the paper is organised as follows. Section 2 reviews the literature on ESG, greenwashing, and the theoretical frameworks used to explain disclosure behaviour. Section 3 articulates the research gap, objectives, and guiding questions. Section 4 outlines the paper's methodological approach as an integrative conceptual review supported by case illustration. Section 5 presents the analysis of the credibility gap's structural drivers, the two case studies, and the implications for financial transparency and sustainable corporate performance. Section 6 examines regulatory and institutional responses. Section

7 discusses the findings and their implications for theory, practice, and policy. Section 8 acknowledges limitations and proposes directions for future research, and Section 9 concludes.

2. Literature Review and Theoretical Framework

2.1 Conceptualizing ESG and the Sustainability Reporting Ecosystem:

The ESG label aggregates three heterogeneous domains — environmental stewardship, social responsibility, and governance quality — into a single evaluative construct intended to capture non-financial risks and opportunities material to long-term firm value. Its conceptual lineage runs through corporate social responsibility (CSR) scholarship and Elkington's (1997) "triple bottom line," which reframed corporate performance as simultaneously economic, environmental, and social. The formal ESG label itself emerged from the early-2000s convergence of institutional-investor initiatives, most notably the United Nations Principles for Responsible Investment, with financial-analyst efforts to price sustainability-related risk.

The resulting reporting ecosystem is characterised by pluralism rather than standardisation. Firms may report against the Global Reporting Initiative (GRI) standards, the Sustainability Accounting Standards Board (SASB) framework, the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, or increasingly the International Sustainability Standards Board (ISSB) standards, often in combination. Third-party rating agencies — including MSCI, Sustainalytics, Refinitiv (now part of LSEG), and Bloomberg — then translate this disclosed information, together with proprietary data collection, into composite ESG scores that are widely used by asset managers, index providers, and lenders. Because these agencies employ different scope definitions, indicator weightings, and measurement methodologies, the resulting scores frequently diverge substantially for the same firm (Berg et al., 2022; Chatterji et al., 2016). This plurality of standards and scores is not a peripheral technical detail; it is a structural feature of the ESG ecosystem that, as discussed in Section 2.5, materially shapes the incentives for both genuine sustainability investment and its simulation.

2.2 Defining Greenwashing:

The term "greenwashing" originated in the environmentalist critique of corporate advertising in the 1980s and has since been formalised in the academic literature as the practice of disseminating false or misleading information about an organisation's environmental practices or the environmental benefits of its products, with the intention of creating an overly positive corporate image (Delmas & Burbano, 2011; de Freitas Netto et al., 2020). De Freitas Netto et al.'s (2020) systematic review distils this literature into a typology distinguishing firm-level from product-level greenwashing, and executional (communication style and imagery) from claim-based (specific factual assertions) greenwashing. Lyon and Maxwell (2011) offer a complementary economic account, characterising greenwashing as a form of selective disclosure undertaken strategically in response to the anticipated probability and cost of external audit or exposure, while Lyon and Montgomery (2015) trace the evolution of greenwashing research from early "decoupling" studies, in which firms' symbolic communications diverge from their substantive actions, toward more

recent concern with "greenhushing" (the strategic withholding of sustainability claims to avoid scrutiny) as a mirror-image response to intensifying regulatory and reputational risk.

Seele and Gatti (2017) argue that greenwashing is best understood not as an objective property of corporate communication but as an accusation-based, socially constructed label applied by external stakeholders — journalists, non-governmental organisations, and activist investors — when a firm's claims are perceived to exceed its substantive performance. This framing matters because it implies that the incidence of "greenwashing" observed empirically is partly a function of the intensity of external scrutiny rather than of underlying corporate behaviour alone, a point echoed in Marquis et al.'s (2016) cross-national study of selective disclosure, which finds that firms headquartered in jurisdictions with weaker civil-society monitoring capacity are more likely to engage in selective, symbolic ESG disclosure. Torelli et al. (2020) extend the analysis to stakeholder perception, showing that greenwashing accusations damage not only the accused firm's reputation but also generalised consumer and investor trust in sustainability claims across the sector, a spillover effect with significant implications for the ESG information ecosystem as a whole.

Building on this literature, the present paper treats greenwashing and ESG fraud as points along a single continuum of misrepresentation rather than as categorically distinct phenomena. What differentiates them is principally (a) the degree of intentionality and knowledge of falsity, and (b) the materiality of the misstatement to a reasonable investor or consumer — criteria that map closely onto the legal standards applied in securities-fraud and consumer-protection enforcement, discussed further in Section 2.3.

2.3 From Greenwashing to ESG Fraud: A Continuum of Misrepresentation:

Where greenwashing shades into fraud is a question with direct legal and financial consequences. Securities regulators, including the U.S. Securities and Exchange Commission (SEC) and Germany's Federal Financial Supervisory Authority (BaFin), have increasingly treated ESG misrepresentation as ordinary disclosure fraud subject to existing anti-fraud statutes rather than as a novel category of misconduct requiring bespoke rules. The Deutsche Bank/DWS matter, examined in detail in Section 5.2.1, exemplifies this approach: the SEC's enforcement action rested on standard anti-fraud and books-and-records provisions applied to allegedly overstated claims about the extent of ESG integration in the asset manager's investment process (ESG Today, 2023, 2025).

This "no special category" enforcement posture has an important theoretical implication: it suggests that the legal system does not recognise a bright line between greenwashing and fraud so much as a materiality threshold. A vague or aspirational claim (for example, a general commitment to "sustainability leadership") may be actionable only under soft-law consumer-protection instruments, such as the European Union's Directive on Empowering Consumers for the Green Transition (European Parliament and Council of the European Union, 2024), whereas a specific, falsifiable, and financially material claim — for example, a fund's assertion that ESG criteria were systematically integrated into every investment decision — can constitute securities fraud once shown to be false and relied upon by investors. The Volkswagen emissions scandal illustrates a parallel dynamic in the environmental-compliance domain: what began as characterisation of the firm's "clean diesel" marketing evolved, once the use of defeat-

device software to circumvent emissions testing was discovered, into criminal fraud and conspiracy charges resulting in a guilty plea and penalties exceeding US\$25 billion globally (Siano et al., 2017; U.S. Department of Justice, 2017).

This continuum perspective reframes the ESG credibility gap as a spectrum-management problem for both firms and regulators: firms must calibrate the specificity and verifiability of their sustainability claims against their actual capacity to substantiate them, while regulators must draw defensible lines between actionable misrepresentation and legitimate managerial optimism or forward-looking aspiration — a line-drawing exercise complicated considerably by the measurement problems discussed in Section 2.5.

2.4 Theoretical Foundations:

Four complementary theoretical lenses inform the analysis developed in this paper.

Legitimacy theory (Deegan, 2002; Suchman, 1995) conceives of the firm as operating under an implicit social contract with the community in which it is embedded; when a firm's performance is perceived to have departed from prevailing societal norms and expectations, management has an incentive to use voluntary disclosure to repair, maintain, or proactively manage its legitimacy, independent of the firm's underlying performance. Cho and Patten's (2007) empirical finding that environmentally sensitive, poor-performing firms disclose more extensively than their better-performing peers is frequently cited as evidence that disclosure can function as a legitimacy-repair mechanism rather than as a transparent account of performance — precisely the dynamic that gives rise to greenwashing.

Signalling theory and voluntary disclosure theory (Verrecchia, 1983) offer a contrasting, information-economics account: firms with genuinely superior unobservable performance have an incentive to disclose credibly in order to separate themselves from lower-performing rivals and thereby reduce information asymmetry, agency costs, and the cost of capital. Hummel and Schlick's (2016) reconciliation of these two theories proposes that voluntary disclosure theory better explains disclosure quality among genuine sustainability leaders, while legitimacy theory better explains the disclosure behaviour of poor performers seeking to disguise weak underlying performance — a synthesis directly relevant to explaining the coexistence of credible ESG leadership and greenwashing within the same reporting ecosystem.

Finally, a fraud-triangle perspective, adapted from forensic accounting, is useful in explaining the escalation from greenwashing to outright fraud. This perspective posits that misconduct is more likely where three conditions jointly obtain: pressure (competitive or capital-market pressure to demonstrate sustainability credentials), opportunity (weak assurance, fragmented standards, and low probability of detection), and rationalization (a belief, however self-serving, that the underlying sustainability goals justify the means used to represent progress toward them). Applied to the ESG domain, the fraud-triangle lens helps to explain why credibility failures cluster in precisely the structural conditions examined in Sections 2.5 and 5.1: high investor demand for ESG performance (pressure), low and inconsistent assurance requirements (opportunity), and an organizational culture in which sustainability communication is treated as a marketing rather than an accountability function (rationalization).

2.5 The ESG Measurement Problem: Rating Divergence and Disclosure Asymmetry:

A substantial and rapidly growing empirical literature documents that ESG ratings assigned to the same firm by different rating agencies diverge markedly. In an influential study, Berg et al. (2022) analyzed ratings from six prominent agencies and found correlations far lower than those observed among credit ratings, attributing the divergence to three distinct sources: scope divergence (agencies assess different underlying attributes), measurement divergence (agencies use different indicators for ostensibly the same attribute), and weight divergence (agencies assign different relative importance to environmental, social, and governance components). Chatterji et al. (2016) reach a similar conclusion using an earlier generation of rating data, finding correlations among prominent social-responsibility ratings that are markedly lower than analogous correlations among credit ratings from established credit-rating agencies.

This divergence has non-trivial consequences. Gibson Brandon et al. (2021) show that firms exhibiting higher ESG rating disagreement earn a positive return premium, consistent with rating disagreement being priced by the market as a distinct form of uncertainty, over and above conventional risk factors. Because CEO compensation, index inclusion, and green-financing eligibility are increasingly linked to specific rating outcomes, disagreement across raters creates an incentive structure in which firms can, in effect, optimise disclosure toward the specific indicators a chosen rater emphasises — the "hit the target, miss the point" problem identified by Berg et al. (2022) — without necessarily improving underlying sustainability performance.

Taken together, these measurement and assurance deficiencies constitute the structural substrate of the ESG credibility gap: they lower the practical cost of symbolic, decoupled disclosure relative to substantive sustainability investment, and they complicate external verification of whether a given firm's ESG claims are genuine, aspirational, or fraudulent.

3. Research Gap, Objectives, and Research Questions

Notwithstanding the depth of literature reviewed above, three gaps motivate the present paper. First, the accounting, finance, and management literatures on ESG disclosure quality, rating divergence, and greenwashing have developed largely in parallel, with comparatively limited cross-fertilisation; few studies integrate rating-divergence economics with legitimacy-theoretic accounts of disclosure behaviour and with the legal architecture of fraud enforcement. Second, empirical case evidence on how credibility failures actually unfold — from initial whistle-blowing or investigative-journalism exposure, through regulatory investigation, to eventual civil or criminal sanction — remains scattered across practitioner and legal commentary rather than systematically incorporated into academic analysis, despite its evident relevance to theory-testing. Third, the regulatory response to the credibility gap is evolving so rapidly, and in some jurisdictions so unevenly, that academic treatments risk obsolescence; a synthesis that captures the current state of the European Union's CSRD/SFDR/Taxonomy architecture alongside the more volatile trajectory of United States climate-disclosure rulemaking is of direct value to scholars, practitioners, and policymakers alike.

Against this backdrop, the paper pursues the following objectives: (1) to develop an integrative conceptual framework situating greenwashing and ESG fraud along a single continuum of misrepresentation,

grounded in legitimacy, signalling, agency, and fraud-triangle theory; (2) to identify and analyse the principal structural drivers of the ESG credibility gap, namely rating divergence, assurance deficits, and uneven enforcement; (3) to illustrate these dynamics through case analysis of two landmark credibility failures; (4) to assess the implications of the credibility gap for financial transparency and for sustainable corporate performance; and (5) to evaluate the adequacy of current and emerging regulatory responses in the European Union, the United States, and selected other jurisdictions.

These **objectives** translate into four guiding research questions:

RQ1: How can greenwashing and ESG fraud be theoretically distinguished and integrated within a unified conceptual framework?

RQ2: What structural features of the ESG information ecosystem create incentives for symbolic rather than substantive sustainability behaviour, and how are these features illustrated in landmark enforcement cases?

RQ3: What are the implications of ESG credibility failures for financial transparency, capital-market efficiency, and the cost of capital, and for firms' long-run sustainable corporate performance?

RQ4: To what extent do current regulatory and institutional responses — including mandatory disclosure regimes, assurance requirements, and securities enforcement — address the structural drivers of the credibility gap, and what further reforms are warranted?

4. Research Methodology

This paper adopts an integrative conceptual review methodology, a design well suited to research questions that require synthesis across fragmented literatures and the development of an original theoretical framework, rather than the generation of new primary quantitative data. The approach followed here parallels systematic narrative review practice as applied in prior greenwashing scholarship (e.g., de Freitas Netto et al., 2020) and is supplemented by purposive case illustration.

The review draws on peer-reviewed journal articles indexed in Scopus- and Web of Science-listed outlets across accounting, finance, management, and law, identified through structured searches of terms including "greenwashing," "ESG fraud," "ESG rating divergence," "sustainability disclosure," and "corporate sustainability performance," conducted across leading publisher platforms (including ScienceDirect, SpringerLink, Wiley Online Library, and SSRN), together with authoritative regulatory and enforcement sources (the European Commission, EUR-Lex, the U.S. Securities and Exchange Commission, and the U.S. Department of Justice) and specialist financial-sustainability trade press (ESG Today) used strictly for verifiable factual reporting on enforcement outcomes rather than as a substitute for peer-reviewed evidence. Priority was given to studies published in, or building on, established journals in the field (e.g., Review of Finance, Organization Science, Journal of Business Ethics, Business Strategy and the Environment, Accounting, Organizations and Society) and to foundational, highly cited theoretical contributions (e.g., Deegan, 2002; Jensen & Meckling, 1976; Suchman, 1995; Verrecchia, 1983).

Two illustrative cases were selected purposively rather than as a representative sample, following case-study logic appropriate to theory illustration rather than theory generalisation. The Deutsche Bank/DWS matter was selected because it represents the largest ESG-related enforcement penalty imposed on an asset

manager to date and because it arose from an internal whistle-blower complaint, allowing examination of both the detection mechanism and the subsequent regulatory response across two jurisdictions (the United States and Germany). The Volkswagen "Dieselgate" scandal was selected because, although predating the contemporary ESG-labelling era, it remains the most extensively studied case of environmental-compliance fraud in the management and accounting literatures, offering a mature body of peer-reviewed analysis against which more recent, ESG-specific cases can be theoretically compared.

Consistent with an integrative review design, the analysis in Section 5 proceeds thematically rather than chronologically: it first identifies structural drivers common across the literature and the cases (Section 5.1), then examines each case in relation to those drivers (Section 5.2), and finally synthesises the implications for financial transparency (Section 5.3) and sustainable corporate performance (Section 5.4). This structure allows the paper to move iteratively between theory and evidence, while remaining transparent about the purposive, illustrative — rather than exhaustive or statistically representative — status of the case evidence, a limitation acknowledged explicitly in Section 8.

5. Findings and Analysis

5.1 Anatomy of the ESG Credibility Gap: Structural Drivers

Synthesising the literature reviewed in Section 2, three structural drivers can be identified as jointly responsible for the persistence of the ESG credibility gap.

The first driver is measurement plurality and rating divergence. As shown in Section 2.5, the absence of a single, agreed methodology for translating disclosed ESG information into a comparable performance metric means that a firm's sustainability standing is, to a significant extent, an artefact of which rating agency, which framework, and which weighting scheme is applied. This plurality creates what might be termed "measurement arbitrage": the incentive for firms to optimise disclosure toward the specific indicators used by the rating agencies most influential for their investor base, index inclusion, or financing terms, rather than toward comprehensive, substantive sustainability improvement (Berg et al., 2022).

The second driver is the assurance and verification gap. Financial statement audit developed over more than a century into a mature discipline underpinned by statutory mandate, professional licensure, standardised methodology, and civil liability for negligent or fraudulent certification. Sustainability assurance, by contrast, remains predominantly voluntary outside the European Union's emerging CSRD assurance mandate, is frequently limited rather than reasonable in scope, and is provided within a commercial ecosystem that has not yet developed the independence safeguards characteristic of statutory audit (de Silva Lokuwaduge & De Silva, 2022). This gap lowers the marginal cost of overstatement relative to the marginal cost of genuine performance improvement, a classic condition for the "opportunity" leg of the fraud triangle discussed in Section 2.4.

The third driver is asymmetric and evolving enforcement. Securities regulators in leading jurisdictions have moved decisively, if unevenly, to treat material ESG misrepresentation as ordinary disclosure fraud — the SEC's Climate and ESG Task Force, established in March 2021, has brought a series of enforcement actions against asset managers, of which the DWS matter is the most prominent (ESG Today, 2023) — while other jurisdictions, including at times the United States federal government itself with respect to

climate-specific disclosure rulemaking (discussed in Section 6.2), have moved in the opposite direction, creating a fragmented and shifting compliance landscape. Australia's securities regulator, ASIC, has likewise stepped up enforcement, securing a record AU\$12.9 million penalty against a superannuation trustee for greenwashing conduct in 2024 and commencing further proceedings against ESG investment funds in 2025, indicating that enforcement momentum, where it exists, is a genuinely global rather than solely transatlantic phenomenon.

These three drivers interact rather than operate independently. Rating divergence increases the plausibility of a firm's defence that any given disclosure was a reasonable, good-faith interpretation of an inherently ambiguous methodology, complicating enforcement; weak assurance reduces the likelihood that overstatement will be detected before it becomes market-moving information; and uneven enforcement means that the expected cost of detected misrepresentation varies enormously by jurisdiction, creating incentives for regulatory arbitrage in the location of ESG-labelled fund domiciles and disclosure. Together, they explain why the empirical literature on greenwashing (e.g., Marquis et al., 2016; Torelli et al., 2020) finds it to be a widespread rather than isolated phenomenon, and why event-study evidence on market reactions to greenwashing exposure finds effects that are highly heterogeneous rather than uniformly severe (Xu, 2025) — precisely what would be expected where detection is uncertain and enforcement inconsistent.

5.2 Case Illustrations

5.2.1 The Deutsche Bank/DWS Greenwashing Settlement

The DWS matter is widely regarded as the most consequential ESG enforcement action to date in asset management (ESG Today, 2025). The case originated in August 2021 when DWS's former global head of sustainability (ESG) publicly alleged that the firm had materially overstated, in its 2020 annual report, the proportion of assets under management subject to genuine ESG integration. The allegations triggered parallel investigations by German prosecutors and the U.S. Securities and Exchange Commission; in May 2022, approximately fifty German police officers raided DWS's and Deutsche Bank's Frankfurt offices in connection with a prospectus-fraud investigation, and DWS's chief executive resigned the following day (ESG Today, 2023).

In September 2023, the SEC announced a US\$19 million settlement with DWS's U.S. investment-adviser subsidiary, finding that the firm had made materially misleading statements about the controls used to incorporate ESG factors into research and investment recommendations for products marketed as "ESG integrated," and had failed to implement aspects of its own Global ESG Integration Policy as represented to clients (ESG Today, 2023). A further US\$6 million penalty was imposed concurrently for unrelated anti-money-laundering failures, and in 2025 German authorities imposed an additional penalty, bringing DWS's cumulative ESG-related and related settlements to approximately US\$25–27 million (ESG Today, 2025).

Several features of the case are instructive for the framework developed in this paper. First, the detection mechanism was internal whistle-blowing rather than external rating-agency scrutiny or market-based price discovery, consistent with the assurance-gap driver identified in Section 5.1: neither DWS's external

auditors nor the ESG rating agencies that scored its funds identified the alleged discrepancy between marketed and actual ESG-integration practices. Second, the SEC's enforcement theory did not require proof that DWS's underlying investments were environmentally or socially harmful; it rested entirely on the gap between the firm's description of its own internal process and the process actually followed — a pure disclosure-integrity claim of the kind anticipated by agency theory's emphasis on the fidelity of managerial representations to shareholders and clients (Jensen & Meckling, 1976). Third, the matter proceeded on a "neither admit nor deny" basis typical of SEC settlements, meaning that DWS was never required to concede that its prior disclosures were knowingly fraudulent, illustrating the practical difficulty, noted in Section 2.3, of drawing a clean legal line between negligent overstatement and intentional fraud even in prominent enforcement outcomes.

5.2.2 The Volkswagen "Dieselgate" Scandal

Although it predates the contemporary ESG-labelling era, the Volkswagen emissions scandal remains the paradigmatic case of environmental-compliance fraud in the management and accounting literatures and offers a valuable point of theoretical comparison. Volkswagen had, for over a decade, marketed its "clean diesel" technology as delivering low emissions without compromising fuel efficiency or performance, a claim central to the company's environmental legitimacy strategy and its broader sustainability positioning (Siano et al., 2017). In September 2015, U.S. regulators revealed that Volkswagen had installed "defeat device" software in approximately eleven million vehicles worldwide, designed to detect laboratory emissions-testing conditions and activate pollution controls only during testing, while emitting nitrogen oxides at many multiples of the permitted level during ordinary driving.

The scandal's resolution proceeded through both civil and criminal channels: in January 2017, Volkswagen AG pleaded guilty in U.S. federal court to conspiracy, obstruction of justice, and importation of merchandise by false statements, and agreed to pay US\$4.3 billion in criminal and civil penalties, in addition to separate civil settlements related to vehicle buybacks and environmental remediation that brought total global penalties to an estimated US\$30 billion or more (U.S. Department of Justice, 2017). A former chief executive was separately charged with conspiracy and wire fraud.

For the theoretical framework developed in this paper, Dieselgate is instructive on two counts. First, Siano et al. (2017) show, through content analysis of Volkswagen's pre-scandal sustainability communications, that the firm's environmental disclosures exhibited classic greenwashing characteristics — vague, aspirational, and executional claims of environmental leadership — well before the specific, falsifiable defeat-device fraud was uncovered, supporting the continuum perspective advanced in Section 2.3: an established pattern of legitimacy-oriented, symbolic environmental communication appears to have coexisted with, and arguably provided cover for, an underlying substantive fraud. Second, the scandal illustrates the limits of corporate governance structures conventionally regarded as robust: Volkswagen operated under Germany's two-tier board system, often considered more effective at internal monitoring than unitary boards, yet this structure did not prevent, and according to subsequent analysis may have contributed to, a corporate culture in which internal dissent regarding the emissions-testing strategy was suppressed. This finding cautions against equating formal governance quality — frequently a heavily

weighted component of composite ESG scores — with substantive integrity of environmental representations, reinforcing the rating-divergence and measurement-arbitrage concerns discussed in Section 5.1.

5.3 Implications for Financial Transparency

The credibility gap examined in this paper carries direct implications for financial transparency, understood as the capacity of disclosed information to allow external stakeholders to assess a firm's condition and prospects accurately. First, unreliable ESG information degrades the price-discovery function of capital markets. Where ESG scores diverge substantially across providers, and where the underlying disclosures on which those scores rest are unassured, market participants face heightened information-processing costs and must, in effect, form independent judgments about the reliability of sustainability claims — precisely the function that assured, standardised financial reporting was designed to remove from investors' burden. Gibson Brandon et al.'s (2021) finding that ESG rating disagreement commands a positive return premium indicates that markets already price this uncertainty, but a priced risk is not the same as a resolved information problem: the premium compensates investors for bearing ambiguity rather than eliminating the ambiguity itself.

Second, ESG credibility failures generate discrete, event-driven capital-market consequences once exposed, though the empirical evidence on the magnitude and consistency of these effects is more nuanced than early greenwashing scholarship assumed. Xu's (2025) event-study evidence indicates that market reactions to greenwashing news exposure are shaped significantly by firm size, prior ESG reputation, and industry, with some large, reputationally exposed firms experiencing more muted average abnormal returns than smaller firms, for whom a credibility failure represents a proportionally larger shock to firm-specific reputational capital. This heterogeneity is consistent with the structural drivers identified in Section 5.1: where enforcement and detection are uncertain, markets rationally discount the probability that any given allegation will translate into material financial consequences, producing the mixed and context-dependent reaction patterns documented across recent event studies.

Third, the credibility gap has systemic as well as firm-specific implications. Because ESG ratings and disclosures increasingly feed into index construction, green-bond eligibility criteria, prudential considerations for banks, and sovereign and corporate green-financing instruments, unreliable underlying data risks propagating mispricing across the financial system rather than remaining confined to individual securities. Christensen et al.'s (2021) review notes that mandatory disclosure regimes, absent credible assurance and enforcement, can in some circumstances increase rather than decrease information asymmetry, by creating a veneer of standardisation that lends false confidence to underlying data of uneven quality — a risk directly relevant to the European Union's rapid expansion of mandatory sustainability reporting discussed in Section 6.1.

Fourth, and most directly relevant to the cost of capital, El Ghouli et al. (2018) provide international evidence that superior, verifiable environmental responsibility performance is associated with a lower cost of equity capital, operating through reduced perceived risk and improved investor relations; the corollary is that credibility failures — once they degrade investors' confidence in a firm's environmental disclosures

generally — risk raising the cost of capital not only for the firm implicated but, through the trust-spillover mechanism documented by Torelli et al. (2020), for sector peers whose disclosures investors can no longer take at face value with the same confidence.

5.4 Implications for Sustainable Corporate Performance

The relationship between ESG performance and financial performance has been the subject of one of the most extensively replicated streams of research in sustainable finance. Friede et al.'s (2015) second-order meta-analysis, aggregating findings from more than 2,000 empirical studies, concludes that the large majority of studies find a non-negative — typically positive — relationship between ESG criteria and corporate financial performance (CFP), a relationship that appears stable across regions and asset classes. This body of evidence is frequently invoked to justify the "business case" for genuine sustainability investment. However, the credibility gap examined in this paper complicates the interpretation of this literature in an important respect: because the great majority of underlying studies rely on disclosed ESG scores or self-reported CSR data as the independent variable, rather than on independently verified environmental or social outcomes, any systematic component of greenwashing embedded in the input data risks biasing estimated ESG–CFP relationships in ways that are difficult to sign a priori. Where greenwashing is itself correlated with strong financial performance — well-resourced firms may be better able to fund sophisticated sustainability communications regardless of substantive environmental performance — meta-analytic estimates of the ESG–CFP relationship may partly reflect the financial returns to disclosure sophistication rather than to genuine sustainability performance.

This concern is reinforced by recent Australian evidence from Bhuiyan and Hoque (2026), who develop a quantitative greenwashing measure based on the divergence between reported ESG scores and directly measured carbon emissions for Australian listed firms over 2014–2023, and find that greenwashing is associated with reduced stock-price volatility and enhanced perceived firm stability in the short run — because investors interpret strong reported ESG signals as evidence of lower risk — but that this stabilising effect dissipates, and in some specifications reverses, over the medium to long run as the gap between claimed and actual performance becomes apparent to the market. This finding has a direct and important implication for the theorised relationship between ESG and sustainable corporate performance: it suggests that greenwashing can generate a transient financial-performance premium that is functionally indistinguishable, in short-window empirical tests, from a premium generated by genuine sustainability performance, but that this premium is not durable and may reverse with a lag, consistent with legitimacy theory's account of disclosure as a temporary, reactive strategy rather than a substitute for substantive performance (Deegan, 2002; Suchman, 1995).

The implications extend beyond capital markets to operational and strategic dimensions of sustainable corporate performance. Firms that substitute symbolic communication for substantive investment in decarbonisation, supply-chain due diligence, or governance reform may forgo the operational efficiencies, regulatory-risk mitigation, and innovation benefits that genuine sustainability transformation can generate, effectively trading a short-run reputational dividend for a long-run competitiveness deficit as regulatory stringency increases — a dynamic directly visible in Zeng and Xu's (2024) analysis of "carbon washing"

among Chinese listed firms, which finds that firms exhibiting the largest gap between disclosed decarbonisation ambition and measured emissions performance are disproportionately concentrated in carbon-intensive sectors facing the most severe future transition risk. In this sense, the ESG credibility gap does not merely distort financial transparency in the short run; it risks systematically misallocating the real capital investment needed to achieve durable sustainable corporate performance in the sectors where it is most urgently required.

6. Regulatory and Institutional Responses

6.1 The European Union Framework

The European Union has assembled the most comprehensive regulatory architecture yet attempted for closing the ESG credibility gap, built around three interlocking instruments. The Sustainable Finance Disclosure Regulation (SFDR), in force since 2021, requires financial-market participants and financial advisers to disclose, at both entity and product level, how sustainability risks are integrated into investment decisions and to classify funds according to their sustainability ambition. The European Commission has since acknowledged, in its ongoing SFDR review, persistent concerns regarding the regulation's legal certainty, usability, and susceptibility to greenwashing, with a further legislative proposal planned for the fourth quarter of 2025 (European Commission, 2025). The EU Taxonomy Regulation supplies the classification system against which the environmental sustainability of specific economic activities is assessed, intended to prevent firms from labelling activities as "green" absent a shared technical definition of what that label requires. The Corporate Sustainability Reporting Directive (CSRD), which entered into force in stages beginning with the 2024 financial year, substantially expands the scope and granularity of mandatory sustainability disclosure relative to its predecessor, the Non-Financial Reporting Directive, requiring reporting against detailed European Sustainability Reporting Standards and, significantly for the assurance gap identified in Section 5.1, mandating assurance of reported sustainability information with a trajectory from limited toward reasonable assurance over time (European Parliament and Council of the European Union, 2022).

This architecture has, however, proven politically unstable. Facing sustained criticism regarding compliance burden and competitiveness effects, the European Commission's February 2025 "Omnibus" simplification package proposed removing a substantial majority of previously in-scope companies from CSRD's ambit by raising the applicable employee and turnover thresholds, a proposal subsequently approved by the European Parliament in revised form in late 2025, narrowing mandatory CSRD reporting to companies exceeding 1,000 employees and €450 million in net turnover. In parallel, the proposed Green Claims Directive, which would have introduced EU-wide substantiation and independent-verification requirements for voluntary environmental marketing claims, was ultimately withdrawn from the legislative process in 2025 amid concerns regarding administrative burden. Nevertheless, the earlier and narrower Directive on Empowering Consumers for the Green Transition survived this recalibration and is scheduled to take full effect from 27 September 2026, prohibiting generic, unsubstantiated environmental claims (such as "eco-friendly" or "climate neutral" absent recognised certification) and most claims based

purely on emissions offsetting rather than genuine emissions reduction (European Parliament and Council of the European Union, 2024).

Taken together, the European trajectory illustrates a recalibration rather than an abandonment of the regulatory response to greenwashing: the Union has narrowed the population of firms subject to the most burdensome CSRD reporting obligations while simultaneously tightening the specific rules governing environmental marketing claims applicable to all firms regardless of CSRD scope. For the framework developed in this paper, this dual movement is significant: it suggests that the most effective anti-greenwashing lever, at least in the EU's current regulatory judgment, is not blanket mandatory disclosure of maximal scope but targeted substantiation requirements applied directly to the specific claims most likely to mislead consumers and investors, combined with assurance requirements concentrated on the largest, most systemically significant reporting entities.

6.2 The United States Framework

The trajectory of United States climate- and ESG-disclosure regulation has been considerably more volatile than the European Union's. The SEC adopted comprehensive rules in March 2024 to enhance and standardise climate-related disclosures for investors, requiring registrants to disclose material climate-related risks, certain greenhouse gas emissions, and governance processes for managing climate risk. The rules were immediately challenged in consolidated litigation before the U.S. Court of Appeals for the Eighth Circuit and stayed pending that litigation. Following a change in Commission leadership, the SEC voted in March 2025 to end its defence of the rules altogether, and by May 2026 had proposed their outright rescission on the ground that the original rules exceeded the Commission's statutory authority, invoking a disclosure philosophy centred on materiality as the governing standard (U.S. Securities and Exchange Commission, 2026). As of the time of writing, the Eighth Circuit litigation remains in abeyance pending the outcome of this rescission rulemaking.

This retreat from mandatory federal climate disclosure does not, however, eliminate disclosure pressure on U.S. registrants, for at least three reasons. First, state-level climate-disclosure statutes, notably California's SB 253 and SB 261, impose independent, and in some respects more stringent, greenhouse-gas and climate-risk disclosure obligations on large companies doing business in California regardless of their federal registration status, although enforcement of aspects of this regime has itself been subject to litigation and injunctive relief. Second, U.S. multinational issuers with EU operations remain subject to the CSRD's extraterritorial scope provisions where thresholds are met, meaning that European disclosure requirements exert an indirect but material harmonising effect on large U.S. firms' sustainability reporting irrespective of domestic federal policy. Third, and most directly relevant to the fraud-continuum framework developed in Section 2.3, the SEC's retreat from prescriptive climate-disclosure rulemaking has not been accompanied by any relaxation of the Commission's ordinary anti-fraud authority under existing securities statutes: the DWS enforcement action rested entirely on general anti-fraud and books-and-records provisions rather than on the (subsequently contested) climate-disclosure rules, meaning that the principal legal risk associated with ESG misrepresentation in the United States — liability for

materially false statements about ESG investment processes — persists independently of the fate of prescriptive climate-disclosure rulemaking.

This divergence between the EU's expanding-then-recalibrating mandatory disclosure model and the U.S.'s retreat-to-materiality, enforcement-based model represents, in effect, a natural experiment in alternative regulatory strategies for closing the ESG credibility gap, the comparative results of which will only become clear over the coming years as enforcement patterns and market outcomes in each jurisdiction diverge further.

6.3 Global Convergence Pressures: The ISSB and Assurance Standards

Notwithstanding this transatlantic divergence, a countervailing convergence pressure operates through the International Sustainability Standards Board (ISSB), established under the IFRS Foundation to develop a global baseline for sustainability-related financial disclosure. A growing number of jurisdictions, including Australia, the United Kingdom, and several ASEAN economies, have committed to adopting or endorsing ISSB-aligned standards (IFRS S1 and S2) as their national sustainability-reporting baseline, creating pressure toward disclosure comparability that operates independently of, and to some extent in tension with, the divergent EU and U.S. domestic trajectories described above.

A parallel convergence pressure is emerging in the assurance domain. International auditing standard-setters and the CSRD's own assurance mandate both point toward an eventual global expectation that sustainability disclosures will be subject to independent assurance broadly analogous to statutory financial audit, closing, over time, the assurance gap identified as a central structural driver of the credibility gap in Section 5.1. Australia's experience is again instructive here: ASIC's escalating enforcement activity — including record penalties against superannuation trustees and civil proceedings against ESG fund operators in 2024 and 2025 — has proceeded in parallel with, and arguably in advance of, Australia's own formal adoption of ISSB-aligned mandatory climate reporting, illustrating that credible enforcement under existing consumer-protection and financial-services law can substitute, at least partially and in the near term, for the assurance and standardisation reforms that take longer to implement through primary legislation. This Australian pattern — vigorous enforcement preceding comprehensive mandatory standardisation — offers a potentially generalisable lesson for other jurisdictions, including the United States, where the retreat from prescriptive rulemaking need not, on this evidence, imply a retreat from meaningful anti-greenwashing enforcement under existing law.

7. Discussion

The analysis developed in this paper carries implications for theory, for corporate practice, and for policy design.

For theory, the paper's central contribution is to reframe greenwashing and ESG fraud as points on a single continuum of misrepresentation rather than as categorically distinct constructs studied by separate literatures. This reframing has practical analytical value: it directs attention to the materiality threshold — the point at which a vague, legitimacy-oriented claim becomes a specific, falsifiable, and financially consequential representation — as the key variable determining whether a given instance of ESG

misrepresentation is likely to be addressed through soft-law consumer-protection mechanisms (as in much of the EU's approach to executional greenwashing) or through hard securities-fraud liability (as in the DWS case). The integration of legitimacy theory, voluntary disclosure theory, agency theory, and the fraud-triangle perspective within a single framework further clarifies why credibility failures are neither randomly distributed across firms nor purely a function of underlying sustainability performance: they cluster where reputational pressure to demonstrate ESG credentials (the pressure leg) coincides with weak assurance and rating divergence (the opportunity leg) and with organisational cultures that treat sustainability communication as a marketing rather than an accountability function (the rationalisation leg).

For corporate practice, the analysis suggests that firms seeking to reduce their own exposure to the credibility gap should prioritise three actions above and beyond compliance with minimum disclosure mandates. First, firms should seek voluntary reasonable — rather than merely limited — assurance over material sustainability claims in advance of it becoming mandatory, both because doing so pre-empts the assurance-gap vulnerability exploited in cases such as DWS, and because early adoption of higher assurance standards is likely to become a positive market-differentiating signal as investor sophistication regarding ESG data quality increases (a prediction consistent with voluntary disclosure theory's account of credible signalling by genuinely superior performers; Verrecchia, 1983; Hummel & Schlick, 2016). Second, firms should align internal compensation and risk-management structures with the actual, verified sustainability metrics underlying external claims, rather than with the composite ESG scores assigned by any single rating provider, precisely to avoid the "hit the target, miss the point" dynamic identified by Berg et al. (2022). Third, firms should treat the specificity of their public sustainability claims as a direct function of their internal capacity to substantiate them: the Volkswagen and DWS cases both illustrate that generalised, aspirational claims of environmental or ESG leadership create legitimacy exposure that later, more specific fraud allegations can exploit, even where the specific fraud itself was not initially the subject of the aspirational claim.

A further implication concerns the ESG rating industry itself. Given the extent to which rating divergence contributes to the credibility gap, policy attention directed solely at corporate disclosure, without parallel attention to the methodology, transparency, and potential conflicts of interest of the rating agencies that convert disclosure into investable scores, addresses only part of the problem. The European Union's move to regulate ESG rating providers directly, requiring greater transparency regarding methodology and potential conflicts of interest where rating providers also sell consulting services to rated firms, represents a necessary complement to disclosure-side reform, and its eventual effectiveness will be an important indicator of whether the measurement-plurality driver identified in this paper can be substantially reduced, as opposed to merely made more transparent.

Finally, the paper's findings caution against an overly binary framing of the ESG debate as a contest between "genuine sustainability" and "cynical greenwashing." The Bhuiyan and Hoque (2026) evidence that greenwashing generates a transient rather than durable financial-stability premium suggests that markets are not permanently deceived by symbolic sustainability communication; rather, credibility failures appear to unwind over time as the underlying gap between claims and performance becomes

apparent, whether through whistle-blowing, investigative journalism, regulatory investigation, or simply the accumulation of measurable outcomes (such as realised emissions) that eventually contradict prior claims. This suggests that closing the ESG credibility gap is not solely, or even primarily, a matter of preventing firms from making claims that later prove false — an inherently difficult task given the forward-looking and aspirational nature of much sustainability communication — but rather a matter of accelerating and formalising the market and regulatory mechanisms through which the gap between claims and performance is eventually revealed, so that the interval during which mispriced capital is misallocated is minimised.

8. Limitations and Future Research Directions

This paper is subject to several limitations that qualify its conclusions and point toward productive avenues for future research. First, as an integrative conceptual review, the paper does not generate new primary quantitative evidence; its conclusions rest on synthesis of existing published findings, and its case analyses, while grounded in verifiable regulatory and legal record, were selected purposively for their theoretical illustrative value rather than as a representative or exhaustive sample of ESG credibility failures. Future research employing systematic, large-sample content analysis of enforcement actions across multiple regulators (the SEC, ASIC, BaFin, and equivalent authorities in other major capital markets) would allow more rigorous testing of the continuum framework proposed in Section 2.3, for example by examining whether materiality thresholds and enforcement outcomes are applied consistently across jurisdictions and firm types.

Second, the paper's treatment of the ESG-financial-performance relationship, while grounded in the substantial meta-analytic evidence reviewed in Section 5.4, is necessarily constrained by the limitations of the underlying primary literature, most of which continues to rely on disclosed rather than independently audited sustainability performance data. Future empirical work that exploits emerging, harder-to-manipulate physical and satellite-derived environmental performance measures — for example, remote-sensing estimates of actual emissions or deforestation, as opposed to disclosed or self-reported figures — offers a promising avenue for disentangling genuine sustainability performance from disclosure sophistication in tests of the ESG–CFP relationship, building on the emissions-based greenwashing measurement approach pioneered by Bhuiyan and Hoque (2026) and Zeng and Xu (2024).

Third, the regulatory landscape analysed in Section 6 is, by its nature, a moving target; the EU's Omnibus simplification process, the SFDR review, and the SEC's climate-rule rescission proceedings were all still unresolved at the time of writing, and subsequent developments may alter some of the specific conclusions drawn here, even as the paper's underlying structural framework — measurement plurality, assurance gaps, and enforcement asymmetry — is likely to remain analytically relevant regardless of the specific regulatory equilibrium eventually reached. Researchers revisiting this topic are encouraged to treat the regulatory description in Section 6 as a snapshot requiring updating rather than a stable baseline.

Fourth, the paper's geographic coverage, while spanning the European Union, the United States, and Australia, does not extend systematically to the rapidly evolving regulatory and disclosure practices of major emerging markets, including China, India, and the Gulf Cooperation Council states, where

sovereign wealth funds, state-owned enterprises, and distinctive governance structures may generate materially different incentive structures for ESG disclosure and greenwashing than those documented in the predominantly Western literature synthesised here. Comparative research extending the present framework to these contexts represents a further priority for future scholarship.

9. Conclusion

This paper has examined the ESG credibility gap — the persistent divergence between corporate sustainability claims and verifiable underlying performance — as a phenomenon spanning a continuum from executional greenwashing to outright securities fraud, unified by common structural drivers and addressable, in principle, through a coherent combination of substantiation requirements, assurance mandates, and vigorous enforcement. Drawing on legitimacy theory, signalling and voluntary disclosure theory, agency theory, and a fraud-triangle perspective, the paper has shown that the credibility gap is not an incidental imperfection in an otherwise well-functioning ESG information ecosystem but a structurally embedded feature arising from rating-methodology plurality, an immature assurance regime, and unevenly applied enforcement across jurisdictions.

The Deutsche Bank/DWS and Volkswagen cases, though separated by nearly a decade and arising in different sectors, illustrate a common pattern: aspirational, legitimacy-oriented sustainability communication preceding and, in important respects, obscuring more specific and consequential misrepresentation, exposed ultimately not by the formal assurance or rating apparatus surrounding ESG disclosure but by internal whistle-blowing and external regulatory investigation. The financial-transparency implications of such failures are significant, ranging from firm-specific cost-of-capital effects to systemic risks arising from the propagation of unreliable ESG data through indices, green-financing instruments, and prudential frameworks; the sustainable-corporate-performance implications are equally significant, with recent Australian evidence suggesting that the financial-stability premium associated with greenwashing is transient rather than durable, unwinding as genuine performance data eventually contradict prior claims.

The regulatory response, while considerable, remains unsettled: the European Union's CSRD/SFDR/Taxonomy architecture has been substantially recalibrated in the direction of narrower, more targeted obligations, while United States federal climate-disclosure rulemaking has retreated toward reliance on general anti-fraud enforcement, even as state-level, extraterritorial EU, and ISSB-driven convergence pressures continue to operate. For ESG information to function as a reliable signal of sustainable corporate performance, rather than as a reputational veneer vulnerable to exploitation along the greenwashing-to-fraud continuum, continued convergence toward assured, comparable, and rigorously enforced disclosure standards will be essential — a conclusion with direct relevance for scholars, corporate practitioners, investors, and policymakers engaged in the ongoing project of making sustainable finance genuinely sustainable.

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