



KONFERENCIAKÖTET

Conference Proceedings

**Nemzetközi tudományos konferencia
a Magyar Tudomány Ünnepe alkalmából**
International Scientific Conference
on the Occasion of the Hungarian Science Festival

Sopron, 2025. november 6.
6 November 2025, Sopron

**FEJLŐDÉSI PÁLYÁK ÉS ÚJ TÖRÉSVONALAK A
FENNTARTHATÓSÁGI ÁTMENET IDŐSZAKÁBAN**

DEVELOPMENT TRAJECTORIES AND NEW DIVIDES IN TIMES OF SUSTAINABILITY TRANSITIONS

Szerkesztők / Editors:

RESPERGER Richárd, SZÉLES Zsuzsanna, TÓTH Balázs István

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KONFERENCIAKÖTET
CONFERENCE PROCEEDINGS

LEKTORÁLT TANULMÁNYOK / PEER-REVIEWED PAPERS

Szerkesztők / Editors:

RESPERGER Richárd – SZÉLES Zsuzsanna – TÓTH Balázs István



SOPRONI EGYETEM KIADÓ

UNIVERSITY OF SOPRON PRESS

SOPRON, 2026



JUBILEUMI
TUDOMÁNYÜNNEP
2025



SCIENCE
JUBILEE
2025

Mottó: „200 év a tudás és a társadalom szolgálatában”
/ Motto: „200 years to knowledge and service to society”



**MAGYAR
TUDOMÁNY
ÉVE 2025/2026**

Felelős kiadó / Executive Publisher: Prof. Dr. FÁBIÁN Attila
a Soproni Egyetem rektora / Rector of the University of Sopron

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Tördelőszerkesztő / Layout Editor: Dr. RESPERGER Richárd

ISBN 978-963-334-579-5 (pdf)

DOI: <https://doi.org/10.35511/978-963-334-579-5>

A kötetben közölt tanulmányok tartalmáért kizárólag a szerzők felelősek.
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Designing ESG Reports with Nudges: Integrating Behavioural Insights into CFO-Led Sustainability Reporting

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Abstract:

Environmental, Social and Governance reporting has become a central element of corporate accountability; however, disclosure practices remain highly heterogeneous. While most research has examined investors, consumers, and employees, the perspective of Chief Financial Officers as key decision-makers has received little attention. This study addresses this gap by developing a conceptual framework that integrates behavioural insights into Environmental, Social and Governance reporting led by Chief Financial Officers. Drawing on an integrative literature review of behavioural economics and accounting research, the framework explains how cognitive biases shape disclosure decisions and how nudging mechanisms can be used to counteract them. The results show that Chief Financial Officers act as internal choice architects positioned between regulatory requirements and organisational practice, and that embedding behavioural principles in reporting tools can improve transparency, comparability, and credibility in sustainability reporting.

Keywords: ESG disclosure, behavioural design, international accounting, CFO decision-making, transparency

JEL Codes: M41, D91, Q56, G34

1. Introduction

Escalating regulatory requirements, rising expectations from investors and consumers, and the increasing relevance of sustainability-related risks have made Environmental, Social and Governance (ESG) reporting a central component of corporate governance and strategic (Christensen et al., 2021; Gácsér & Szóka, 2022; IFRS, 2023). Firms are now expected to disclose environmental, social and governance information in a transparent, comparable and decision-useful manner that serves a wide range of stakeholders (Hao & Wu, 2024; Hoschek & Szóka, 2024; PwC, 2023; Loughran & McDonald, 2014).

Regulatory initiatives such as the Corporate Sustainability Reporting Directive (CSRD), the European Sustainability Reporting Standards (ESRS) and the International Sustainability

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Standards Board (ISSB) standards have established a formal architecture for sustainability reporting. Yet compliance remains challenging. Even under harmonised reporting requirements, companies retain substantial discretion in interpreting materiality, selecting indicators and structuring narratives. As a result, ESG disclosure practices continue to vary widely. The Chief Financial Officers (CFO) plays a particularly influential role in shaping these outcomes, as materiality decisions, methodological assumptions and the presentation of sustainability information depend heavily on managerial judgement (Christensen et al., 2021; Grewal et al., 2020)

A growing body of research suggests that these decisions are systematically influenced by cognitive biases. Status-quo tendencies, loss aversion, information overload and framing effects affect which sustainability information is emphasised, downplayed or omitted (Christensen et al., 2021; Leite de Almeida et al., 2024; Martiny et al., 2024). This creates a paradoxical situation: regulatory harmonisation increases formal consistency, yet organisations may still fail to achieve the substantive transparency and comparability intended by standard setters.

Behavioural economics provides a promising lens for addressing this gap. Nudges-subtle adjustments to decision environments that guide choices without restricting autonomy (Thaler & Sunstein, 2008) have proven effective in improving information processing across various domains. Evidence from sustainability and corporate reporting shows that salience can improve clarity (Hąbek & Wolniak, 2016), social norms can support alignment with recognised practices (Gao et al., 2022), and defaults can reduce omissions in disclosures (Sunstein, 2014). However, existing behavioural interventions have primarily targeted external stakeholders such as investors, employees or consumers. The behavioural mechanisms that influence CFO decision-making in ESG reporting remain largely unexplored, despite the central role of CFOs in translating regulatory requirements into organisational practice.

This study addresses this gap by developing a behaviourally informed ESG-nudging framework that focuses on the decision environment of CFOs. It identifies key cognitive biases that shape ESG reporting, links these biases to suitable nudge mechanisms and outlines how behavioural interventions can reduce distortions and strengthen the transparency, credibility and consistency of sustainability disclosures. The study makes three contributions to the literature. First, it advances behavioural corporate reporting research by conceptualising CFOs as internal choice architects who shape the informational and structural conditions of ESG disclosure. Second, it develops the Behavioural ESG-Nudging Framework, which systematically connects CFO-specific cognitive biases with empirically validated nudge mechanisms. Third, it provides actionable design implications for reporting tools, templates and organisational processes that integrate behavioural insights into ESG reporting practice. Based on this foundation, the study examines how a behaviourally informed framework can support CFOs in mitigating cognitive biases and improving the transparency and consistency of sustainability reporting. The remainder of the paper is structured as follows: Section 2 outlines the theoretical foundations of ESG reporting and behavioural decision architecture. Section 3 describes the methodological approach. Section 4 presents the Behavioural ESG-Nudging Framework and its implications.

2. Theoretical Foundation

Environmental, Social and Governance reporting refers to the systematic collection and presentation of non-financial information on a company's environmental performance, social practices and governance structures. The idea behind this form of reporting is straightforward: stakeholders should receive reliable and comparable information that helps them assess long-term risks and opportunities (Bansal & Knox-Hayes, 2013; Hahn et al., 2023; Kotsantonis et al., 2016). Over the past years, what once depended largely on voluntary disclosure has shifted towards a regulated system. In the European Union, for example, the CSRD and the ESRS now set clear rules and require external assurance of sustainability information (EFRAG, 2023; European Commission, 2022). Internationally, the ISSB's S1 and S2 standards serve as another important

point of reference (Eccles et al., 2014; IFRS Foundation, 2023). A core idea shared by these frameworks is the principle of double materiality, meaning that firms must report both how sustainability issues affect their financial situation and how their own activities influence society and the environment (Baumüller & Sopp, 2022; Girella et al., 2022). Even with this growing alignment in reporting rules, companies still have substantial room for interpretation when deciding what to disclose and how. CFOs are especially influential here, since they sit at the intersection of financial reporting, strategy and communication with investors. Their decisions about what counts as material, which indicators to include, and how to address methodological uncertainties shape the reliability and comparability of ESG reports (Christensen et al., 2021; PwC, 2023; Grewal et al., 2020). These choices are made in an environment marked by complex regulations, diverse stakeholder expectations and large volumes of information. Such conditions are known to foster cognitive biases (Shefrin, 2001). In practice, this can mean that status-quo preferences slow the adoption of new reporting requirements, loss aversion shifts attention towards short-term compliance costs or information overload leads to selective disclosure (Eppeler & Mengis, 2004; Kahneman & Tversky, 1979). Nudge theory (Thaler & Sunstein, 2008) offers a set of tools that can help counteract these behavioural tendencies. Nudges alter the decision environment in subtle ways that support better choices while preserving autonomy. Defaults, salient information, reframing and social comparisons have proven effective in many areas such as savings, energy consumption and tax (Allcott, 2011; Benartzi et al., 2017; Madrian & Shea, 2001). Yet their potential for improving managerial decisions in ESG reporting has received little attention so far. Given the central role of CFOs in shaping sustainability disclosures, behavioural interventions could help create more consistent reporting practices, for instance by highlighting key indicators or guiding users through more complete reporting templates. At the same time, nudging within organisations is not without controversy. Critics argue that the boundary between supportive guidance and manipulation can be thin, and that cultural context shapes how acceptable such interventions are perceived to be (Bovens, 2009; Hansen & Jespersen, 2013). For this reason, approaches such as Nudge Plus boosts stress openness, participation and respect for autonomy (Hertwig & Grüne-Yanoff, 2017). These concerns are particularly relevant in ESG reporting, where credibility is possible to design decision architectures that support CFOs in dealing with complexity and nudge them to improve the quality and consistency of sustainability reporting.

3. Literature Review & Gap Analysis

Research on ESG frameworks and behavioural mechanisms has primarily focused on enhancing transparency, comparability, and capital market relevance through regulations and nudges. Four mechanisms dominate the literature: salience, social norms, defaults, and framing. While these approaches generate measurable effects on readability, consistency, and market outcomes, they primarily target external stakeholders, such as investors, employees, and consumers. In contrast, the role of Chief Financial Officers (CFOs) as internal choice architects, who actively shape disclosure architecture, remains largely underexplored. For instance, recent work on C-suite decision-making shows that behavioural nudges such as defaults, framing, and social norms can enhance executives' strategic choices without restricting freedom (Houna & Sticken, 2025). These insights validate C-level appropriateness of nudging, yet they do not target CFOs or reporting contexts, which justifies the current study's focus. This omission is particularly striking, given that ESG disclosure is a textbook case of bounded rationality (Simon, 1955). CFOs operate under conditions of limited information processing capacity, regulatory ambiguity, and competing stakeholder demands. The Dual-Process Theory (Kahneman & Tversky, 1979.) further suggests that decision-makers alternate between fast, intuitive (System 1) and slow, deliberative (System 2) reasoning. ESG reporting, with its complex data, multidimensional materiality, and long-term horizons, is especially prone to System 1 shortcuts and cognitive distortions. Research in Behavioural Corporate Governance (Shefrin, 2001) confirms that

managerial discretion is systematically shaped by biases such as status quo inertia, loss aversion, and framing effects. However, despite these theoretical insights, ESG reporting research has not explicitly integrated behavioural economics into the analysis of CFO decision-making.

Saliency nudges have received the most attention in the context of reporting. Empirical evidence demonstrates that textual readability and linguistic clarity influence capital-market reactions. Loughran & McDonald (2014) show that more readable financial reports elicit positive investor responses, whereas (Lian et al., 2023; Yang et al., 2021) find that structured ESG disclosures reduce loan spreads. Bonsall & Miller (2016) demonstrate that lower narrative complexity is associated with stronger credit ratings and lower debt costs. Similarly, Hu et al. (2024) linked low readability to increased greenwashing risks and reduced transparency. Recent evidence further supports this link: Houna et al. (2025) demonstrate that clearer ESG disclosures reduce cognitive load and enhance decision relevance, underscoring the importance of saliency mechanisms in sustainability reporting. Beyond text, visualisation techniques such as tables and graphics improve cognitive accessibility and mitigate selective perceptions (Hąbek & Wolniak, 2016). These findings suggest that saliency mechanisms reduce information overload and processing bias. However, they largely address how investors and creditors interpret reports, whereas the question of how CFOs structure and produce reports remains unanswered. Norm-based nudges also influence this reporting. J. Gao et al. (2022) document strong peer effects in ESG disclosure practices, while Grewal et al. (2020) show that capital markets respond more strongly to the disclosure of material ESG topics, reinforcing sectoral benchmarking. These mechanisms highlight the role of social norms in promoting consistency and alignment across firms. However, the dynamics studied emphasise external pressures, not the internal cognitive processes through which CFOs determine materiality and disclosure depth.

Defaults are less explored in ESG reporting, although they are well documented in adjacent fields. Defaults significantly increase retirement savings participation (Madrian & Shea, 2001), raise organ donation rates (Johnson & Goldstein, 2003), and foster the adoption of sustainable energy tariffs (Pichert & Katsikopoulos, 2008). Gabriel et al. (2009) further show that default savings options stabilise long-term investment behaviour. These findings illustrate the robustness of defaults in overcoming the status quo inertia. In ESG disclosure, structured templates or predefined reporting modules can serve as defaults to enhance completeness and reduce opportunistic omissions. However, empirical evidence for defaults in CFO-driven reporting contexts is lacking.

Framing effects also play a central role in this process. Tversky & Kahneman (1981) famously demonstrated that identical information can trigger different risk preferences depending on its presentation. In sustainability communication, opportunity framing is more effective than risk framing (Morton et al., 2011). Krüger (2015) finds that capital market responses to CSR activities depend heavily on narrative framing, while Rossi & Candio (2023) show that reporting formats themselves moderate the effectiveness of ESG disclosures by shaping analyst forecast accuracy. These results emphasise that disclosure architecture itself, not only its content, fundamentally shapes decision-making outcomes. However, the framing choices of CFOs, who decide whether ESG information is presented as a risk, opportunity, or compliance exercise, remain unstudied.

Beyond these design-related mechanisms, emerging research has pointed to assurance, psychological traits, and structural determinants. Reimsbach et al. (2018) show that assurance of sustainability information increases investor confidence, but the effect weakens when assured financial data and unaudited ESG information are combined in integrated formats. This indicates that even formally verified disclosures are vulnerable to cognitive distortions when presented in complex report architectures. At the leadership level, Dabbebi et al. (2022) demonstrated that narcissistic CEOs are more likely to disclose social and governance activities, underscoring how individual psychological traits influence disclosure. Balogh et al. (2022) show that organisational attributes such as revenue, profitability, and workforce size predict ESG disclosure in large Czech firms, whereas löäboard-level characteristics do not. These findings

highlight that while resources matter, disclosures ultimately reflect managerial discretion. On a broader level, Korteling et al. (2023) argue that sustainability-related decisions are especially susceptible to cognitive biases because of their long-time horizons, experiential uncertainty, and multidimensional complexity. Importantly, they propose that targeted behavioural interventions, including nudges, can mitigate these distortions and support more sustainable decision-making.

Table 1 summarises the primary empirical studies on nudges in reporting-related contexts and illustrates that existing evidence largely focuses on external stakeholders, while CFOs remain systematically underrepresented. It highlights robust evidence for salience, norms, defaults, and framing among investors, employees, and consumers. However, as the last column indicates, CFOs, despite their centrality in the disclosure architecture, are systematically absent from these analyses.

Table 1: Empirical studies on nudges in ESG- and reporting-related contexts

Study	Nudge Type	Addressed Bias	Target Group	Context / Key Findings	CFO
Loughran & McDonald (2014)	Saliency (Readability)	Complexity/processing bias	Investors	Higher readability leads to more positive market reactions.	No
Du & Yu (2023)	Saliency (Readability)	Information overload	Investors, creditors	Readable ESG reports associated with lower loan spreads.	No
Bonsall & Miller (2017)	Saliency (Readability)	Complexity bias	Creditors	Lower narrative complexity linked to better bond ratings, lower cost of debt.	No
Hu (2024)	Saliency (Readability)	Selective perception, greenwashing risk	Public, investors	Low readability increases greenwashing risk; clarity fosters transparency.	No
Hąbek & Wolniak (2016)	Saliency (Visualization)	Selective perception	Public	Visualisation enhances transparency and comparability.	No
Gao et al. (2022)	Norms (Benchmarking)	Herding bias	Firms	ESG disclosure shaped by peer practices.	Indirectly
Grewal, Hauptmann & Serafeim (2020)	Norms (Materiality Benchmark)	Selection/prioritisation bias	Investors	SASB-defined material topics more value relevant.	No
Madrian & Shea (2001)	Defaults (Auto-enrolment)	Status quo inertia	Employees	Automatic enrolment boosts 401(k) participation.	No
Johnson & Goldstein (2003)	Defaults (Opt-out organ donation)	Status quo inertia	Citizens	Opt-out regimes double organ donation rates.	No
Pichert & Katsikopoulos (2008)	Defaults (Green tariffs)	Status quo inertia	Consumers	Green default tariffs increase sustainable energy adoption.	No
Carroll et al. (2009)	Defaults/Active decision	Status quo inertia	Employees	Default savings options stabilize long-term investment behaviour.	No
Morton et al. (2011)	Framing	Loss aversion	Citizens	Opportunity framing more effective in climate communication.	No
Krüger (2015)	Framing	Perception bias	Investors	CSR framing leads to differing capital market effects.	No

Source: Own illustration based on the reviewed literature

In parallel with behavioural research, regulatory frameworks have become the backbone of ESG disclosure. The CSRD and ESRS establish binding EU-wide requirements with an emphasis on double materiality and external assurance (Baumüller & Sopp, 2022). The ISSB’s IFRS S1 and S2 aim to ensure global comparability through an investor-oriented lens (IFRS Foundation, 2024). In contrast, the Global Reporting Initiative (GRI) adopts a stakeholder-oriented approach, enhancing inclusiveness but reducing comparability due to report heterogeneity (Boiral & Henri, 2017; He & Plumlee, 2020; Leeson & Kuszewski, 2023). The Sustainability Accounting Standards Board (SASB) provides industry-specific materiality guidance with demonstrated capital market relevance (Grewal et al., 2020; Khan et al., 2016). *Table 2* provides an overview of major ESG frameworks and highlights their limited consideration of behavioural and nudging-related aspects of disclosure. While these frameworks establish formal structures and minimum requirements, they remain silent on the behavioural dimension of disclosure: how decision-makers prioritise, frame, and communicate ESG information. This omission is particularly salient, given that CFOs operate at the intersection of regulatory compliance, capital market expectations, and internal strategic considerations.

Table 2: Overview of major ESG frameworks and their relation to nudges

Framework	Objective	Focus	Relation to Nudges	Example Studies
CSRD (2024)	Binding EU-wide sustainability reporting	Double materiality, external assurance	No guidance on decision architecture	Jokinen (2025); Baumüller & Sopp (2022)
ESRS (2023)	Operationalisation of CSRD with datapoints	Standardisation, KPI structure	Focus on content, not cognitive processes	EFRAG (2024); Girella et al. (2023)
ISSB/IFRS S1–S2 (2023)	Global comparability, investor focus	Climate-related risk integration	No behavioural support	IFRS Foundation (2024); KPMG (2025)
GRI (1997)	Stakeholder orientation, CSR transparency	Broad sustainability issues	No nudging elements	Bais et al. (2024); Plumlee et al. (2015)
SASB (2011)	Industry-specific materiality	Capital market relevance	Interpretation CFO-dependent, no nudges	Khan, Serafeim & Yoon (2016); Grewal et al. (2020)

Source: Own illustration based on the reviewed literature

Synthesising these streams reveals a critical implementation gap. Nudging research has demonstrated robust effects on external audiences, whereas regulatory frameworks define minimum disclosure requirements. Yet the behavioural processes of CFOs, the internal architects of ESG disclosure, remain unexamined. Evidence shows that managerial judgments are systematically shaped by cognitive biases (Christensen et al., 2021; Dyer et al., 2017), that assurance and integrated formats can unintentionally foster distortions (Reimsbach et al., 2018), and that psychological traits shape disclosure choices (Dabbebi et al., 2022).

Table 3 synthesises the reviewed literature by mapping cognitive biases in ESG reporting to the corresponding nudge mechanisms and empirical evidence. This highlights a critical implementation gap: while nudges have been validated across investors, consumers, and CEOs, no study has systematically addressed how CFOs can be supported through behavioural interventions to mitigate these distortions.

Table 3: Mapping cognitive biases in ESG reporting

Bias in ESG Reporting	Relevant Nudge Mechanism	Empirical Evidence	Gap at CFO Level
Information overload / complexity	Saliency (readability, visualisation)	Loughran & McDonald (2014); Du & Yu (2023); Bonsall & Miller (2017); Hu (2024); Hąbek & Wolniak (2016)	Nudges tested on investors and public perception, but not on CFOs as report producers.
Selective perception / greenwashing risk	Saliency & Assurance	Reimsbach et al. (2018)	CFOs decide format and integration, yet behavioural influences on these choices are unexplored.
Herding bias / peer pressure	Norms (benchmarking, sectoral rankings)	Gao et al. (2022); Grewal et al. (2020)	CFOs as choice architects mediating peer effects have not been analysed.
Status quo inertia	Defaults (templates, standardised modules)	Madrian & Shea (2001); Johnson & Goldstein (2003); Pichert & Katsikopoulos (2008); Carroll et al. (2009)	ESG templates as defaults remain theoretical; no empirical tests with CFO-driven disclosure.
Loss aversion / perception bias	Framing (opportunity vs. risk framing)	Tversky & Kahneman (1981); Morton et al. (2011); Krüger (2015); Rossi & Candio (2023)	CFO framing decisions (e.g., risk vs. opportunity narratives) remain unstudied.
Personality-driven disclosure bias	Nudge+ (awareness, accountability mechanisms)	Dabbebi et al. (2022)	No analysis of CFO-specific psychological traits shaping ESG reporting.
Structural / resource bias	Organisational design interventions	Balogh et al. (2022)	Structural drivers recognised, but interplay with CFO discretion remains a blind spot.
Sustainability-specific decision biases (uncertainty, long-term horizon, complexity)	Broad application of nudges across saliency, framing, norms	Korteling et al. (2023)	CFOs' role in mitigating sustainability-specific distortions has not been addressed.

Source: Own illustration based on Allcott (2011), Reimsbach et al. (2018), Balogh et al. (2022), and related studies.

4. Methodology

This study follows a theory-building approach based on an integrative literature review, which is well suited for developing new conceptual frameworks when evidence is fragmented and cannot be synthesised through meta-analysis (Jaakkola, 2020; Snyder, 2019; Torraco, 2005). This approach is particularly appropriate in the context of ESG reporting, where behavioural mechanisms, regulatory structures and managerial discretion have not yet been connected in a unified explanatory model. In contrast to traditional systematic reviews, the aim here is to connect insights from ESG reporting, behavioural economics and corporate governance to explain how behavioural mechanisms shape disclosure practice (Brocke et al., 2009; Gregor, 2006). The outcome of this integrative process is the development of a Behavioural ESG-Nudging Framework that links CFO-specific cognitive frictions to empirically established nudge mechanisms and generates theoretically grounded propositions for future empirical testing.

The literature search was conducted in Web of Science, Scopus and Google Scholar for the years 2000-2024. Keywords included "ESG reporting," "sustainability disclosure," "nudging," "behavioural biases," "decision architecture," and "corporate governance." Inclusion criteria required peer-reviewed journal articles in English that examined either ESG disclosure, reporting quality, or behavioural interventions; non-academic and unrelated work was excluded. This ensured coverage of key regulatory/accounting sources (e.g. Boiral et al., 2020;

Christensen et al., 2021) as well as behavioural decision-making research (e.g. Gao et al., 2022; Jin et al., 2023; Madrian & Shea, 2001).

The analysis proceeded in four steps. First, relevant research streams were identified through prior reviews (Boiral et al., 2020; Christensen et al., 2021) and empirical studies. Second, CFO-relevant frictions-status-quo inertia, information overload, loss aversion and framing sensitivity-were extracted from recent accounting and behavioural literature (Christensen et al., 2021; Leite de Almeida et al., 2024). Third, empirically supported nudges such as defaults, salience, framing and social norms (J. Gao et al., 2022; Jin et al., 2023; Madrian & Shea, 2001) were conceptually mapped to these frictions. Their transferability to ESG reporting is justified through analytical generalisation (Yin Robert, 2018), as similar cognitive patterns appear across contexts. Finally, the bias-nudge constellations were integrated into the Behavioural ESG-Nudging Framework, positioning CFOs as internal choice architects within the regulatory landscape shaped by CSRD, ISSB and ESRS.

5. Results

Cognitive Bias in ESG-Reporting of CFOs

The analysis of the reviewed literature reveals that CFO decision-making in ESG reporting is constrained systematically by a limited set of cognitive biases. Among the many behavioural mechanisms documented in managerial research, five distortions emerge as particularly relevant to reporting responsibilities: status-quo inertia, information overload, loss aversion, framing effects, and peer dynamics. The following sections elaborate on these biases, highlighting how they shape disclosure outcomes and constrain the effectiveness of regulatory frameworks.

The first source of distortion arises from the status quo tendencies. Research shows that managers frequently rely on incremental rather than transformative adaptations when faced with new regulations, reflecting a preference for established routines, even when they are no longer sufficient (Christensen et al., 2021; Samuelson & Zeckhauser, 1988). For CFOs, this implies that implementing new standards, such as the CSRD or ESRS, may be constrained by path dependency, in which existing templates and processes are perceived as safer and less resource-intensive than a substantial redesign.

Building on this inertia, CFOs are confronted with information overload. The integration of heterogeneous ESG indicators, from emissions and workforce diversity to governance structures, generates a volume and variety of data that exceeds bounded cognitive capacities. Evidence suggests that such overload increases the likelihood of selective disclosure and incoherent reporting structures (Eppler & Mengis, 2004; Wang et al., 2024) In practice, modular standards such as the ESRS can exacerbate these challenges, forcing CFOs to balance comprehensiveness against operational feasibility, thereby creating the risk of inconsistency.

Closely connected to these constraints is loss aversion, a mechanism highlighted in the prospect theory (Kahneman & Tversky, 1979). CFOs tend to overweight the immediate costs of expanded disclosure, such as higher reporting effort, reputational risks, or intensified market scrutiny, relative to its long-term benefits in terms of credibility, transparency, and access to capital. Empirical studies confirm that managers often prioritise short-term downside protection over sustainable disclosure strategies (Graham et al., 2005). Within ESG reporting, this can result in defensive narratives or the withholding of material information.

These cost-oriented tendencies are further shaped by framing effects, which systematically alter stakeholders' perceptions of disclosed information. Research demonstrates that identical information can yield diverging reactions depending on whether it is presented as a risk or an opportunity (Levin et al., 1998; Morton et al., 2011). In the ESG context, investors and rating agencies respond differently depending on the narrative chosen (Grewal et al., 2020). CFOs, as the central architects of reporting narratives, therefore, face the challenge of managing frames responsibly to avoid opportunistic bias and ensure comparability across firms.

Finally, peer dynamics exert a powerful influence on disclosure practices. Firms frequently align their ESG reporting with industry peers, reinforcing sectoral benchmarking but also risking homogenisation that overlooks firm-specific materiality (Gao et al., 2014). Because capital markets evaluate disclosure quality in relative terms, CFOs are particularly vulnerable to herding pressures, which can promote conformity over differentiation (Christensen et al., 2021)

Taken together, these five biases illustrate how the behavioural context of CFOs systematically constrains the quality of ESG reporting. They directly affect transparency, comparability, and stakeholder trust and form a robust foundation for developing targeted interventions. By mapping these distortions to empirically validated nudge mechanisms, the present study proposes a Behavioural ESG-Nudging Framework designed to mitigate such frictions and support CFOs as internal choice architects.

Mapping von Nudge-Mechanise auf CFO-Biases

Building on the identified cognitive biases, this section develops a systematic mapping between CFO-specific decision frictions in ESG reporting and suitable behavioural interventions. Rather than treating biases and nudges as isolated mechanisms, the analysis shows how different nudges target distinct types of friction: structural inertia, information-processing limits, perception distortions, and social pressures (Benartzi et al., 2017; Hummel & Maedche, 2019; Mertens et al., 2022).

In each case, the hypotheses are grounded in established empirical evidence and adapted to the context of CFO reporting. The detailed reasoning and empirical grounding for each bias nudge constellation are developed in the text, while *Table 4* provides a condensed overview that highlights the underlying CFO challenge, appropriate nudge mechanism, illustrative evidence, and derived hypothesis. This complementary structure ensures both conceptual depth and clarity of presentation, avoiding redundancy while making theoretical contributions more transparent.

Table 4: Mapping of CFO biases and suitable nudges in ESG reporting

Cognitive Bias	Underlying CFO Challenge	Nudge Mechanism	Illustrative Evidence	Derived Hypothesis
Status-quo bias	Persistence of established reporting routines despite new standards (CSRD, ISSB)	Default templates, pre-structured disclosure modules	Madrian & Shea (2001); Johnson & Goldstein (2003); Pichert & Katsikopoulos (2008)	H1: Defaults reduce inertia and foster consistency
Information overload	Selective or incomplete reporting due to complexity of ESG indicators	Saliency nudges (readability, executive summaries, KPI dashboards, visualisation)	Loughran & McDonald (2014); Du & Yu (2023); Hąbek & Wolniak (2016)	H2: Saliency nudges mitigate overload and improve comprehensiveness
Loss aversion	Overweighting short-term disclosure costs vs. long-term benefits	Opportunity framing (strategic framing of ESG as investment)	Kahneman & Tversky (1979); Morton et al. (2011); Levin et al. (1998)	H3: Opportunity framing reduces loss aversion and enhances quality
Framing effects	Inconsistent narratives reduce comparability and credibility	Consistent reporting logics, structured narratives	Entman (1993, 2004); Grewal et al. (2020)	H4: Consistent framing reduces opportunism and increases comparability

Cognitive Bias	Underlying CFO Challenge	Nudge Mechanism	Illustrative Evidence	Derived Hypothesis
Peer/herding effects	Alignment with competitors fosters homogenisation, neglecting firm-specific materiality	Norm-based nudges (benchmarking, rankings, peer comparisons)	Gao, Lisic & Zhang (2022); Allcott (2011); Schultz et al. (2007); Hallsworth et al. (2017)	H5: Norm nudges reduce herding and promote disclosure consistency

Source: Own illustration based on the reviewed literature

Managerial disclosure behaviour is shaped not only by external regulations but also by entrenched cognitive frictions. A central distortion arises from the persistence of established reporting routines, which reflect the well-documented status quo bias (Samuelson & Zeckhauser, 1988). Empirical evidence shows that firms often adapt incrementally rather than transforming reporting practices even under major reforms (Christensen et al., 2021). Research on defaults demonstrates that pre-structured choices can counteract such inertia, as seen in domains ranging from retirement savings (Madrian & Shea, 2001) to organ donation (Johnson & Goldstein, 2003), and green energy adoption (Pichert & Katsikopoulos, 2008).

Recent evidence also highlights that regulatory disclosure requirements can act as *de facto* defaults by reducing managerial discretion. Cicchiello et al. (2023) show that the EU's Non-Financial Reporting Directive significantly improved ESG performance and disclosure effectiveness, while Do & Vo (2023) find that mandatory ESG disclosure reduces corporate default risk across emerging markets, functioning as a governance substitute. These findings suggest that default-like mechanisms, whether embedded in choice architecture or regulation, systematically enhance the quality of disclosure. Regarding ESG reporting, default-based disclosure modules and templates can lower switching costs, standardise practices, and counteract inertia in CFO decision-making. The theoretical and empirical logic suggests Hypothesis 1: Default-based templates reduce the status-quo bias of CFOs and foster more consistent ESG disclosures.

The risk of information overload is closely linked to structural inertia. CFOs must integrate a wide array of ESG indicators, which can exceed decision-makers' cognitive capacity (Eppler & Mengis, 2004), often resulting in selective or incomplete disclosures. Recent empirical studies directly in the ESG context highlight the importance of readability: Hao & Wu (2024) demonstrate that higher readability in ESG reports is associated with lower bank loan spreads, while Krasniqi & Wellenstam (2024) find that enhanced legibility and structured reporting reduce financing costs. These findings support the premise that salience nudges, such as executive summaries, KPI dashboards, and visual highlights, can mitigate cognitive overload and foster comprehensive reporting. Accordingly, Hypothesis 2 proposes: Salience nudges reduce information overload for CFOs and improve the comprehensiveness of ESG disclosure.

A further distortion arises from loss aversion, in which the short-term costs of extensive disclosure are overweighted relative to its long-term benefits (Kahneman & Tversky, 1979; Shefrin, 2001). Prior research shows that managers frequently prioritise downside protection over credibility and transparency, even when this undermines long-term market trust (Graham et al., 2005). Recent evidence further substantiates this behavioural tendency in ESG contexts: Daugaard et al. (2024) demonstrate in a field experiment that opportunity-oriented framing significantly increases sustainable investment engagement, highlighting that positively framing long-term benefits can counteract the overweighting of immediate costs. Similarly, Hoos et al. (2025) shows that CFOs often struggle with complex ESG dashboards and reporting requirements, reinforcing the need for clear and strategically framed disclosure to prevent defensive reporting behaviour. Taken together, these findings suggest that framing mechanisms can mitigate the adverse effects of loss aversion by reframing disclosure not as a cost factor but as a strategic opportunity. Accordingly, Hypothesis 3 states that opportunity-oriented framing reduces CFOs' loss aversion and enhances the quality of ESG disclosure.

Beyond individual cost–benefit perceptions, narrative framing plays a pivotal role in shaping credibility and comparability in ESG reporting. Recent Large Language Model (LLM)-based analyses reveal a homogenization of narrative styles across firms within the same sector, indicating convergence in storytelling patterns that enhance comparability (Bronzini et al., 2024). Furthermore, trend analysis of ESG disclosures shows convergent messaging over time, reflecting firms’ tendencies to adopt similar narrative structures to reduce stakeholder uncertainty and boost behavioural legitimacy (Xia et al., 2023). These empirical insights affirm that consistent and structured narratives underpin comparability and credibility in ESG reporting. Thus, Hypothesis 4 naturally follows: Consistent framing strategies reduce opportunistic behaviour and enhance comparability in ESG reporting.

Finally, disclosure behaviour is significantly shaped by peer dynamics. Recent empirical evidence points to strong peer effects in ESG disclosure: Zhao et al. (2018) show, using IV-based analysis of over 32,000 Chinese A-share firms, that companies systematically align their ESG reporting with that of industry peers. Gu et al. (2025) further corroborate these findings, identifying significant peer effects in both the quantity and quality of environmental disclosures across regional peer groups. Moreover, Keeve (2022) demonstrates that peer benchmarking via ESG ratings, rather than mere industry affiliation, drives voluntary disclosure practices among unregulated firms, especially following mandated disclosures by comparable firms. Recognising this convergence tendency, norm-based nudges, such as benchmarking or sectoral rankings, can harness rather than inhibit peer pressure. They can guide CFOs toward improving disclosure quality without sacrificing firm-specific materiality. Thus, Hypothesis 5 posits: Norm-based nudges reduce herding effects among CFOs and enhance the consistency of ESG disclosure.

Taken together, defaults and salience mechanisms primarily address structural frictions (status-quo inertia and information overload), while framing and norm-based nudges target perceptual and social frictions. This distinction is critical because CFOs operate simultaneously under regulatory constraints and in capital-market communication. To integrate these insights, *Figure 1* presents the Behavioural ESG-Nudging Framework. It links regulatory requirements and internal ESG data (input level), the cognitive biases shaping CFO disclosure decisions (bias level), and the corresponding nudge mechanisms (nudge level) to the expected reporting outcomes. The framework highlights the central theoretical contribution of this study: CFOs are conceptualised as internal choice architects whose behaviour can be shaped not only by regulation but also by behavioural decision architectures.

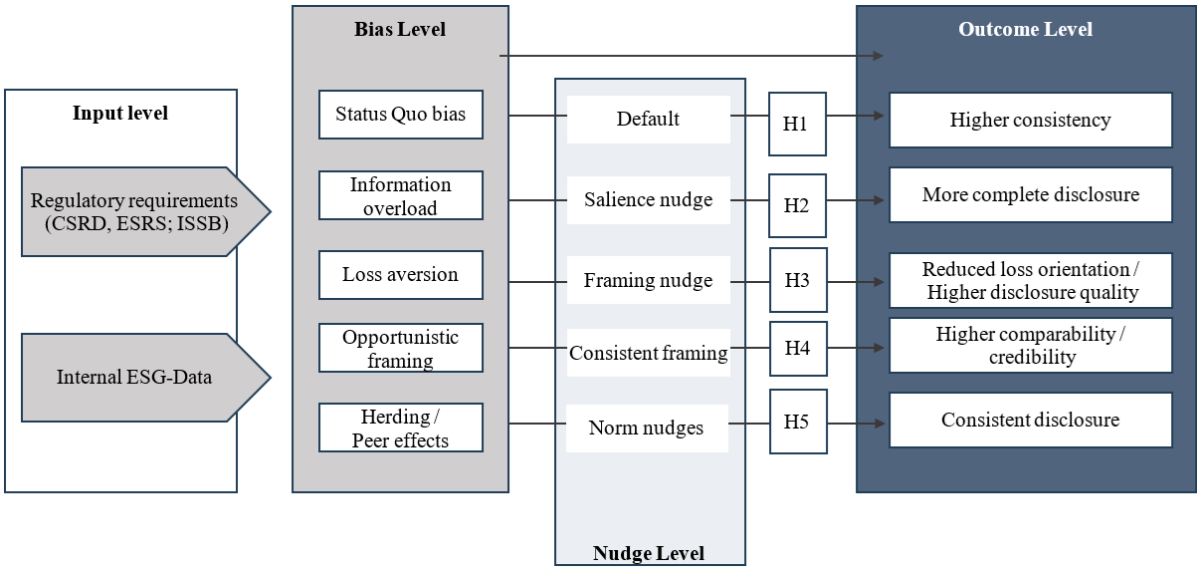


Figure 1: Behavioural ESG-Nudging Framework
 Source: Own illustration based on the reviewed literature

6. Discussion

The framework developed in this study shows how behavioural mechanisms shape the selection, prioritisation, and communication of ESG information. The initial assumption was that biases such as status-quo persistence, information overload, loss aversion, framing effects and herding can weaken the quality of sustainability reporting. The analysis suggests that relatively simple interventions-structured defaults, salient metrics, clear visualisations and peer-based reference points-can ease these distortions and lead to reports that are more consistent and easier to interpret. A central aim of this work was to give greater attention to the role of CFOs. Much of the existing literature focuses on investors or consumers, yet the findings here illustrate that decision-makers within firms are equally influenced by bounded rationality.

By linking regulatory standards (CSRD, ISSB, ESRS) with behavioural insights, the framework offers a way to explain why ESG disclosures continue to differ widely even when companies follow the same rules. From a practical standpoint, the framework highlights how CFOs and their teams can organise reporting processes more effectively. Pre-defined templates reduce inertia, visual tools handle complexity, consistent frames support clarity and peer benchmarks provide orientation. These mechanisms can be integrated into digital reporting systems, helping firms communicate more transparently while managing regulatory demands more smoothly.

However, the discussion also needs to acknowledge the trade-offs that come with behavioural interventions. Nudges are not neutral. Defaults may streamline reporting, but risk creating a box-ticking mentality. Frames can increase credibility but may also shift perceptions in problematic ways. Peer benchmarks help users position their results, but they can also reinforce herd behaviour and weaken firm-specific materiality. These tensions underline that nudges must be applied with care.

The effectiveness of the framework also depends on contextual factors. Organisational resources, cultural norms and regulatory environments all influence how strongly behavioural tools work. Small firms may experience different frictions than large multinationals, and cultural attitudes can determine whether defaults are perceived as helpful or intrusive. Growing digitalisation-especially the use of AI-opens new possibilities for decision support but also introduces risks such as automation bias.

For policymakers, the core message is that regulation alone cannot ensure high-quality ESG reporting. Standard-setters may want to incorporate behavioural guidance into their documents, recognising that CFOs' choices are shaped not only by formal requirements but also by the decision environments in which they operate.

7. Limitations and Future Research

Despite its conceptual contribution, this study is subject to limitations that also open clear directions for future research. First, the Behavioural ESG-Nudging Framework is derived from an integrative literature review and has not yet been empirically tested. While this theory-building approach is appropriate for synthesising fragmented research streams, empirical validation remains a necessary next step.

Future research could address this limitation through experimental research designs that simulate ESG reporting environments. Laboratory or online experiments may expose CFOs, finance managers, or sustainability reporting professionals to reporting templates that systematically vary in behavioural design (e.g., default structures, salience cues, or framing). Dependent variables could include disclosure completeness, internal consistency, perceived cognitive load, and perceived reporting quality.

Beyond experimental settings, field studies in organisational contexts would provide valuable insights into how behavioural interventions operate under real reporting conditions. For

example, CFO-led reporting teams could be observed before and after the introduction of behaviourally designed reporting tools, templates, or digital dashboards. Such designs would allow researchers to assess the persistence of nudging effects over time and their interaction with organisational routines, regulatory pressure, and internal governance structures.

In addition, survey-based vignette studies represent a complementary empirical approach. CFOs could be presented with hypothetical ESG reporting scenarios that differ in decision architecture, enabling the isolation of individual nudging mechanisms and their effects on materiality assessments, framing choices, and risk perceptions.

Finally, cross-country comparative research constitutes an important avenue for extending the framework. Given the heterogeneity of sustainability reporting regimes—such as the CSRD/ESRS framework in the European Union versus ISSB-based standards in other jurisdictions—future studies could examine how institutional, cultural, and regulatory contexts moderate the effectiveness of behavioural interventions. Such analyses would enhance the external validity of the framework and clarify its applicability across different reporting environments.

Taken together, these research directions would enable a systematic empirical examination of the Behavioural ESG-Nudging Framework and deepen the understanding of how behavioural decision architectures can support high-quality ESG reporting in practice.

8. Conclusion

This study examined why ESG disclosures differ so markedly despite detailed regulation. Standards such as CSRD, ESRS, and ISSB define reporting content, but they do not address how decision-makers organise, filter, or communicate information. The Behavioural ESG-Nudging Framework closes this gap by viewing CFOs as internal choice architects whose decisions are shaped by cognitive biases. By combining behavioural economics with corporate governance, the framework explains persistent disclosure heterogeneity under harmonised rules. It connects key biases—such as status-quo inertia, information overload, loss aversion, framing and herding—with nudges validated in prior research, including defaults, salience, framing techniques and social norms. Practically, the framework provides guidance for designing reporting templates and digital tools that integrate nudging elements to reduce friction, improve report clarity and support more comparable sustainability information. Future work should test the framework empirically through field experiments, industry comparisons and cross-cultural studies. Such evidence could help shift ESG reporting from a compliance-focused activity to a behaviourally informed practice that better supports decision-making.

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Web resources were last accessed on 31 March 2026.