

Non-financial reporting and assurance trends in selected Central European countries

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ABSTRACT: This study examines how sustainability reporting and assurance enhance a company's environmental, social, and governance (ESG) impact. The Non-Financial Reporting Directive (NFRD) improved transparency in non-financial reporting, requiring companies to disclose policies, risks, and outcomes related to ESG issues. However, the Corporate Sustainability Reporting Directive (CSRD) expands on these requirements and enforces third-party assurance, reinforcing the European Sustainability Reporting Standards (ESRS). This shift forces companies in the scope of CSRD to enhance transparency, credibility, and accuracy, prompting the development of innovative assurance methods by auditors. My empirical research focuses on Central and Eastern Europe with comparator cases from Germany and Luxembourg, analyzing twenty years of practice using Refinitiv ESG data and Kaplan-Meier survival analysis. Research questions were posed about time-to-adoption and differences between external assurance providers. The research highlights Hungary as an early adopter of CSRD, which is trying to promote corporate compliance, while Austria is lagging behind. The analysis of audit trends shows that Big4 firms have dominated auditing in recent years, with limited industry-specific deviations, while the role of sustainability expert assurance has tended to decline. Kaplan-Meier's survival analysis of assurance maturity shows that large firms typically introduce external assurance after about three years of reporting, and high-impact sectors adopt assurance earlier. The study highlights practical implications for companies preparing first-time ESRS reports with mandatory assurance and discusses limitations related to sample composition and regional scope. Keywords: sustainability, assurance, transparency

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Introduction

Financial reporting is a fundamental aspect of corporate transparency and accountability, and the role of audits in ensuring the reliability and accuracy of the reporting cannot be overstated (O'Dwyer & Owen, 2005; Boiral et al., 2019). Previously, accounting systems – both nationally and internationally – provided only limited information on companies' emerging environmental performance, facing challenges in measurement and standardization. Over the last two decades, there has been a growing need to communicate environmental, social, and governance (ESG) factors to external stakeholders. Therefore, consistent and conscious non-financial reporting should be developed (Gipper et al., 2023).

Auditing plays a vital role in the financial reporting process, as it provides an independent assessment of the accuracy and reliability of an organization's financial statements. Accountants and auditors have historically claimed that their expertise enables them to objectively mediate uncertainty and construct accurate and fair accounts of corporate affairs, thereby allowing stakeholders to manage risks more effectively. Nonetheless, the importance of audit quality in maintaining the integrity of financial reporting cannot be overstated. High-quality audits can help to detect and prevent fraud, ensure compliance with relevant laws and regulations, and provide valuable insights into an organization's financial health and performance (Sikka, 2009).

As the business landscape continues to evolve, the need for sustainability reporting and assurance has become increasingly pressing, particularly considering the upcoming Corporate Sustainability Reporting Directive 2022/2464/EU (hereinafter referred to as CSRD) requirements. There have been several regulatory changes in terms of the development of the non-financial reporting system. As a result, from the 2017 financial year onwards, Non-Financial Reporting Directive 2014/95/EU (hereinafter referred to as NFRD) required large public-interest companies to publish non-financial reports to create and promote responsible and long-term sustainable economic activity. The legislation sought to make companies more transparent, identify sustainability risks in their operations, and increase investor and consumer trust in companies.

NFRD is the outcome of claims made by stakeholders, even though they were not actively involved in its preparation (Biondi et al., 2020). Regarding trust, Directive 2014/95/EU has several implications, as the disclosure of environmental, social, and government issues can direct the legitimization process of a firm from the perspective of its stakeholders. Enhancing this mindset, the CSRD was introduced in April 2021 to amend the NFRD to expand and incorporate audited reporting for all companies within its scope. Organizations disclosing non-financial information (NFI) can show performance to stakeholders, who can evaluate their non-financial disclosures compared to those found in other businesses.

Regulators are crucial in preventing misleading ESG information and holding companies accountable for their operations (de Freitas Netto et al., 2020). The CSRD aims to address issues like selective disclosure – such as “cherry-picking”

and “greenwashing” – by making the European Sustainability Reporting Standards (hereinafter referred to as ESRS) compulsory and requiring third-party assurance for reports. Published on December 16, 2022, and entering into force on January 5, 2023, the CSRD expands the scope of organizations required to report, beginning in 2024, and seeks to align non-financial reporting with the rigor of financial reporting. One of its key objectives is to advance the EU’s climate neutrality goals by 2050 (European Commission, 2023). The European Financial Reporting Advisory Group (hereinafter referred to as EFRAG) is developing the ESRS, which the European Commission officially adopted on July 31, 2023 (European Commission, 2023). From the first year of adoption, firms will need to adapt their operations to meet enhanced reporting requirements, including more thorough data collection. By raising the non-financial reporting standard to match financial reporting, the CSRD aims to address criticisms of current practices and mitigate greenwashing through mandatory third-party assurance. Combining these new regulatory requirements with quantitative survival analysis provides a practical framework and a “call to action” for companies of all sizes preparing to meet these obligations.

This research aims to offer a comprehensive understanding of non-financial reporting practices and assurance services in Central and Eastern Europe prior to the first mandatory CSRD reporting period. It examines the decision-making processes behind the assurance of non-financial reports, drawing upon existing literature, regulatory developments, and quantitative analysis. Specifically, survival analysis is used to study patterns in the uptake of external assurance providers among the region’s largest firms. By exploring the evolving landscape of sustainability reporting in Central Europe – considering historical precedents and the emerging CSRD obligations – this study demonstrates how accounting and non-financial reporting practices shape organizations’ accountability for their environmental, social, and governance impacts. It highlights the essential role of independent third-party assurance in verifying non-financial information and how credible, externally validated disclosure can enhance stakeholder trust and maintain more meaningful engagement with sustainability goals.

Building on prior work on sustainability reporting and assurance under the NFRD/CSRD context, this exploratory study addresses three questions:

- ▶ Research question 1. When do large firms begin obtaining external assurance on their sustainability reports? Was there a typical time-to-adoption?
- ▶ Research question 2. Does the time-to-adoption differ across industries and country groups?
- ▶ Research question 3. How has the assurance provider mix evolved over time?

Research questions 1 and 2 were addressed using Kaplan-Meier survival analysis (event: first assured report) with log-rank comparisons across sectors and country groups, and 3rd research question through descriptive trend analysis of assurer types.

The paper is organized as follows: it begins with an introduction that outlines the motivation and research questions. This is followed by a literature review and theoretical background, an overview of the regulatory context (NFRD/CSRD/ESRS),

and a description of the data sample. The methodology employed includes Kaplan-Meier survival analysis and statistical comparisons. Next, the results are presented, addressing the research questions regarding time-to-assurance, industry and country differences, and the mix of assurers. The paper concludes with a discussion of the findings, implications, limitations, suggestions for future research, and a concluding summary.

Literature review

The demand for non-financial reporting on the current and long-term impacts of an entity's sustainable operations has been driven by the interest of sustainable, responsible investors, business partners, and consumers who wish to incorporate this information into their decision-making (Osemeke et al., 2016). The main goal of non-financial information disclosure is to encourage transparency and accountability for an entity's stakeholders. Such disclosures usually take the form of non-financial reports, sustainability reports, ESG reports, or integrated reports (Global Reporting Initiative, 2013).

Meeting stakeholders' growing information demands, particularly since the introduction of ESG indicators in the early 2000s, has prompted corporate reporting to evolve into a more comprehensive representation of social, environmental, and governance data. In this context, companies need to integrate reporting mechanisms into their internal processes to collect and verify relevant sustainability metrics, thereby publishing increasingly advanced and high-quality information (Utz, 2019). Research shows that environmental, social, and governance considerations have become crucial for the largest business organizations. ESG scores, ratings, and audited non-financial reports offer valuable insights into firms' sustainability practices (Schiemann & Tietmeyer, 2022). Additionally, regulations have begun to encourage forward-looking disclosures, enabling firms to highlight future challenges and long-term strategies alongside standard retrospective accounting reports (Lippai-Makra, 2022).

Starting in 2017, the NFRD mandated that large public interest entities in the European Union provide non-financial information annually, effectively ending the previous practice of purely voluntary disclosure. However, significant variations in the structure, format, and content of these reports emerged across Europe, raising concerns about the reliability and comparability of the published data (Bose 2020). Additionally, the rate of sustainability reporting began to rise during the NFRD period, particularly in Eastern Europe, where a 9% increase was observed compared to 2017; meanwhile, Western Europe experienced a slight decline (KPMG International, 2022). Yet, these shifts did not significantly enhance overall reporting standards within the EU, as instances of "greenwashing" and selective disclosure continued. In response, stakeholders and regulators started to advocate for more independent third-party assurance to boost credibility, thereby intensifying the conversation around formalized assurance services and standardized practices.

Some companies began auditing their sustainability information to improve disclosure credibility and voluntarily enhance confidence in non-financial data

(Farooq & De Villiers, 2020). The International Auditing and Assurance Standards Board (IAASB) defines assurance engagements as:

“Engagement(s) in which a practitioner aims to obtain sufficient appropriate evidence in order to express a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the subject matter information” (IAASB, 2013, p.7)

Non-financial reporting holds the responsibility of providing high-quality information that fosters public trust. In certain sectors, companies can effectively manage their reputations and promote responsible practices by publishing transparent non-financial reports (Sethi et al., 2016). In accordance with legitimacy theory (Rahman-Alsayegh 2021), organizations often produce higher-quality reports to legitimize and justify their operations. While these reports generally present a wide range of sustainability data, any doubts about their accuracy can undermine public confidence, thus devaluing one of the company’s most vital public communication channels (Sethi et al., 2016).

As the number of non-financial reports increases, so do the instances of greenwashing, making external assurance increasingly vital for stakeholders. Sustainability assurance serves as a method through which organizations can demonstrate their ethical commitment and the credibility of their disclosures, advancing sustainability and aligning with the concept of legitimacy in accounting and reporting. Indeed, a greater application of legitimacy theory in accounting research – especially concerning sustainability assurance – can assist ESG-oriented organizations in enhancing the clarity and reliability of their reported information (Utz, 2019). The core argument in this article is that sustainability assurance is a crucial indicator of legitimacy for a socially responsible company.

Greenwashing is defined as making misleading or unsubstantiated disclosures about the environmental, social, and government benefits of a product, service, or company’s whole practice, which undermines the credibility of sustainability disclosures (O’Dwyer & Owen, 2005). The literature shows that greenwashing can emerge when companies selectively present positive information and omit detrimental data, thereby distorting stakeholders’ perceptions (de Freitas Netto et al., 2020). Despite the increasing number of non-financial reports – particularly in the context of the NFRD – greenwashing remains a persistent concern, prompting calls for more rigorous verification and third-party assurance to strengthen transparency and accountability.

Non-financial reporting and assurance issues in the light of CSRD

Growing stakeholder awareness has underscored the importance of transparent and credible sustainability reporting. A cornerstone of the CSRD is the requirement to use the European Sustainability Reporting Standards. This standardized framework aims to mitigate cherry-picking and inadequate disclosures by obligating companies to report comprehensively on environmental, social, and governance issues. The

ESRS emphasizes a dual materiality perspective, requiring companies to disclose both how sustainability factors on their operations as well as the impact of their activities on society and the environment (EFRAG, n.d.). The directive also introduces a phased expansion of coverage: starting from 2024, the CSRD implementation will gradually encompass a broader set of companies, including large entities, listed small and medium-sized enterprises, and even non-EU organizations with substantial business in the EU.

Following the first year of adoption, firms must develop strategies to ensure compliance with the new requirements, which aspire to elevate non-financial reporting to the same level of completeness and rigor typically seen in financial reporting. In doing so, the CSRD aims to address numerous criticisms of the preceding framework, including the need for greater comparability and reliability of sustainability metrics. The directive further mandates external assurance of sustainability information, beginning with limited assurance and eventually shifting toward reasonable assurance over time (European Commission, 2023; Deloitte, 2024).

Limited assurance provides a lower level of assurance, typically expressed in a negative form (“nothing has come to our attention...”), with procedures that emphasize inquiries and analytical reviews and are less extensive than for reasonable assurance. Reasonable assurance provides a higher – though not absolute – level of assurance and is expressed in a positive opinion, requiring broader evidence gathering, expanded testing of data, processes, and controls. These distinctions are consistent with international assurance standards (IAASB, 2023).

According to a 2022 survey by KPMG, approximately 10,000 companies with compulsory reporting will increase to 50,000 by 2028. (KPMG International, 2022). This will be the result of starting from 2025, all large companies (the exact details mentioned above), from 2026 listed small and medium-sized entities, small and non-complex credit institutions with captive insurance entities, and according to the plans lastly, the non-EU companies with substantial operations in the EU must prepare and disclose non-financial reports (PwC, 2023).

Under the CSRD, all disclosed sustainability data will require assurance from a statutory auditor or another qualified provider. Implementation phases begin with limited assurance during an entity’s initial reporting year, as illustrated in Figure 1. All implementation phases of the CSRD involve limited assurance, hence requiring entities falling within its scope to be granted limited assurance during their initial year of reporting. The practicability of shifting from limited to reasonable assurance for auditors and firms will be evaluated by the European Council. It will implement assurance requirements for (1) limited assurance by October 1, 2026, and (2) reasonable assurance by October 1, 2028, following this evaluation. The assurance provider will deliver an assurance report with an opinion regarding whether the company has effectively communicated its sustainability information in line with the requirements (Deloitte 2024).

Figure 1: The CSRD’s planned timing for non-financial reporting assurance for the period 2024-2029

Financial years	2024	2025	2026	2027	2028	2029
Public interested companies > 500 employees				Limited assurance	Reasonable assurance	
Other large companies						
Listed SMEs						
Non-EU parent companies				?		

Source: Own composition based on PwC, 2023

Non-financial reporting assurance experiences

As previously explained, non-financial reporting has evolved, and the assurance practices for non-financial disclosures have also changed. However, this development has been slower and more fragmented than financial audit processes (Jámbor & Zanócz, 2023). In contrast to the well-established standards for financial audits, sustainability assurance varies widely in depth and in different approaches. Organizations may opt for either limited or reasonable assurance engagements, with limited assurance generally involving fewer procedures, a narrower scope of evidence collection, and typically excluding detailed assessments of internal controls or IT systems (Boiral et al., 2019; IAASB, 2023).

A key driver behind the adoption of non-financial assurance is the pursuit of enhanced credibility. The voluntary nature of sustainability reporting has historically raised questions regarding the authenticity and accuracy of ESG data, thereby challenging stakeholder confidence. Third-party assurance helps strengthen trust by mitigating greenwashing and validating the company’s stated commitments (Farooq & De Villiers, 2017; Glover & Touboulis, 2020). Nevertheless, the lack of a single, universally accepted assurance standard has led to significant variability in how companies approach the process. Some restrict the assurance scope to select metrics or specific sections of reports, which can create confusion for external stakeholders about the depth and reliability of the overall disclosure (Jámbor & Zanócz, 2023; PwC, 2023).

Empirical findings indicate that the adoption of non-financial assurance was strongly influenced by regional regulations and industry-specific pressures. Companies headquartered in regions like the European Union and Japan – where regulatory frameworks surrounding sustainability are relatively strict – are more inclined to engage external assurance providers than those in jurisdictions with weaker mandates, particularly the United States. Moreover, high-impact sectors often experience more rigorous assurance processes due to increased public scrutiny

and environmental risks, which is in contrast with other industries with lower ESG exposure (Bakarich et al., 2023).

The importance for auditors of defining and implementing standards that provide assurance on non-financial statements is emphasized. However, there is a debate on whether the audit profession should be involved in providing assurance on non-financial statements (Domaracká & Kňázková, 2020). Stakeholder perceptions of assurance providers and the credibility of non-financial statements have turned negative, and the impact of assurance providers on the credibility of non-financial statements has become context-dependent (Pflugrath et al., 2011). These studies highlight the importance of auditor independence and the quality of financial reports in ensuring accurate and reliable non-financial reporting.

Boiral et al. (2019) conducted a qualitative content analysis of assured sustainability reports from the mining and energy sectors, revealing that assurance statements often fail to provide substantive, credible verification. Instead, these statements frequently reflect a hyperreal practice, detached from critical sustainability issues and stakeholder concerns. Similarly, their analysis of assurance statements in environmental, social, and sustainability reports suggests that such statements do not necessarily enhance stakeholder transparency or accountability. The practice of sustainability assurance remains rooted in procedural accounting rhetoric and is often guided by assurance standards that are insufficiently aligned with the specific demands of sustainability reporting.

Alsahali and Malagueno in 2021 showed in their study that the increase in assurance in sustainability reporting lags behind the increase in reporting and that switching between assurers is a common practice among companies. The primary standards used to audit sustainability reports are International Standard for Assurance Engagements 3000 (ISAE 3000), issued by the International Auditing and Assurance Standards Board, and AA1000, issued by the non-profit organization AccountAbility. Accounting firms engaged in sustainability assurance mainly use the ISAE 3000 standard, whereas assurance providers in engineering and consulting organizations mostly employ the AA1000AS standard.

AA1000AS is specifically designed to provide assured non-financial reports, with an emphasis on the quality of sustainability reporting and stakeholder engagement and the inclusive and responsive nature of the reports. ISAE 3000 is broader in applicability and more focused on auditor ethical compliance, quality management, and assurance engagement performance. Despite their differences (concluded in Table 1), these standards are based on quite similar principles (e.g., independence of the assurance provider, the scope of the audit, and assurance levels) and can be used together in the same assurance process, but differ in depth (Eugénio et al., 2022).

Table 1: Differences between the ISAE 3000 and AA1000AS standards

	ISAE 3000	AA1000AS
Approach and emphasis of standards	Widely applicable and based on principles and practice of professional accounting and assurance	More specific to sustainability and stakeholder engagement
Scope of standards	Application guidance	Stakeholder-based materiality assessment
Focus of the standards	How to audit the reports with pre-defined agenda	How to evaluate the reliability and reliance of reported information
Standard users	Mainly accounting firms	Both accounting and non-accounting firms

Source: Own composition based on Eldis n.d.s and Boiral et al. 2019

Methodology

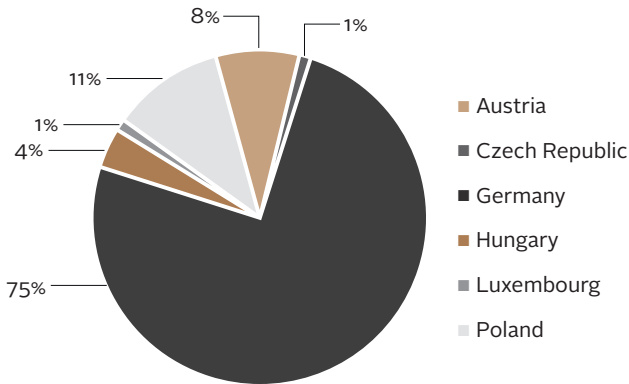
This study employs a multi-faceted methodology, starting with a comparative analysis approach to examine the state of CSRD regulation and assurance practices in selected Central European countries, and conducts a comprehensive literature review to explore the importance of audits in financial reporting and the need for sustainability reporting assurance. The paper draws on a range of academic sources, including peer-reviewed journal articles and industry reports, to provide a thorough analysis of the topic. Considering that the new CSRD legislation makes mandatory the implementation of auditing processes from the first non-financial report, a question of assurance maturity of companies arises: Are companies prepared to have non-financial reports externally audited in the initial reporting period? In this regard, I prepared a quantitative analysis of companies' non-financial reporting assurance maturity using the Kaplan-Meier survival method. I used Refinitiv ESG data to assess the level of assurance provided for non-financial reports. Besides, the review of CSRD regulations across selected Central European countries provide insights into the varying degrees of mandatory disclosure requirements and the level of harmonization across the region (Testarmata et al., 2019). This analysis helps to understand the institutional environment and the extent to which organizations are accountable for their environmental, social, and governance impacts.

The survival analysis using Refinitiv data examines the trends in assurance practices for non-financial reports in Central Europe. This allows for an assessment of the reliability and trustworthiness of the information disclosed, as well as the potential drivers and barriers to the adoption of assurance services. (Nechita et al., 2020). By combining these complementary methodological approaches, the study aims to provide a comprehensive understanding of the current state of reporting

and assurance practices and to provide insights into how these practices can support organizations' accountability and the reliability of non-financial information.

Data and sample

Figure 2: The proportion of companies in the selected countries



Source: Own composition based on Refinitiv database

First, I used the Refinitiv database to identify those large Central European entities that have ESG ratings by Refinitiv. The composition of companies by country is shown in Figure 2, operating in 10 different industries. Then, I retrieved all available ESG ratings, reports, and assurance data for the selected companies, going back from 2022 to 2002. For my event-to-event analysis, I chose the Kaplan-Meier Survival Analysis.

The event in the Kaplan-Meier setting is the first externally assured sustainability report. The status variable indicates whether the event occurs within the window. Controls include industry and assurer type (accounting vs. engineering/consulting). Median survival times and compare survival curves are reported across sectors using log-rank tests. This survival analysis is a statistical method used to examine changes over time up to a given event. The Kaplan-Meier analysis can calculate the time taken from the start of an event to the occurrence of the tested event – e.g. in this case, the time from the first non-sustainability report to the first voluntarily, independently assured non-financial report – for individuals who were not otherwise lost from the sample, or until the end of the study (Szüle, 2016; Békés & Kézdi, 2021).

Results and discussion

It is vital to know the main similarities and differences between Central European Countries' CSRD transition; therefore, in the following chapter, I summarize them, focusing on the assurance of non-financial reports.

Comparison of CSRD transition in selected Central European countries

First, Hungary has been a leading country among European countries and has emerged as the clear frontrunner in implementing the CSRD among the countries under review, having already completed its national transposition. This early adoption helps Hungarian companies gain greater clarity on their reporting obligations and places them under pressure to comply with detailed sustainability disclosures. By contrast, Austria stands at the other end of the spectrum: a first official draft of the legislation was initially anticipated by the end of the second quarter of 2024, but it remains pending. It is also unclear when any formal text might be published (Kinstellar, 2024).

The Czech Republic occupies a middle ground by having already adopted some provisions of the CSRD for companies previously covered by the NFRD, enabling these entities to start reporting under the new framework as of January 2024. However, the accompanying legislation intended to expand the directive's requirements to a broader range of businesses is linked to a new accounting law that must be approved by the end of June 2024. Legislative disagreements regarding other aspects of this more comprehensive law, however, may necessitate pursuing the CSRD portion separately (Kinstellar, 2025).

Germany employs a systematic method and has moved to a second draft of its transposing law. This suggests that key stakeholders have begun an iterative dialogue with the government, although the timeline for the final version remains unclear. Meanwhile, Luxembourg is actively reviewing its draft, having shared a preliminary version for discussion and input from professional associations. While its stakeholder engagement is not as developed as Germany's, it is more solid than Austria's and the remaining parts of the Czech Republic's legislation. Poland is in a comparable position to Luxembourg and Germany, having issued its draft law in April 2024 and currently evaluating feedback from various professional organizations (PwC, 2024).

A common issue among these Central European countries is how policy agendas interact with legislative schedules, affecting the speed and efficiency of implementation of complex directives such as the CSRD. While the specificities of the optional aspects, such as increased requirements or phased deadlines, are still under discussion in many areas, it is clear that businesses in nations without finalized legislation are going to face tighter deadlines when the regulations come into force. The countries transposition of CSRD is detailed in Table 2.

Table 2: National transposition of CSRD

National transposition of CSRD	
Austria	No official draft has been released yet. The first draft was expected by the end of Q2/2024, but it remains pending. Due to the National Council election in autumn 2024, it's unclear when the first draft can be expected.
Czech Republic	The portion of the CSRD applicable to companies under the NFRD was approved in November 2023, effective from January 2024. The draft for the remaining companies is part of the new accounting law, which was expected to be approved by June 2024. However, due to discrepancies, it's uncertain if this deadline was met, and the CSRD-related section might be approved separately as an amendment.
Germany	The second draft of the CSRD was received, but as of January 2025, the legislation had not been adopted. Germany faced delays, and the European Commission initiated infringement procedures due to non-compliance with the transposition deadline.
Hungary	The CSRD has been transposed into national legislation.
Luxembourg	The first draft law was presented and was under discussion and review as of early 2025.
Poland	The CSRD implementation draft law was announced in December 2024 and entered into force on December 31, 2024.

Source: Own composition based on Accountancy Europe, 2025

It is important to note that the European Commission has proposed simplifying the CSRD regulations soon, potentially affecting the reporting requirements and timelines for companies. These changes aim to reduce the regulatory burden on businesses while maintaining transparency and accountability in sustainability reporting (European Commission, 2025). The progress of CSRD implementation in Central European countries in terms of assurance can be found in more depth in Table 3.

Table 3: CSRD implementation results in the selected countries regarding assurance

	Auditors	Independent Assurance Services	Assurance Report	Penalties
Austria	Not specified if auditors other than statutory auditors can audit the sustainability statement.	Not specified whether independent assurance services are allowed.	No details provided on whether the assurance report on sustainability needs to be included separately from the financial report.	No answer yet
Czech Republic	It is a company choice whether to use statutory auditors or other auditors for the sustainability statement	Independent assurance services can audit the sustainability statement if the auditor has valid certification	It is not specified whether the assurance report on sustainability needs to be a separate section or part of the financial audit report.	Penalties can reach 3% of total assets
Germany	Both statutory auditors and other auditors are allowed to audit the sustainability statement.	Independent assurance services are not allowed unless specific conditions are met.	The opinion on the assurance of the sustainability report must be issued separately from the opinion on the financial statements.	Penalties similar to financial reporting
Hungary	Both statutory auditors and other auditors are allowed to audit the sustainability statement.	Independent assurance services are permitted.	The assurance report can either be included as part of the audit report or as a separate section.	Penalties similar to financial reporting, may need legislative amendment
Luxemburg	Statutory auditors and independent assurance services can audit the sustainability statement.	Independent assurance services are permitted.	The assurance report can be either a separate section or included as part of the audit report.	Penalties similar to financial reporting
Poland	Only auditors registered in Poland are allowed to audit the sustainability statement.	Independent assurance services are not permitted unless an IASP's report is reviewed by the statutory auditor.	The assurance report on sustainability cannot be included in the same report as the financial audit.	Penalties similar to financial reporting

Source: Own composition based on Accountancy Europe, 2025

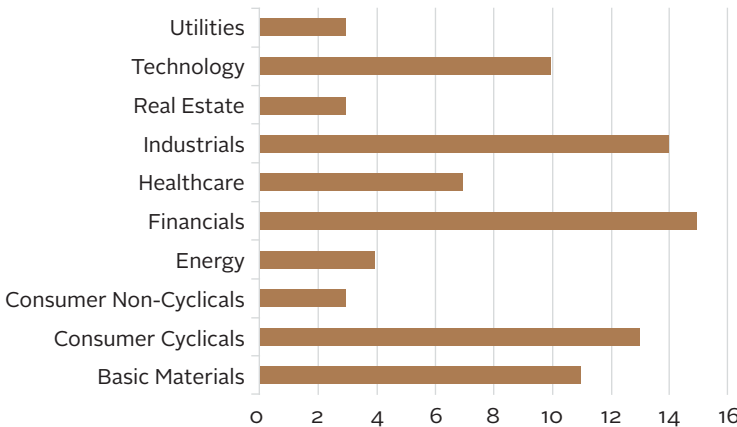
Only Hungary, Luxembourg, and Poland have decided to allow subsidiaries to use the exemption when preparing their sustainability report if their sustainability information is included in their parent’s consolidated sustainability report. All countries (where there is a clear implementation) apply the ISAE 3000 auditing standard on a mandatory basis. The Luxembourg regulators plan to issue new standards in the near future.

Survival analysis

Reflecting the complexity of audit and external control processes, even a solid and well-established non-financial reporting system can face challenges during independent third-party assurance, not to mention small and medium-sized companies. Therefore, I investigated the number of years after non-financial reporting companies began to assure NFRs in general and looked for commonalities and patterns among the reporting companies.

Figure 3 illustrates the distribution of industries across the selected Central European countries, showing that the financials, industrials, and consumer cyclical sectors have the highest scores, indicating that these sectors dominate the measure. Consumer non-cyclical (business services), real estate, and utility appearances are significantly lower, which may indicate that they play a smaller role in the context. Meanwhile, the technology sector and the healthcare sector are mid-ranked.

Figure 3: Breakdown of industries in selected Central and Eastern European countries covered by the sample



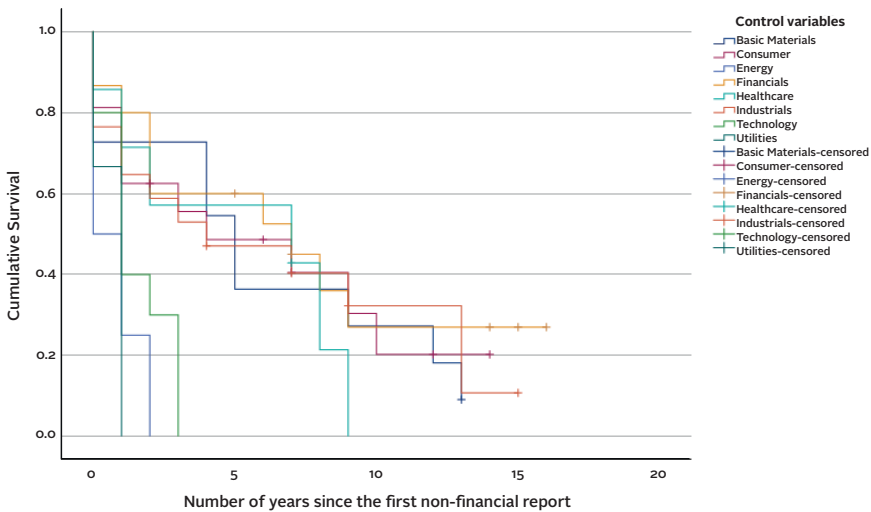
Source: Own composition

I have included in my analysis the financial years from the first non-financial report to the first audited report of the companies concerned. As a status variable, I have indicated whether the companies have ever voluntarily prepared reports.

Overall, 67 companies out of the sample of 83 companies have already prepared a non-financial report to inform stakeholders about sustainability activities within the company. As a control variable, I wanted to examine two factors based on the results from academic literature. One is the industry in which the companies operate, and the other is the one that assures their non-financial reports.

According to my SPSS results – and answering Research Question 1 – the overall median survival time is 3 years (SE = 0.844; 95% CI: 1.347 – 4.653), consistent with log-rank comparisons across sectors, with a standard error of 0.844 and a 95% confidence interval ranging from 1.347 to 4.653. This means that taking all categories into account, the median value of Survival Time is 3 units (years), according to Kaplan-Meier’s model, which means that companies took 3 years to audit their non-financial reports. The standard error indicates the level of variance of the estimate of the median, and the confidence interval suggests that it is 95% confident that the true median value of the overall survival time is between 1.347 and 4.653 units. It is important to note that the median is less sensitive to outliers than the mean. In my results, the overall survival time mean is 5.341, which is higher than the median. This suggests a bias in the distribution of the data, as some very high survival time values tend to pull the mean up.

Figure 4: Assurance trends in corporate sustainability reporting using the Kaplan-Meier Survival model based on the sample



Source: Own composition based on Refinitiv database

Moreover, looking at the survival curves (Figure 4) and analyzing them in detail by comparing one industry pattern to the remaining ones, I found that the Energy, Technology, and Utilities sectors are prone to have their reports assured by third parties significantly earlier than companies in other sectors, which answers Research

Question 2. It is because the p-value of the survival analysis was lower than 5% for these three industries. The reason for this can be explained by the emergence of greenwashing scams in their industry dating back to the early 2000s. So, in the case of these companies, under pressure from peer companies and to avoid the disclosure of untruthful, not credible information, companies have been engaging auditors earlier, sometimes even in their very first reporting period, to focus on the validation of their disclosed information.

In this sample of large European companies, I found that during the NFRD reporting period, the very first audited reports were often assured by engineering or consultancy firms. However, after some assurance switching, it became clear that accounting firms, particularly the Big Four firms (PwC, Deloitte, EY, KPMG), are the preferred providers of assurance among these companies (Figures 5 and 6). The rate of switching to consultancy firms was notably higher in the last period observed, highlighting the transition toward more established accounting firms for assurance services. The Big Four firms dominated in this shift, as they have largely led the assurance efforts for these companies in recent years.

Figure 5: Distribution of the first independent third-party assurer of the companies included in the sample

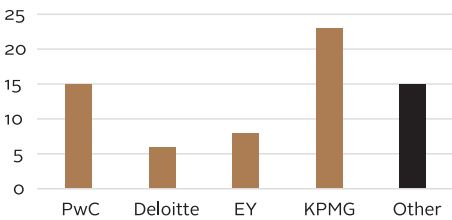
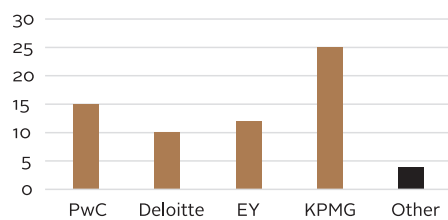


Figure 6: Distribution of assurers in the sample of companies in 2022



Source: Own composition

Research Question 3 can be answered as in this sample (2002-2022), assurance provision concentrates toward auditing firms – particularly the Big Four –, while engineering/consulting firms’ share declines. In early NFRD years, first-time assurance was frequently performed by engineering or consulting firms, but switching patterns show a gradual consolidation toward accounting and auditing firms. This aligns with the CSRD’s expected elevation of assurance rigour.

The overview below (Table 4) aims to provide stakeholders and researchers with a comprehensive understanding of current reliability and assurance issues in organizations and to contribute to the increasing research in the field.

Table 4: The considerations of non-financial reporting disclosure

Considerations of NRD assurance	Details of the considerations
Lack of assurance framework	A unified reporting assurance framework incorporates various aspects employed to assess corporations' non-financial information.
Accounting, consultancy, and engineering assurance companies	Accounting firms have started to dominate the market for assurance in non-financial reporting. However, engineering firms and other consultants still hold a significant share.
Stakeholders' perceptions	Stakeholders' perceptions of assurance providers and the credibility of non-financial reporting have changed, so addressing their concerns is becoming increasingly important.
Lack of comparability	The absence of a common standard and comprehensive guidance regarding the assurance of non-financial reports raises concerns about the ability to compare assurance results.
Assurer switching	Companies often switch between assurance providers for their NFD, which also raises concerns about the credibility of the information provided.

Source: Own composition

Conclusion

Non-financial reporting has gained increasing importance in recent years, as companies are required to disclose a broad set of data to demonstrate their sustainability practices. However, the historical lack of standardization has raised concerns about the credibility of these reports, with several scandals highlighting discrepancies between reported and actual sustainability performance. To address these issues, the CSRD aims to establish a more standardized and reliable approach to non-financial reporting by integrating independent assurance into the reporting process. The role of audit in financial reporting is well-established, and the demand for reliable and credible sustainability reporting assurance is becoming increasingly urgent. As companies prepare to comply with the CSRD requirements, sustainability assurance will play a crucial role in ensuring that stakeholders receive accurate and transparent information regarding corporate sustainability practices.

Companies that introduce assurance from the first reporting period may face significant difficulties – not only must they prepare their non-financial reporting

frameworks in advance of the CSRD enforcement deadlines, but they must also integrate assurance services into their reporting processes in a meaningful way. Early adoption of assurance requires companies to build internal expertise, establish reliable sustainability reporting systems, and align assurance practices with evolving regulatory expectations.

Based on my analysis of non-financial reporting practices in Central Europe over the past 20 years, I found that companies typically introduce external auditors into their sustainability reporting processes only after three years at the earliest. This observation suggests that companies with no prior experience in non-financial reporting may face significant challenges in meeting the new CSRD requirements, as they will be required to prepare their first sustainability reports in compliance with the mandatory ESRS while simultaneously integrating assurance services due to their legal obligations. Therefore, companies should strategically assess their timeline for entering the scope of the CSRD and actively utilize the current preparatory phase to enhance their reporting frameworks.

Assurance statements in sustainability reports do not necessarily increase the transparency or accountability of companies under current practices. The practice of sustainability assurance remains based on procedural accounting practices and is often driven by assurance standards that are not sufficiently aligned with the specific requirements of sustainability reporting. Besides, the importance of audit in financial reporting and non-financial reporting cannot be emphasized enough, as it is vital in ensuring the reliability and accuracy of financial disclosures. As the emphasis on sustainability reporting grows, the need for robust and credible assurance mechanisms also becomes increasingly evident. Addressing the challenges associated with sustainability assurance requires the development of special assurance standards and greater involvement of the auditing profession in verifying sustainability reports. Such measures will be instrumental in strengthening the credibility of non-financial reporting and fostering more sustainable business practices. The role of management accountants is pivotal in integrating sustainability measures and tools into corporate decision-making processes, ensuring that sustainability considerations become deeply embedded in organizational strategy.

Future research could expand upon this study by exploring the following questions: How can non-financial reporting practices enhance organizational accountability for future environmental, social and governance impacts? How can assurance services contribute to the reliability and trustworthiness of non-financial reports? These questions would provide deeper insights into the role of assurance in shaping corporate sustainability strategies and improving stakeholder trust.

However, this research has some limitations, such as the sample used in the analysis consists primarily of large companies, with 74.7% of the selected index sample originating from Germany. Given the size disparity between German firms and those in other Central European countries, the analysis is somewhat weighted towards the German market. Nevertheless, the results remain broadly applicable, as the NFRD and CSRD initially mandate compliance for large public interest entities, ensuring their systematic inclusion in the first phase of ESRS reporting. Additionally, past non-financial reporting practices – whether voluntary or legally mandated –

lacked a unified reporting framework or assurance criteria, leading to highly diverse assurance methodologies and conclusions. Consequently, the omission of specific prior assurance processes from this study is justified and reflects the inherent inconsistencies in early non-financial reporting assurance practices.

It should also be noted that an important area for future investigation is coming up on how the new Omnibus regulation will affect corporate sustainability reporting practices. Understanding how this changing regulatory environment will shape reporting obligations and assurance requirements will be critical for companies seeking to comply with sustainability disclosure requirements and maintain their credibility and competitiveness in the eyes of investors and other stakeholders. ■

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