

Authors' contribution/
 Wkład autorów:
 A. Study design/
 Zaplanowanie badań
 B. Data collection/
 Zebranie danych
 C. Statistical analysis/
 Analiza statystyczna
 D. Data interpretation/
 Interpretacja danych/
 E. Manuscript preparation/
 Przygotowanie tekstu
 F. Literature search/
 Opracowanie
 piśmiennictwa
 G. Funds collection/
 Pozyskanie funduszy

CASE STUDY
 JEL Code: Q56, M14, M48,
 D82
 Submitted:
 Abril, 2026
 Accepted:
 Mayo, 2026

Tables:8
 Figures:0
 References:21

STUDIUM PRZYPADKU
 Klasyfikacja JEL Q56,
 M14, M48, D82
 Zgłoszony:
 kwiecień, 2026
 Zaakceptowany:
 maj, 2026

Tabele:8
 Rysunki:0
 Literatura:21

FORMAL ESRS COMPLIANCE DOES NOT FULLY ELIMINATE INFORMATION ASYMMETRY IN ESG REPORTING: EVIDENCE FROM A SCREENING – BASED CASE STUDY

FORMALNA ZGODNOŚĆ Z SYSTEMEM ESRS NIE ELIMINUJE W PEŁNI ASYMETRII INFORMACYJNEJ W SPRAWOZDAWCZOŚCI ESG: WNIOSKI Z BADANIA OPARTEGO NA ANALIZIE SELEKCYJNEJ

Štěpán Franc^{1,A-G}, Petra Holendova^{1,E}

¹Faculty of Business and Management, Brno University of Technology, Czech Republic
¹Wydział Biznesu i Zarządzania, Politechnika w Brnie, Republika Czeska

Citation: Formal ESRS Compliance Does Not Fully Eliminate Information Asymmetry in ESG Reporting: Evidence from a Screening-Based Case Study / Formalna zgodność z systemem ESRS nie eliminuje w pełni asymetrii informacyjnej w sprawozdawczości ESG: wnioski z badania opartego na analizie selekcyjnej, (2026) / *Economic and Regional Studies / Studia Ekonomiczne i Regionalne*, 19(3), 539-553. <https://doi.org/10.2478/ers-2026-0031>

Abstract

Environmental, social and governance (ESG) reporting is widely regarded as a mechanism for reducing information asymmetry between firms and their stakeholders, particularly under the European Sustainability Reporting Standards (ESRS). However, regulatory compliance does not necessarily ensure high informational quality. This study examines the extent to which information asymmetry persists within ESG reporting prepared in accordance with ESRS. Using a qualitative case study design, a screening-based methodological framework is applied to a publicly available and externally audited ESG report. Information asymmetry is assessed across four dimensions: disclosure completeness, content specificity, verifiability, and truthfulness, using a weighted scoring model. The findings indicate that while many disclosures exhibit low or negligible information asymmetry, medium and, in isolated cases, high levels persist, particularly in areas related to financial impacts of sustainability risks. The results suggest that formal ESRS compliance and external assurance do not fully eliminate informational imbalances.

Keywords: information asymmetry, ESG reporting, sustainability disclosure, European Sustainability Reporting Standards, screening methodology

Streszczenie

Sprawozdawczość w zakresie czynników środowiskowych, społecznych i ładu korporacyjnego (ESG) jest powszechnie postrzegana jako mechanizm zmniejszający asymetrię informacyjną między przedsiębiorstwami a ich interesariuszami, zwłaszcza w ramach europejskich standardów sprawozdawczości w zakresie zrównoważonego rozwoju (ESRS). Jednak zgodność z przepisami niekoniecznie gwarantuje wysoką jakość informacji. Niniejsze badanie analizuje, w jakim stopniu asymetria informacyjna utrzymuje się w sprawozdaniach ESG sporządzanych zgodnie

Address for correspondence / Adres korespondencyjny: Štěpán Franc, Faculty of Business and Management, Brno University of Technology, Kolejní 2906/4, 61200, Brno, Czech Republic; (email: Stepan.Franc@vut.cz), ORCID: 0000-0003-3355-8425

Journal included in: AgEcon Search; AGRO; Arianta; Baidu Scholar; BazEkon; Cabell's Journalytics; CABI; CNKI Scholar; CNPIEC – cnpLINKer; Dimensions; DOAJ; EBSCO; ERIH PLUS; ExLibris; Google Scholar; Index Copernicus International; J-Gate; JournalTOCs; KESLI-NDSL; MIAR; MyScienceWork; Naver Academic; Naviga (Softweco); Polish Ministry of Science and Higher Education; QOAM; ReadCube, Research Papers in Economics (RePEc); SCILIT; Scite; SCOPUS, Semantic Scholar; Sherpa/RoMEO; TDNet; Ulrich's PeriodicalsDirectory/ulrichsweb; WanFang Data; WorldCat (OCLC); X-MOL.

Copyright: © 2026, The Authors. Publisher: John Paul II University in Białą Podlaska, Poland.

z ESRS. Wykorzystując jakościowy projekt badania przypadku, zastosowano ramy metodologiczne oparte na selekcji do analizy publicznie dostępnego i poddanego zewnętrznemu audytowi sprawozdania ESG. Asymetrię informacyjną oceniono w czterech wymiarach: kompletności ujawnionych informacji, szczegółowości treści, weryfikowalności oraz prawdziwości, stosując model punktacji ważonej. Wyniki wskazują, że choć wiele ujawnionych informacji charakteryzuje się niską lub znikomą asymetrią informacyjną, to nadal utrzymują się średnie, a w pojedynczych przypadkach wysokie poziomy asymetrii, szczególnie w obszarach związanych z finansowymi skutkami ryzyk związanych ze zrównoważonym rozwojem. Wyniki sugerują, że formalna zgodność z ESRS oraz zewnętrzna weryfikacja nie eliminują w pełni nierównowagi informacyjnej.

Słowa kluczowe: information asymmetry, ESG reporting, sustainability disclosure, European Sustainability Reporting Standards, screening methodology

Introduction

ESG reporting has become a central instrument of corporate disclosure, reflecting growing societal, regulatory and investor demand for transparency regarding firms' non-financial performance. ESG information is increasingly used to assess long-term risks, corporate resilience and sustainability impacts that are not captured by traditional financial indicators. Prior research shows that ESG disclosure influences firm valuation, cost of capital, investor behavior and reputational outcomes, particularly in capital markets characterized by information uncertainty (Alsayegh et al., 2020; Friede et al., 2015; Gillan et al., 2021).

In response to the expanding role of ESG information, regulators have introduced mandatory reporting frameworks aimed at standardizing sustainability disclosures. Within the European Union, the Corporate Sustainability Reporting Directive (CSRD) and the ESRS represent a major regulatory shift toward harmonized, comprehensive and decision-useful ESG reporting. These frameworks are designed to improve comparability across firms and to reduce information asymmetries between companies and external stakeholders by defining required disclosure topics, metrics and qualitative explanations (European Commission, 2023). However, the introduction of standardized requirements does not automatically guarantee high informational quality or eliminate strategic discretion in reporting practices. In the context of CSRD and ESRS, this issue is particularly relevant because the purpose of the standards is not merely to increase the volume of disclosed sustainability information, but to improve its comparability, usefulness and credibility for report users. Assessing whether ESRS-based disclosure actually reduces information asymmetry is therefore directly relevant to the regulatory logic of standardized sustainability reporting.

A growing body of empirical literature highlights persistent shortcomings in ESG reporting, including selective disclosure, narrative ambiguity, lack of quantification and limited external verification. Several studies document that firms tend to emphasize favorable sustainability indicators while downplaying or omitting negative impacts, a practice commonly associated with greenwashing (Delmas and Burbano, 2011; Lyon and Montgomery, 2015; Yu et al., 2025). Others note that ESG disclosures frequently rely on internally generated data and firm-specific methodologies, which complicates comparability and weakens stakeholders' ability to assess credibility (Clément et al., 2023; Kotsantonis et al., 2016). As a result, extensive ESG disclosure does not necessarily translate into improved transparency and may, under certain conditions, increase confusion rather than reduce uncertainty.

These challenges can be systematically examined through the lens of information asymmetry, a foundational concept in economic theory describing situations in which one party possesses superior or private information relative to others. In his seminal contribution, George Akerlof (1970) demonstrated that asymmetric information can lead to adverse selection and market failure, as exemplified by the degradation of quality in markets where buyers cannot distinguish between high- and low-quality products. Subsequent theoretical advances by Michael Spence (1973) and Joseph E. Stiglitz (2000) further elaborated the mechanisms through which economic agents attempt to mitigate information asymmetry via signaling and screening.

In corporate disclosure settings, firms typically act as the informed party, possessing detailed knowledge of their internal operations, risk exposure and sustainability impacts, while investors, regulators and other stakeholders operate under conditions of limited observability. ESG reporting is often implicitly treated as a signaling mechanism, whereby firms voluntarily or mandatorily disclose sustainability information to demonstrate legitimacy, responsibility or superior performance. However, signaling theory assumes that signals are sufficiently costly or verifiable to be credible. When ESG disclosures are vague, selectively framed or weakly verifiable, signaling may lose its disciplinary function and instead reinforce informational imbalances (Connelly et al., 2011).

Screening theory offers an alternative perspective by shifting attention to the role of information users. Screening occurs when the less informed party actively evaluates available information to classify, compare or infer unobservable characteristics. In financial markets, screening mechanisms are commonly employed by analysts, auditors and regulators through standardized metrics, disclosure requirements and verification procedures (Rothschild and Stiglitz, 1976). Within the ESG context, however, systematic screening tools remain underdeveloped, particularly with respect to assessing the internal quality, completeness and credibility of ESG reports themselves.

Recent empirical studies provide evidence that ESG reporting may not consistently reduce information asymmetry and, in some cases, may exacerbate it. Agapova and Garanina (2024) find that more extensive ESG disclosure is associated with higher levels of information asymmetry, as firms respond to stakeholder uncertainty with increased voluntary guidance. Allen et al. (2023) show that ESG narratives are often strategically ambiguous, creating room for impression management rather than substantive transparency. Other research suggests that ESG ratings and disclosures may reflect communication effectiveness and reputational positioning more strongly than actual environmental or social performance (Khan et al., 2021; Kathan et al., 2025).

The economic consequences of such informational distortions are non-trivial. Studies indicate that greenwashing practices increase the likelihood of stock price crashes by concealing negative information until it is abruptly revealed (Liu et al., 2024). Market reactions to greenwashing allegations are consistently negative, with documented declines in stock prices following public exposure (Akyildirim et al., 2023). High-profile cases such as Volkswagen's Dieselgate or BP's sustainability rebranding campaigns further illustrate the reputational and financial risks associated with misleading ESG communication (Hao et al., 2025).

Despite these insights, existing ESG literature has largely focused on disclosure outcomes, such as market valuation, cost of capital or regulatory compliance, while paying limited attention to ESG reports as potential sources of information asymmetry in their own right. In particular, there is a lack of methodological approaches that systematically assess disclosure quality within ESG reports across multiple dimensions, including completeness, specificity and verifiability. This gap is especially relevant under the ESRS regime, where standardized disclosure requirements coexist with substantial managerial discretion in data selection, aggregation and narrative framing.

Against this background, this study adopts a screening perspective and develops a structured methodological framework for identifying and assessing information asymmetry within ESG reports prepared under ESRS. Despite the rapid institutionalization of ESG reporting under the ESRS framework, limited research has systematically examined whether formally compliant ESRS reports effectively reduce information asymmetry at the level of individual disclosure activities. Existing studies predominantly focus on market outcomes of ESG disclosure, such as valuation effects, cost of capital, investor reactions or greenwashing risks, while far less attention has been devoted to assessing ESG reports themselves as potential sources of informational imbalance. Moreover, while information asymmetry and signaling theory are frequently invoked in discussions of ESG disclosure, empirical applications that operationalize these theoretical constructs at the disclosure-item level remain underdeveloped. In particular, structured screening-based tools that allow stakeholders to evaluate the internal quality, completeness and verifiability of ESRS disclosures are largely absent from the literature.

This study contributes in three ways. First, it extends information asymmetry, signaling and screening theory to the level of individual ESRS disclosure activities and explains why standardization alone may not ensure informational symmetry. Second, it develops a structured and replicable screening-based framework that operationalizes information asymmetry across four dimensions: completeness, specificity, verifiability and truthfulness. Third, it provides early case-based evidence that even a formally ESRS-compliant and externally assured ESG report may exhibit residual information asymmetry in selected disclosure areas, particularly where sustainability considerations intersect with financial impacts and strategic decision making.

The study is guided by the following research question:

RQ: To what extent does information asymmetry occur within an ESG report prepared under the European Sustainability Reporting Standards?

Based on the theoretical framework of information asymmetry and the exploratory design of the case study, the following analytical expectations are formulated:

Analytical Expectation 1: The analyzed ESG report exhibits exclusively low or negligible levels of information asymmetry across disclosure activities.

Analytical Expectation 2: The analyzed ESG report exhibits medium or higher levels of information asymmetry in at least some disclosure activities.

Given the exploratory single-case design of the study, **Analytical Expectations 1 and 2** are not treated as hypotheses for statistical testing but as analytical expectations that guide interpretation of the case findings. Their function is to clarify whether the analyzed report exhibits exclusively low or negligible information asymmetry or whether medium and higher levels also occur in selected disclosure activities. Methodological rigor is strengthened not through statistical inference, but through transparent scoring logic, explicit assessment dimensions and replicable coding rules.

1. Methodological framework

1.1. Research design and methodological approach

This study adopts a qualitative screening-based methodological approach aimed at identifying and assessing information asymmetry within ESG reports prepared under the ESRS. The research design is exploratory and methodological in nature, focusing on the development and demonstration of a structured assessment framework rather than on statistical generalization. The proposed framework is intended to support systematic evaluation of ESG disclosure quality and to enable comparison across reporting areas within a single report as well as across firms in future applications.

The study employs an exploratory single-case design intended to demonstrate the applicability of the proposed screening-based framework rather than to provide statistical generalization. The selected case therefore serves as an illustrative application through which disclosure-level information asymmetry can be systematically identified and assessed within an ESRS-based report.

The case was selected purposively because it met three criteria relevant to the methodological demonstration: it was publicly available, externally assured, and explicitly prepared in accordance with ESRS. These characteristics made it suitable for illustrating how disclosure-level information asymmetry may persist even in a formally compliant reporting context.

The methodological approach is grounded in information economics, particularly in screening theory as developed by Joseph E. Stiglitz, which emphasizes the role of the less informed party in actively evaluating available information in order to mitigate informational disadvantages. In the context of ESG reporting, external stakeholders typically lack direct access to internal corporate data and must rely on disclosed information whose completeness and credibility may vary. The screening perspective therefore provides an appropriate conceptual basis for assessing ESG reports as informational artifacts rather than as neutral representations of sustainability performance.

1.2. Unit of analysis and scope of assessment

The unit of analysis in this study is an individual ESG disclosure item corresponding to specific reporting activities defined by the ESRS framework. Each activity represents a distinct disclosure requirement related to environmental, social or governance dimensions. The assessment does not evaluate sustainability performance itself, but rather the informational quality of disclosures as presented in the ESG report. The sample was not constructed selectively. The analysis covers all disclosure activities identified in the analyzed ESG report as relevant reporting items within the scope of the company's ESRS-based sustainability statement ($N = 42$). If only a single activity appears under a particular ESRS area in the summary tables, this reflects the structure and content of the analyzed report rather than selective inclusion by the author. A complete list of assessed disclosure activities and their mapping to ESRS areas is provided in Appendix A to ensure full transparency of the analytical scope.

The framework is designed to be applicable to publicly available ESG reports prepared in accordance with ESRS requirements. It can be employed by regulators, auditors, analysts or researchers seeking to identify areas where reported information may be incomplete, insufficiently specified or difficult to verify, thereby generating information asymmetry between reporting entities and report users.

1.3. Assessment dimensions

Information asymmetry is operationalized through four core assessment dimensions that reflect key aspects of disclosure quality relevant for stakeholder decision making.

The first dimension, disclosure completeness, evaluates whether the required information is fully disclosed, partially disclosed or omitted. Incomplete or missing disclosures represent a primary source of information asymmetry, as they limit stakeholders' ability to assess material sustainability impacts and risks.

The second dimension, content specificity, assesses the degree to which disclosed information is presented in a concrete and decision-useful manner. Disclosures may be quantitative, detailed qualitative or overly general. Vague narratives and non-quantified statements reduce interpretability and hinder comparability, thereby increasing informational imbalance.

The third dimension, verifiability, captures whether disclosed information can be independently verified through external sources, audits or publicly accessible data. Information that lacks verifiable references or assurance mechanisms weakens credibility and increases reliance on managerial claims.

The fourth dimension, truthfulness, evaluates the consistency of disclosed information with available evidence and verified facts. Although full verification is not always possible, disclosures that contradict observable data or omit known material issues represent a significant source of information asymmetry. For each dimension, the assessment is based on explicit decision rules distinguishing complete versus partial disclosure, specific versus vague disclosure, verifiable versus non-verifiable information, and factually consistent versus constrained truthfulness assessment. The detailed coding rules are presented in Table 1.

Table 1. Coding rules for the assessment of information asymmetry

Dimension	Score	Operational meaning	Decision rule
Disclosure completeness	0	Fully disclosed	All material elements of the relevant ESRS disclosure requirement are clearly reported.
Disclosure completeness	1	Partially disclosed	The disclosure is present, but one or more relevant elements are missing, incomplete or insufficiently developed.
Disclosure completeness	2	Omitted	The disclosure is absent despite being relevant within the scope of the analyzed report.

Content specificity	0	Highly specific / quantitative	The disclosure includes quantitative indicators, clear definitions, or highly specific qualitative detail.
Content specificity	1	Moderately specific	The disclosure is informative but primarily qualitative, with limited quantification or incomplete methodological detail.
Content specificity	2	Vague / non-specific	The disclosure relies on broad, generic or ambiguous statements that limit interpretability and comparability.
Verifiability	0	Verifiable	The disclosure can be confirmed through external assurance, clearly traceable references, or publicly available supporting evidence.
Verifiability	1	Partially verifiable	The disclosure contains some traceable elements, but verification is incomplete or limited.
Verifiability	2	Non-verifiable	The disclosure lacks sufficient traceable support, references or assurance to allow external verification.
Truthfulness	0	Consistent with available evidence	The disclosure is consistent with available evidence and does not raise material factual concerns.
Truthfulness	1	Constrained assessment	No direct contradiction is observed, but external confirmation is limited or incomplete.
Truthfulness	2	Inconsistent / materially misleading	The disclosure is inconsistent with available evidence or omits a materially relevant issue in a way that creates a substantial risk of misleading interpretation.

Source: author's elaboration.

1.4. Scoring system and weighting scheme

Each assessment dimension is evaluated using a discrete scoring scale that reflects the severity of potential information asymmetry. For every ESG disclosure item, a categorical value is assigned to each dimension based on the observed quality of the disclosed information. Higher values indicate greater informational deficiencies and, consequently, a higher degree of information asymmetry.

Disclosure completeness is scored according to whether the required information is fully disclosed, partially disclosed or omitted. Content specificity reflects the extent to which information is presented in a concrete and decision-useful form, ranging from quantitative or detailed qualitative disclosure to vague or non-specific statements. Verifiability captures whether the disclosed information can be independently confirmed through external sources or assurance mechanisms. Truthfulness evaluates the consistency of disclosed information with available evidence and verified facts.

To account for their unequal impact on transparency and stakeholder decision making, individual dimensions are assigned fixed weights. Disclosure completeness carries the highest weight (35 %), as missing or incomplete information fundamentally undermines transparency. Truthfulness is weighted at 30 %, reflecting its central role in maintaining trust in ESG reporting. Content specificity and verifiability are assigned weights of 20 % and 15 %, respectively, reflecting their supporting role in enhancing interpretability and credibility.

To improve replicability, each disclosure item is evaluated using the same sequential procedure: first, the item is matched to the relevant disclosure requirement; second, each of the four dimensions is assessed using predefined qualitative criteria; third, categorical scores are assigned; and fourth, the weighted composite score is calculated. The weighting scheme reflects the assumed relative importance of disclosure deficiencies for stakeholder decision making, with completeness and truthfulness treated as more consequential than specificity and verifiability. To further strengthen transparency, Table 1 presents the coding protocol, while Appendix A provides the full list of assessed disclosure items, their partial scores, weighted scores and final categories. The composite information asymmetry score for each disclosure item is calculated as a weighted sum of the individual dimension scores. This additive structure ensures transparency, traceability and full reproducibility of the assessment process.

1.5. Classification of information asymmetry levels

Composite scores are translated into ordinal categories representing qualitatively distinct levels of information asymmetry. A score of zero represents a state of no information asymmetry, in which disclosures are complete, sufficiently specific, verifiable and consistent with available evidence. The classification thresholds used to distinguish between no, very low, low, medium and high information asymmetry are reported in Table 2.

Table 2. Thresholds for classification of information asymmetry

Composite score	Category
0.00	No asymmetry
0.01–0.50	Very low asymmetry
0.51–1.00	Low asymmetry
1.01–1.60	Medium asymmetry
1.61–2.00	High asymmetry

Source: author's elaboration.

Very low asymmetry corresponds to cases where only minor informational deficiencies are present and do not materially affect stakeholder decision making. Low asymmetry reflects small but noticeable gaps in disclosure quality, such as limited specificity or partial verifiability, which can typically be addressed through additional clarification. Medium asymmetry indicates structurally relevant deficiencies across one or more dimensions that may significantly influence stakeholders' ability to assess sustainability-related risks and performance. High asymmetry represents a critical state in which missing, unverifiable or misleading information creates a substantial informational imbalance between the reporting entity and report users.

The classification thresholds are defined *ex ante* as interpretive categories intended to distinguish between minor, moderate and materially relevant disclosure deficiencies. Their purpose is not to establish statistical cut-offs, but to support consistent qualitative interpretation of cumulative disclosure weaknesses across items. To strengthen methodological robustness, a brief sensitivity check was conducted using an alternative equal-weighting scheme.

As a robustness check, all disclosure activities were recalculated using an equal-weighting scheme (0.25 for each dimension). The main distributional pattern remained substantively unchanged. Only 5 out of 42 disclosure activities changed category, and in all cases the change was limited to an adjacent shift from low to very low asymmetry. No disclosure activity moved by more than one category, and the medium- and high-asymmetry items remained unchanged. These results indicate that the core findings are not driven solely by the original weighting structure (Table 3).

Table 3. Sensitivity check: original and equal-weight classification

Category	Original weighting	Equal weighting
No asymmetry	19	19
Very low asymmetry	9	14
Low asymmetry	7	2
Medium asymmetry	6	6
High asymmetry	1	1

Note: Under equal weighting, only 5 of 42 disclosure activities changed category, and all changes were limited to a one-step shift from low to very low asymmetry.

Source: author's elaboration.

1.6. Demonstration through a single case application

To demonstrate the applicability of the proposed framework, it is applied to a single publicly available ESG report prepared under the ESRS regime. The analysis is illustrative rather than inferential. Individual disclosure items are evaluated across all four dimensions, assigned categorical scores and aggregated into composite asymmetry scores using the predefined weighting scheme.

Because the framework is applied to a single publicly available report, the assessment of truthfulness is necessarily limited to consistency with available evidence and externally observable information. The case application is therefore illustrative and methodological rather than confirmatory.

The case application demonstrates how partial disclosure, insufficient content specificity, limited verifiability and constrained assessment of truthfulness may coexist within a formally compliant and externally assured ESG report. By quantifying these deficiencies, the framework enables systematic identification and comparison of information asymmetry across disclosure areas that would not be evident through compliance-based assessment alone.

2. Results

The screening framework was applied to a total of 42 disclosure activities identified in the ESG report prepared in accordance with the ESRS. Each activity was evaluated across four assessment dimensions: disclosure completeness, content specificity, verifiability and truthfulness. For each activity, dimension level scores were calculated and subsequently aggregated using the predefined weighting scheme to obtain a composite information asymmetry score. Information asymmetry is thus operationalized through four assessment dimensions that capture key aspects of ESG disclosure quality relevant for stakeholder decision making, namely disclosure completeness, content specificity, verifiability and truthfulness. As noted above, these 42 activities represent all disclosure items identified in the analyzed report within the scope of the case study. A complete item-level overview is provided in Appendix A in order to facilitate traceability of the scoring procedure and interpretation of the summary tables.

The results reveal (Figure 1.) a differentiated pattern of disclosure quality across the report. While a substantial share of ESG disclosures demonstrates a high level of informational transparency, the assessment also identifies several areas where deficiencies persist. These deficiencies vary in nature, ranging from minor limitations in specificity or verification to more substantial omissions of required information. Overall, the findings indicate that information asymmetry is not an exceptional or marginal phenomenon within the analyzed ESG report but rather a structurally embedded feature affecting selected disclosure areas to varying degrees.

2.1. Distribution of information asymmetry levels

Out of the 42 assessed disclosure activities, 19 activities, representing approximately 45 percent of the total (see Table 4.), were classified as exhibiting negligible information asymmetry. These disclosures consistently met ESRS requirements in terms of completeness and were characterized by clearly defined metrics, quantitative indicators or detailed qualitative explanations supported by verifiable sources. In several cases, the disclosed information was subject to external assurance, further strengthening its informational credibility.

Table 4. Classification of ESRS Disclosures with Zero Information Asymmetry

Area	Activity Description	Asymmetry
ESRS E1 – Climate Change	Greenhouse gas emission reduction targets	(0.0) – No asymmetry
ESRS E1 – Climate Change	Energy consumption and energy mix (including intensity)	(0.0) – No asymmetry
ESRS E1 – Climate Change	Gross GHG emissions (Scope 1, 2, 3) and total GHG emissions (incl. intensity)	(0.0) – No asymmetry
ESRS E3 – Water and Marine Resources	Water and marine resources targets	(0.0) – No asymmetry
ESRS E3 – Water and Marine Resources	Water consumption	(0.0) – No asymmetry
ESRS E5 – Resource Use and Circular Economy	Resource use and circular economy targets	(0.0) – No asymmetry
ESRS E5 – Resource Use and Circular Economy	Input resources	(0.0) – No asymmetry
ESRS E5 – Resource Use and Circular Economy	Output resources (products and services + waste)	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Targets for managing negative impacts, supporting positive impacts, risks and opportunities	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Characteristics of employees	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Collective bargaining coverage and social dialogue	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Diversity metrics	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Adequate wages	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Social protection	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Training and skills development metrics	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Occupational health and safety metrics	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Work-life balance metrics	(0.0) – No asymmetry
ESRS S1 – Own Workforce	Remuneration metrics (gender pay gap and total remuneration)	(0.0) – No asymmetry
ESRS G1 – Corporate Governance	Confirmed cases of corruption or bribery	(0.0) – No asymmetry

Note: The number of activities listed under each ESRS area reflects the structure of the report analyzed. Where only one activity appears in a given ESRS area within a table, this reflects the content of the analyzed report rather than selective inclusion by the author. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Source: author's elaboration.

Nine activities, corresponding to approximately 21 percent of the sample (see Table 5.), were classified as exhibiting very low information asymmetry. These disclosures were largely complete and informative; however, minor shortcomings were identified. Most frequently, these involved the absence of explicit quantification, limited disclosure of methodological assumptions or a lack of longitudinal comparison. While these deficiencies do not fundamentally undermine transparency, they reduce the analytical usefulness of the information for stakeholders seeking detailed performance evaluation.

Table 5. Classification of ESRS Disclosures with Very Low Information Asymmetry

Area	Activity Description	Asymmetry
ESRS E2 – Pollution	Pollution-related targets	(0.45) – Very low asymmetry
ESRS E2 – Pollution	Air, water and soil pollution	(0.45) – Very low asymmetry
ESRS E2 – Pollution	Substances of concern and substances of very high concern	(0.45) – Very low asymmetry
ESRS E4 – Biodiversity and Ecosystems	Biodiversity and ecosystem targets	(0.45) – Very low asymmetry
ESRS S1 – Own Workforce	Human rights incidents, complaints and severe impacts	(0.45) – Very low asymmetry
ESRS S2 – Workers in the Value Chain	Monitoring the effectiveness of policies and actions through targets	(0.45) – Very low asymmetry
ESRS S3 – Affected Communities	Monitoring the effectiveness of policies and actions through targets	(0.45) – Very low asymmetry
ESRS S4 – Consumers and End-Users	Monitoring the effectiveness of policies and actions through targets	(0.45) – Very low asymmetry
ESRS G1 – Corporate Governance	Payment practices	(0.35) – Very low asymmetry

Note: The number of activities listed under each ESRS area reflects the structure of the report analyzed. Where only one activity appears in a given ESRS area within a table, this reflects the content of the analyzed report rather than selective inclusion by the author. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Source: author's elaboration.

Seven disclosure activities, or roughly 17 percent of the total (see Table 6.), were categorized as exhibiting low information asymmetry. In these cases, information was typically disclosed only partially or relied predominantly on general qualitative statements in areas where more specific or quantitative disclosure would be expected under ESRS requirements. In addition, several disclosures in this category showed limited verifiability, as supporting data sources or assurance references were either incomplete or absent.

Table 6. Classification of ESRS Disclosures with Low Information Asymmetry

Area	Activity Description	Asymmetry
ESRS E1 – Climate Change	Greenhouse gas removals and GHG mitigation projects financed through carbon credits	(0.60) – Low asymmetry
ESRS S1 – Own Workforce	Characteristics of non-employee workers in the undertaking's own workforce	(0.55) – Low asymmetry
ESRS S1 – Own Workforce	Persons with disabilities	(0.55) – Low asymmetry
ESRS S2 – Workers in the Value Chain	Targets related to managing material negative impacts, supporting positive impacts, and managing material risks and opportunities	(0.55) – Low asymmetry
ESRS S3 – Affected Communities	Targets related to managing material negative impacts, supporting positive impacts, and managing material risks and opportunities	(0.55) – Low asymmetry
ESRS S4 – Consumers and End-Users	Targets related to managing material negative impacts, supporting positive impacts, and managing material risks and opportunities	(0.55) – Low asymmetry
ESRS G1 – Corporate Governance	Political influence and lobbying	(0.60) – Low asymmetry

Note: The number of activities listed under each ESRS area reflects the structure of the report analyzed. Where only one activity appears in a given ESRS area within a table, this reflects the content of the analyzed report rather than selective inclusion by the author. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Source: author's elaboration.

Six activities, representing approximately 14 percent of the assessed disclosures (see Table 7.), were classified as exhibiting medium information asymmetry. These disclosures showed more pronounced informational deficiencies, including missing key data points, insufficient explanation of applied methodologies or unclear linkage between disclosed sustainability actions and their potential operational or financial impacts. Such deficiencies may materially constrain stakeholders' ability to evaluate sustainability-related risks and opportunities.

Table 7. Classification of ESRS Disclosures with Medium Information Asymmetry

Area	Activity Description	Asymmetry
ESRS E1 – Climate Change	Potential financial effects of material physical risks, material transition risks and climate-related opportunities	(1.05) – Medium asymmetry
ESRS E2 – Pollution	Potential financial effects of pollution-related impacts, risks and opportunities	(1.50) – Medium asymmetry
ESRS E3 – Water and Marine Resources	Potential financial effects of impacts, risks and opportunities related to water and marine resources	(1.50) – Medium asymmetry
ESRS E4 – Biodiversity and Ecosystems	Impact metrics related to changes in biodiversity and ecosystems	(1.50) – Medium asymmetry
ESRS E4 – Biodiversity and Ecosystems	Potential financial effects of biodiversity- and ecosystem-related risks and opportunities	(1.50) – Medium asymmetry
ESRS E5 – Resource Use and Circular Economy	Potential financial effects of impacts, risks and opportunities related to resource use and circular economy	(1.50) – Medium asymmetry

Note: The number of activities listed under each ESRS area reflects the structure of the report analyzed. Where only one activity appears in a given ESRS area within a table, this reflects the content of the analyzed report rather than selective inclusion by the author. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Source: author's elaboration.

A single disclosure activity was classified as exhibiting high information asymmetry (see Table 8.). This activity was entirely omitted from the ESG report despite being relevant under ESRS requirements. The absence of this information constitutes a significant transparency gap and prevents stakeholders from assessing the company's approach to a material sustainability issue. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Table 8. Classification of ESRS Disclosures with High Information Asymmetry

Area	Activity Description	Asymmetry
ESRS E1 – Climate Change	Internal carbon pricing	(1.70) – High asymmetry

Note: The number of activities listed under each ESRS area reflects the structure of the report analyzed. Where only one activity appears in a given ESRS area within a table, this reflects the content of the analyzed report rather than selective inclusion by the author. The complete mapping of all 42 disclosure activities is provided in Appendix A.

Source: author's elaboration.

2.2. Patterns of information asymmetry across disclosure dimensions

The analysis further reveals that information asymmetry manifests differently across the four assessment dimensions. Deficiencies related to disclosure completeness were relatively infrequent but had the strongest impact on composite asymmetry scores when present. Omitted or only partially disclosed activities accounted for the highest severity classifications.

Limitations related to content specificity were more common and often involved the use of broad qualitative statements in place of expected quantitative indicators. Such disclosures reduced comparability across reporting periods and constrained stakeholders' ability to assess progress or performance trends.

Verifiability emerged as a recurring source of asymmetry, particularly in disclosures relying on internally generated data without explicit reference to external verification mechanisms. Although external assurance was present for large parts of the report, not all disclosure areas benefited equally from independent verification.

Issues related to truthfulness were less frequently identified, reflecting general consistency between disclosed information and available evidence. However, in cases where verification was limited, truthfulness assessments remained constrained by the availability of external reference points.

2.3. ESG areas most affected by information asymmetry

The findings indicate that information asymmetry is unevenly distributed across ESG dimensions. Environmental disclosures related to operational metrics, such as emissions reduction targets and energy consumption, generally exhibited lower levels of asymmetry. These areas benefited from established measurement practices and clearer quantitative indicators.

In contrast, disclosures related to the financial impacts of sustainability risks, internal carbon pricing mechanisms and selected governance practices displayed higher levels of asymmetry. These areas often required forward-looking assumptions, internal valuation models or strategic judgments, which were not always fully disclosed or verifiable.

This pattern suggests that information asymmetry tends to increase in disclosure areas where sustainability considerations intersect with financial decision making or internal strategic processes.

In summary, the findings demonstrate that while the analyzed ESG report exhibits a generally high level of transparency, information asymmetry persists in a non-negligible subset of disclosures. The presence of medium and high asymmetry categories indicates that formal compliance with ESRS requirements and external assurance do not fully eliminate informational imbalances. These findings support the analytical expectation that residual information asymmetry may remain present even within a formally compliant report and that such imbalances are not confined to minor deficiencies alone.

3. Discussion

The results of this study provide important insights into the informational role of ESG reporting prepared under the ESRS. The identification of varying levels of information asymmetry across disclosure activities indicates that ESG reporting under ESRS does not uniformly achieve informational symmetry between firms and their stakeholders. Although many disclosures exhibit low or negligible asymmetry, the presence of medium and higher levels in selected areas suggests that standardized sustainability reporting may still contain structurally relevant informational deficiencies.

From the perspective of information economics, these findings can be interpreted as evidence of incomplete or weakened signaling. ESG disclosures are commonly expected to function as signals of corporate sustainability performance. However, signaling theory assumes that signals are sufficiently specific, costly or verifiable to distinguish higher-quality firms from lower-quality ones. When ESG disclosures rely on vague narratives, partial information or internally generated data with limited verifiability, their signaling value diminishes. Under such conditions, ESG reporting may fail to reduce informational uncertainty and may instead reinforce existing information asymmetries. The results further suggest that information asymmetry is not evenly distributed across disclosure areas. Higher levels of asymmetry were observed particularly in areas that involve forward-looking assumptions, internal valuation methods or the integration of sustainability considerations into financial decision making. These areas inherently

involve a higher degree of managerial discretion and subjective judgment, which increases the scope for selective disclosure and constrains stakeholders' ability to independently assess the reported information. This pattern is consistent with prior literature indicating that ESG reporting tends to be more informative in operational and quantitative domains than in strategic or financially integrated contexts.

These findings are broadly consistent with prior literature showing that ESG communication may remain selective, strategically ambiguous or only partially verifiable despite growing standardization pressures. In this sense, the present results complement studies on greenwashing and disclosure ambiguity by showing that informational imbalances can also be identified within formally ESRS-compliant reporting at the level of individual disclosure activities. They further support the view that ESG information tends to be more robust in operationally measurable domains than in areas shaped by internal assumptions, strategic narratives and financially integrated judgments. More specifically, the findings are consistent with Delmas and Burbano (2011) and Lyon and Montgomery (2015), who show that sustainability communication may remain strategically selective, as well as with Clément et al. (2023), who highlight persistent heterogeneity in ESG-related measurement and interpretation.

The application of a screening perspective offers additional explanatory value. Rather than treating ESG reports solely as signals issued by firms, the screening-based framework emphasizes the active role of information users in evaluating disclosure quality. The findings demonstrate that systematic screening can uncover informational deficiencies that remain obscured when assessments focus primarily on formal compliance with reporting standards. This supports the argument that ESG reporting frameworks should be complemented by analytical tools that enable stakeholders to critically assess disclosure completeness, specificity and verifiability. The findings also have implications for the regulatory effectiveness of the ESRS framework. While ESRS establishes a comprehensive set of disclosure requirements, the results indicate that standardization alone does not eliminate information asymmetry. Managerial discretion in narrative framing, data aggregation and methodological explanation remains a significant source of informational imbalance. This highlights the importance of regulatory attention not only to the scope of required disclosures but also to their qualitative characteristics, consistency and enforceability.

From a practical standpoint, the discussion underscores the need for companies to move beyond a purely compliance-oriented approach to ESG reporting. Firms aiming to enhance credibility and stakeholder trust should prioritize the decision usefulness of disclosures by improving their specificity, transparency and verifiability. Auditors, analysts and assurance providers may likewise benefit from incorporating screening-oriented criteria into their evaluation processes to better identify areas of elevated informational risk.

More specifically, companies should increase methodological transparency by explicitly disclosing key assumptions, data sources and estimation procedures, especially in areas involving financial impacts and forward-looking sustainability considerations. Auditors and assurance providers should extend their focus beyond formal completeness toward content specificity and methodological traceability. Regulators and standard setters may also consider providing more detailed interpretive guidance for disclosure areas characterized by high managerial discretion.

4. Conclusion

This study examined whether ESG reporting prepared under the ESRS effectively fulfills its intended function of reducing information asymmetry between firms and stakeholders. The findings demonstrate that information asymmetry may persist within formally compliant and externally assured ESG reports, particularly in disclosure areas involving financial impacts, strategic integration and forward-looking assumptions.

These results have important implications for the ongoing regulatory transformation of sustainability reporting in the European Union. While ESRS represents a major step toward harmonization and comparability, the evidence suggests that standardization alone does not guarantee informational symmetry.

Managerial discretion in narrative framing, methodological explanation and internal valuation processes continue to generate structurally relevant informational imbalances.

The study contributes in three main ways. First, at the theoretical level, it extends the application of information asymmetry, signaling and screening theory to ESRS-based ESG reporting by demonstrating how informational imbalances can arise at the level of individual disclosure activities. Second, at the methodological level, it develops a structured and replicable screening-based framework that enables systematic assessment of disclosure quality across four dimensions: completeness, specificity, verifiability and truthfulness. Third, at the practical level, the findings suggest that formal ESRS compliance may not be sufficient to ensure decision-useful transparency, particularly in areas characterized by managerial discretion and internally generated assumptions.

In this respect, the study shifts the debate from the question of whether ESG disclosure exists to the more fundamental question of whether it is decision-useful and informationally symmetric. This distinction is particularly relevant in the early implementation phase of ESRS, where regulatory credibility and stakeholder trust are still being consolidated. From a practical and policy perspective, the findings suggest that ESRS effectiveness depends not only on the existence of standardized requirements but also on the informational quality with which they are implemented. This implies a need for more transparent methodologies at the company level, more disclosure-sensitive assurance practices, and more precise guidance in those ESRS areas where internal assumptions and strategic narratives remain especially important.

Several limitations should be acknowledged. The analysis is based on a single case application and relies on a qualitative scoring framework, which limits the generalizability of the findings and involves a degree of evaluative judgment. Future research could extend the framework to larger samples, multiple sectors or longitudinal settings, and could incorporate inter-coder reliability testing or alternative weighting schemes to strengthen empirical robustness.

References

1. Agapova, A., Garanina, T. (2024). Guest editorial: A short review of the role of ESG activities in business and research. *Managerial Finance*, 50(1), 1-9. <https://doi.org/10.1108/MF-01-2024-644>
2. Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), 488-500. <https://doi.org/10.2307/1879431>
3. Akyildirim, E., et al. (2023). Greenwashing: Do investors, markets and boards really care? *SSRN Electronic Journal* [Preprint]. <https://doi.org/10.2139/ssrn.4598145>
4. Allen, F., Barbalau, A., Zeni, F. (2023). Reducing carbon using regulatory and financial market tools. *SSRN Electronic Journal* [Preprint]. <https://doi.org/10.2139/ssrn.4357160>
5. Alsayegh, M. F., Abdul Rahman, R., Homayoun, S. (2020). Corporate economic, environmental, and social sustainability performance transformation through ESG disclosure. *Sustainability*, 12(9), 3910. <https://doi.org/10.3390/su12093910>
6. Clément, A., Robinot, É., Trespeuch, L. (2023). The use of ESG scores in academic literature: A systematic literature review. *Journal of Enterprising Communities: People and Places in the Global Economy*. <https://doi.org/10.1108/JEC-10-2022-0147>
7. Connelly, B. L., Certo, S. T., Ireland, R. D., Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39-67. <https://doi.org/10.1177/0149206310388419>
8. Delmas, M. A., Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64-87.
9. European Commission. (2023). Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU as regards sustainability reporting standards (European Sustainability Reporting Standards). Downloaded from: <https://eur-lex.europa.eu>

10. Friede, G., Busch, T., Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210-233. <https://doi.org/10.1080/20430795.2015.1118917>
11. Gillan, S. L., Koch, A., Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889. <https://doi.org/10.1016/j.jcorpfin.2021.101889>
12. Hao, X., et al. (2025). Unmasking greenwashing in ESG disclosure: Insights from evolutionary game analysis. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-025-06538-3>
13. Kathan, M. C., et al. (2025). What you see is not what you get: ESG scores and greenwashing risk. *Finance Research Letters*, 74, 106710. <https://doi.org/10.1016/j.frl.2024.106710>
14. Khan, M., Serafeim, G., Yoon, A. (2021). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 96(4), 169-205. <https://doi.org/10.2308/TAR-2019-0505>
15. Kotsantonis, S., Pinney, C., Serafeim, G. (2016). ESG integration in investment management: Myths and realities. *Journal of Applied Corporate Finance*, 28(2), 10-16. <https://doi.org/10.1111/jacf.12169>
16. Liu, G., et al. (2024). Does ESG report greenwashing increase stock price crash risk? *China Journal of Accounting Studies*, 1-25. <https://doi.org/10.1080/21697213.2024.2303070>
17. Lyon, T. P., Montgomery, A. W. (2015). The means and end of greenwash. *Organization & Environment*, 28(2), 223-249. <https://doi.org/10.1177/1086026615575332>
18. Rothschild, M., Stiglitz, J. (1976). Equilibrium in competitive insurance markets: An essay on the economics of imperfect information. *The Quarterly Journal of Economics*, 90(4), 629-649. <https://doi.org/10.2307/1885326>
19. Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374. <https://doi.org/10.2307/1882010>
20. Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth century economics. *The Quarterly Journal of Economics*, 115(4), 1441-1478. <http://www.jstor.org/stable/2586930>
21. Yu, X., Fan, L., Shang, D. (2025). Pointless efforts or valuable attempts? Constructing a transparent quantitative tool to analyze the direct and indirect mechanisms of ESG greenwashing on corporate performance. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.5104882>

