



WHITE PAPER

# AI-Enabled ESG Reporting

From Regulatory Complexity to Strategic Advantage

April 2026

By Lorenzo Fantini, Johanna Puetz, Vuk Trifkovic, Jannik Leiendecker, and Elisabeth Richenhagen

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## From Regulatory Complexity to Strategic Advantage

**ESG reporting is structurally complex—and both operationally and financially demanding.** Sustainability reporting has shifted from voluntary disclosure to mandatory, assurance-ready compliance. Frameworks such as CSRD/ESRS, ISSB reporting standards, and multiple regional regimes have transformed ESG reporting into a cross-functional operating process spanning governance, data, analytics, and disclosure. Although recent simplification efforts—including the EU Omnibus Package and the revised ESRS—reduce the number of datapoints, they have not eliminated the structural complexity. For multinational organizations, fragmented regulatory requirements and overlapping standards still demand significant operational effort and reporting costs.

**ESG reporting is no longer a peripheral compliance exercise—it is a material cost center under increasing regulatory scrutiny.** Indeed, recurring CSRD reporting costs for large companies exceed €1.3 million annually, with assurance representing the largest share. In practice, total recurring costs often reach up to four times that figure when internal coordination, data processing, advisory services, and assurance preparation are all fully taken into account.

**AI can enable efficiency—but only if it is implemented in a structured way.** AI use cases in ESG reporting are rapidly expanding, with measurable improvements witnessed in data aggregation, calculation logic (for carbon accounting, for example), gap analysis, and disclosure drafting. However, the main obstacle to progress is not the availability of relevant tools, but insufficient structural integration of AI.

To capture meaningful value from AI in ESG reporting, companies require:

- Clear use-case prioritization focused on automation and generative AI in data-intensive, repeatable tasks
- Risk-aligned governance, embedding AI into existing control and assurance frameworks
- Targeted building of capabilities across ESG, finance, and data teams

ESG reporting processes should be designed so that AI augments structured tasks, while expert judgment, validation, and the accountability for final disclosure remain a human preserve.

**The imperative is to act early and with purpose.** Organizations that move right now to anchor AI integration in robust governance, prioritize high-impact applications, and strengthen internal capabilities will reduce reporting costs, improve data reliability, and boost long-term competitiveness.

AI in ESG reporting is no longer at the experimental phase. What matters now is execution.

## 1 Despite attempts at simplification, ESG reporting continues to be complex

In recent years, sustainability reporting has undergone a fundamental change. What was previously largely voluntary (such as with GRI and SASB) has evolved into mandatory disclosure regimes. A prominent example is the Corporate Sustainability Reporting Directive (CSRD) in conjunction with the European Sustainability Reporting Standards (ESRS), now operative within the European Union (EU), under which the Double Materiality Assessment (DMA) became a mandated component of sustainability reporting, kicking off with FY2024 disclosures.

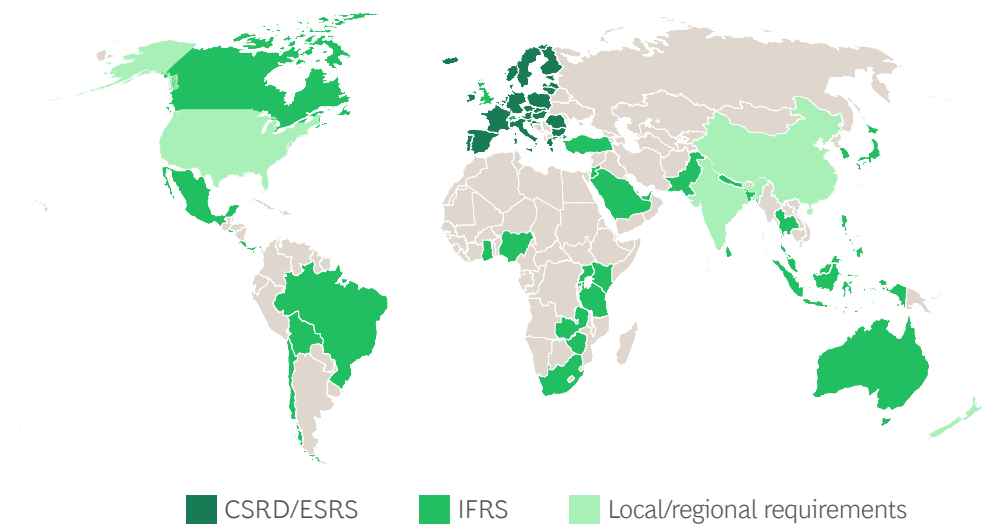
However, this regulatory expansion has not been accompanied by a corresponding global convergence toward a harmonized ESG reporting standard. Instead, companies—particularly large organizations with international operations—must navigate an increasingly fragmented landscape of overlapping and, at times, partially conflicting frameworks. These frameworks include CSRD/ESRS within the EU, ISSB reporting standards across 40 jurisdictions, as well as numerous local or regional reporting regimes.<sup>1</sup> Ensuring consistency and comparability across these constantly developing standards represents a significant operational challenge, particularly for those companies obliged to report across multiple jurisdictions (**Exhibit 1**).

Recognizing this complexity, regulators have taken steps toward simplification. For example, the EU Omnibus Package, initially introduced in February 2025, seeks to streamline sustainability reporting requirements in respect of multiple EU regulations, including the CSRD, the Corporate Sustainability Due Diligence Directive (CSDDD), and the Carbon Border Adjustment Mechanism (CBAM). The proposed changes are expected to reduce the total number of companies subject to CSRD by approximately 80%.

The European standard setter EFRAG also set out to revise and simplify the European Sustainability Reporting Standards (ESRS). As a result, mandatory datapoints were reduced by 61% and overall ESRS Set 1 datapoints by 70%, while voluntary datapoints were removed entirely. Subject to review, these revisions are expected to be adopted by mid-2026.<sup>2</sup>

### EXHIBIT 1

## Global ESG reporting landscape



**Source:** ISSB press release (February 2026) “Jurisdictional Readiness Assessment Guide and tool added to ISSB adoption toolkit”.

1. IFRS website (<https://www.ifrs.org/news-and-events/news/2026/02/jurisdictional-readiness-assessment-guide-and-tool/>).
2. EFRAG - Final draft Simplified ESRS – December 2025.

## **2 ESG reporting involves substantial costs – the annual CSRD report alone costs a company several million, mostly due to the complexity of data collection and processing**

Despite the efficiency gains promised by these moves toward simplification, ESG reporting remains a time-intensive, manual, and highly repetitive process under existing regulatory frameworks. As a result, the costs of ESG reporting are significant. For reporting under the CSRD framework, for example, the amended Cost-Benefit Analysis published by EFRAG in December 2025 estimates annual recurring costs of at least €1.37 million for companies with more than 10,000 employees. Assurance-related expenditure accounts for most of the costs with approximately €800,000 per year, while internal costs are estimated at €370,000 and further external costs at €200,000.<sup>3</sup>

In practice, these direct costs represent only part of the story. The operational burden associated with ESG reporting might well extend well beyond the formal reporting line items captured in a cost-benefit analysis. When the full scope of recurring internal, external, and assurance-related activities is taken into account, total annual ESG reporting costs tend to be two to four times higher.<sup>4</sup>

## **3 Against this backdrop of persistent cost pressure, limited improvements in efficiency, and the highly demanding, complex, and labor-intensive nature of the ESG reporting process, sustainability and finance teams are turning to AI as a way to reduce reporting costs, manual effort, and enhance the overall effectiveness of the ESG reporting lifecycle**

**The central question is no longer whether AI can play a role in sustainability reporting. Rather, it is how, and under what structural conditions, it can minimize the financial and manual burden of this process, while simultaneously enhancing the quality and reliability of ESG reporting.** Indeed, sustainability and finance teams have increasingly come to view AI as a necessity in the battle to alleviate the operational and financial pressures of ESG reporting.

Vendors themselves frequently claim that their solutions are capable of optimizing the ESG reporting lifecycle, with some insisting that they can reduce the time allotted to reporting by at least 50%. They argue that AI solutions offer measurable efficiency gains—reducing processing time and manual effort, lowering recurring reporting costs, speeding up disclosure, and improving data consistency and analytical quality—while also enhancing the credibility of the ESG reporting output and creating significant cost savings.

More specifically, these vendors assert that the operational benefits of AI are most pronounced in structured data processing, consistency checks, and workflow acceleration, although the final validation and sign-off remain firmly in human hands. However, due to the diversified nature of the AI-ESG reporting solutions market, selecting and integrating AI solutions into ESG reporting remains a complicated process.

3. Implementation phase includes IT and consulting costs; recurring phase includes consulting costs only.

4. Cost-Benefit Analysis EFRAG December 2025; BCG experience.

Despite the broad range of AI offerings, the current vendor landscape for AI-enabled ESG reporting is characterized by rapid evolution and a large amount of strategic repositioning. ESG reporting today often resembles a patchwork of specialized tools spanning data collection, carbon accounting, compliance management, narrative drafting, and supplier engagement.

While the desired long-term vision envisages more integrated end-to-end (E2E) orchestration, many systems in practice remain connected solely through customized interfaces and manual workflows, principally due to the novelty of these ESG reporting-focused AI solutions.

Several players are now moving outside their traditional core domains. EHS-led platforms, carbon accounting providers, and ESG analytics tools are broadening their scope and devising more comprehensive E2E offerings. This evolution reflects both customer demand for integrated solutions and a recognition that scalable AI value often emerges through interconnected reporting rather than through isolated applications.

As a result, traditional vendor boundaries are starting to blur. Carbon, compliance, ESG management, and reporting platforms are all converging due to increasing cost, scale, and regulatory pressures. Market consolidation is expected to accelerate as providers seek to strengthen integration capabilities, deepen functionality, and build more unified value propositions.

AI remains the most promising vehicle for alleviating the manual and financial burdens of ESG reporting. It is clear that the central challenge will not be to identify suitable AI-enabled tools, but to develop a strong and clear strategy for structured AI integration into ESG-related corporate data architectures, governance frameworks, and reporting processes. The ultimate goal is to improve efficiency, significantly reduce reporting costs, and strengthen the quality of published reports.

However, there are three main obstacles that consistently hinder AI integration into the ESG reporting lifecycle:

- **Misaligned or inadequate use case selection**, where organizations focus on high-profile applications rather than those with demonstrable operational benefit
- **Lack of a clear governance structure for AI integration**, including defined accountability and decision rights
- **Insufficient enablement and capability development**, whether in-house or through specialized third-party support, to ensure controlled implementation and continuous piloting of emerging AI applications

## 4 To exploit the full potential of AI in ESG reporting, companies should strive for functional AI integration, with three success factors

### 4.1 Success factor I: Stringent use case prioritization with focus on materiality analysis, data processing and analysis, and narrative drafting tasks

Viewing ESG reporting as an integrated end-to-end process sheds lights on where AI can promote structural efficiencies (**Exhibit 2**). These various stages illustrate that ESG reporting is not a single task, but a coordinated operating process that spans governance, data, analytics, and communication. AI's impact is most evident when it enhances data quality, accelerates analysis, and reduces manual coordination right across these reporting stages, not when it improves one individual step in isolation.

In practice, AI applications in ESG reporting fall into three distinct categories:

- **Automation** (Data population and preparation) – streamlining the collection, structuring, and validation of ESG-relevant data across systems to improve completeness, consistency, and efficiency
- **Generative AI** (Analysis and reporting) – synthesizing structured and unstructured inputs into standardized narratives, drafting disclosures, summarizing findings, and aligning outputs with reporting frameworks
- **Agentic AI** (Interaction and orchestration) – supporting workflow navigation, proactively identifying gaps or inconsistencies, and coordinating tasks across reporting stages

#### EXHIBIT 2

### Overview of ESG reporting value chain



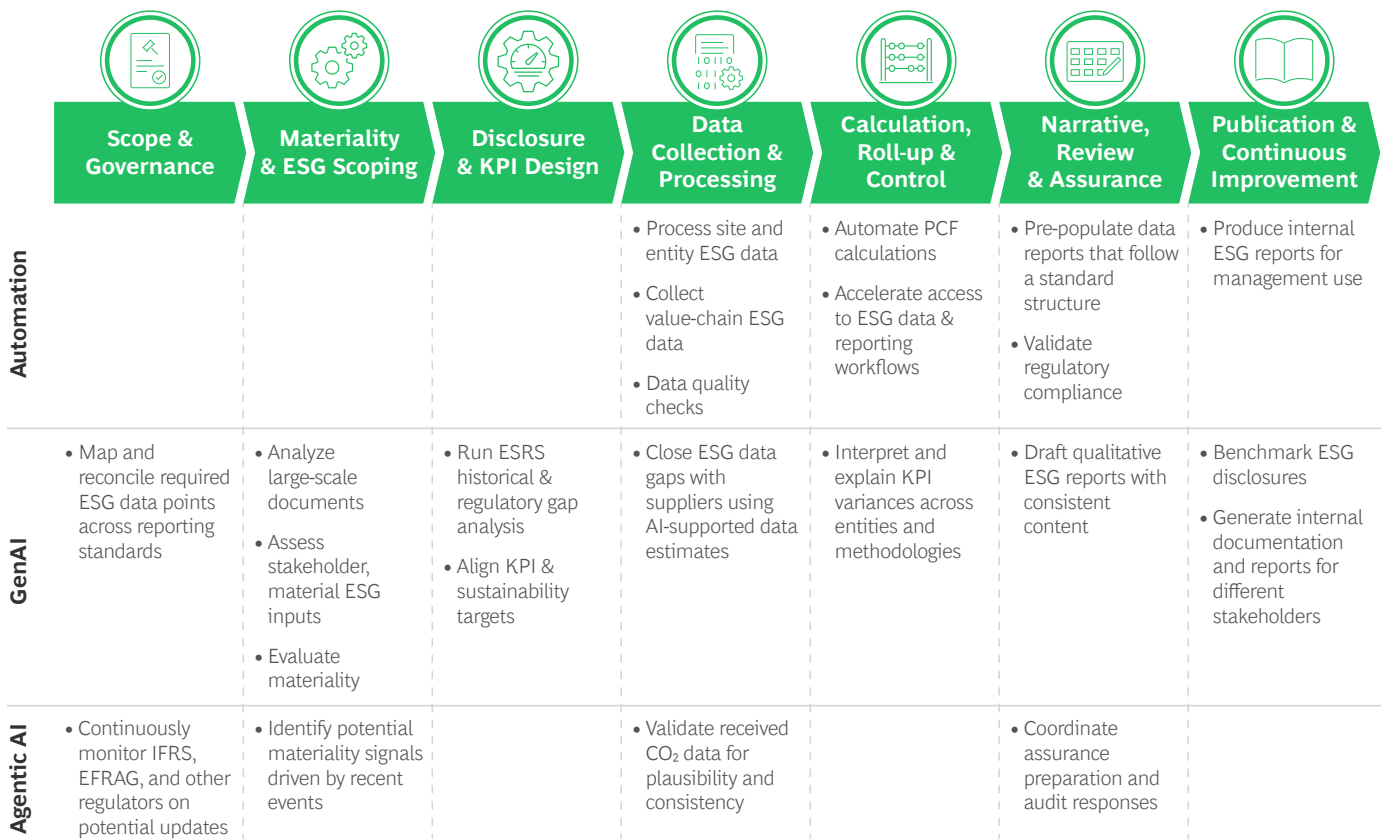
Source: BCG analysis.

Considering the respective maturity of each category and their potential impact, the most powerful short-term gains can be derived from Automation and Generative AI. These applications handle data-intensive, rules-based, and structurally repeatable tasks, such as materiality assessments, data consolidation, calculation logic (for example, in carbon accounting), gap analyses, and narrative drafting.

In these areas, AI can lead to measurable efficiency gains and greater consistency without replacing the fundamental system of accountability. Agentic AI currently delivers most value in workflow coordination and process guidance. It enhances orchestration across reporting steps but does not replace expert judgment, governance oversight, or formal sign-off mechanisms. Responsibility for external reporting remains human-led (**Exhibit 3**).

### EXHIBIT 3

## AI use cases across end-to-end ESG reporting value chain



Source: BCG analysis.

## **Case Studies: AI ESG Reporting Integration**

### *Case Study 1 – Materiality analysis*

One example falls within the Materiality & ESG Scoping step of the ESG reporting process. The case involves a large multi-national company. As it was bound by multiple sustainability disclosure requirements, the company secured an external AI vendor to help improve its double materiality analysis by using external ESG signals and structured data inputs.

For the company, this development marked a shift from manual assessment to a data-driven analytical approach. Materiality assessments that used to take months were completed in weeks, enabling a quarterly review of material ESG priorities. The accelerated rhythm resulted in a greater volume of available evidence, which could then be used to prioritize risks and opportunities. This reinforced the analytical rigor of the company's reporting process and enhanced its responsiveness to evolving stakeholder and regulatory expectations.

### *Case Study 2 – Assurance-ready disclosure*

The Narrative, Review & Assurance stage of the ESG reporting value chain offers another example. In this case, a global energy technology company integrated an external AI solution to help produce assurance-ready disclosures across various mandated sustainability reports.

The solution did not only speed up the drafting, but improved the structuring, review, and validation of disclosures. The outcome involved the delivery of investor-grade ESG disclosures and the formation of scalable, assurance-ready reporting processes capable of adapting as regulatory requirements develop. By embedding standardized controls directly into disclosure production, the company strengthened traceability and review integrity across reporting cycles, reinforcing its external ESG reporting under intensifying regulatory scrutiny.

### *Case Study 3 – In-house calculation and attribution*

In contrast to the previous examples with external vendors, this case covers an internally-developed AI solution within the Calculation, Roll-up & Control stage of the ESG reporting process. The company, a global enterprise software and cloud infrastructure provider, integrated its in-house AI capabilities to calculate emissions and apply attribution logic across value-chain data.

The solution managed to embed structured emissions modeling directly into the reporting architecture. By applying attribution methodologies across supplier and partner data, the company enhanced visibility of Scope 3 emissions, while reducing the manual effort associated with complex calculation and reconciliation processes. This reinforced the transparency and analytical robustness of value-chain emissions reporting, enabling more reliable, traceable emissions figures across reporting cycles and improving the integrity of disclosures in one of the most technically demanding areas of ESG reporting.

Across these cases, the most significant gains were documented in areas characterized by structured data inputs, repeatable logic, and defined reporting outputs—particularly materiality evaluation, quantitative calculation, and controlled disclosure production. These examples illustrate that AI produces most tangible value when analytical tasks are systematic, data-intensive, and embedded within clearly defined reporting steps.

In all three examples, AI enhanced structured analytical steps while final interpretation and sign-off remained in human hands.

## 4.2 Success factor II: Defining governance for successful AI integration

Effective AI integration in ESG reporting requires careful governance design. It is not deploying isolated tools that creates impact. What is important is establishing clear policy structures, defined responsibilities, and an operating model that embeds AI into reporting processes in a controlled and scalable manner, while maintaining appropriate human oversight and authority over final decisions.

Importantly, governance must reflect the risk profile of different AI use cases within ESG reporting. Not all AI applications carry the same level of exposure. High-risk applications—such as AI systems that independently evaluate the materiality of ESG topics or directly shape externally reported conclusions subject to regulatory scrutiny and assurance—require final human decision-making authority and clearly documented accountability. Medium-risk applications—such as AI tools that collect, structure, or analyze ESG data and perform coordinated tasks that have an influence on reporting outcomes—require structured human oversight and review checkpoints. Lower-risk applications—such as checking plausibility, detecting anomalies, or generating traceable, auditable outputs that identify exceptions—may operate with more automation, provided that the escalation mechanisms for outliers are clearly defined.

At the organizational level, governance must begin with formal oversight mechanisms and clearly allocated accountability. Executive leadership should retain ownership of AI-related policy compliance and strategic prioritization of use cases within ESG reporting. Clear role definitions—across the finance function, sustainability and ESG teams, legal and compliance, internal audit, IT and data governance, and designated policy oversight bodies—are essential in ensuring that AI-enabled outputs remain aligned with regulatory requirements, disclosure obligations, and existing internal control frameworks. Structured review processes and defined feedback loops should be embedded into both development and scaling phases, with explicit human checkpoints adjusted according to the risk level of each AI application.

In terms of operating model, a central platform with decentralized delivery provides the most robust foundation for ESG reporting integration. In this structure, a central AI platform is responsible for core assets such as model governance, data standards, monitoring, and quality control, while business functions retain ownership of domain-specific implementation. This model reduces fragmentation, enforces consistent standards across reporting entities, and enables the repeated application of foundational components. At the same time, it maintains proximity to the business and subject-matter expertise within sustainability and finance teams.

For ESG reporting specifically, governance must be anchored in a strong ESG data management foundation. Clear data ownership, standardized definitions, documented validation procedures, and integration into existing quality management processes are prerequisites for credible AI-enabled disclosures.

AI systems that validate data for plausibility or generate auditable exception reports can enhance reliability—but only when embedded within existing assurance-ready processes. Governance therefore serves as the structural enabler that allows AI to improve both efficiency and reporting reliability without compromising accountability or ceding end-to-end control of ESG reporting to AI.

### 4.3 Success factor III: Targeted capability building for AI-Enabled ESG Reporting

Sustainable AI value realization in ESG reporting depends not only on selecting the right use cases and establishing an AI-compatible governance model, but on systematically building the capabilities that allow humans to retain control of interpretation and final reporting decisions. As experience consistently shows, the majority of effort involved in AI adoption relates to people and process changes rather than algorithms or technology alone.

Various stakeholder groups—executive sponsors, ESG leaders, reporting practitioners, data teams, and governance functions—require different types of capability development. Enterprise-wide AI upskilling programs demonstrate that structured persona-based training models enhance readiness across leadership, decision-makers, implementers, and users. When it comes to ESG, this means equipping practitioners with the skills to engage with AI tools in their everyday work in a structured and safe manner—encouraging experimentation on reporting challenges, but supported by the interactive use of AI features embedded in enterprise systems.

Beyond broad upskilling, organizations should consider empowering a small number of dedicated contributors with more freedom to experiment with AI approaches and tools. These people can then systematically capture and translate those learnings into scalable practices for ESG reporting teams. Given the growing capabilities of Agentic AI—particularly in orchestrating workflows and connecting multiple tools across reporting stages—and the absence of fully integrated AI solutions for end-to-end ESG reporting, any internal capability focused on designing and piecing together tailored AI workflows can make integration significantly more effective.

Organizations must decide whether to build these capabilities only internally or complement them with specialized third-party expertise. However, even when external tools are deployed, internal capability building remains essential to embed AI into day-to-day reporting processes and move from successful piloting to scaled adoption.

Structured enablement—combining targeted upskilling, controlled experimentation, workflow redesign, and change management—ensures that AI integration in ESG reporting becomes consistent operational practice, thereby supporting both efficiency gains and sustained reporting quality.

## 5 What companies need to do: Accelerate AI adoption now and do not wait for the market

As ESG reporting remains operationally demanding—even despite regulatory simplification—and as AI tooling continues to develop unevenly across the market, companies should proactively adopt a structured approach to AI integration in ESG reporting. A clear path forward should focus on three steps:

- **Prioritize high-impact use cases:** Concentrate on proven AI applications—particularly in data processing and report generation—to deliver short-term efficiency gains while strengthening data quality and control
- **Define governance and operating model:** Establish clear accountability, decision rights, and a scalable operating structure that embeds AI into ESG reporting processes and controls, founded on a robust ESG data management foundation
- **Build capabilities and pilot systematically:** Determine the appropriate model (internal upskilling, external support, or a hybrid approach) and use structured pilots to test, refine, and scale emerging as well as internally developed AI use cases over time

Companies that anchor AI integration in structured operating foundations, prioritize tangible value creation, and invest in targeted capability building, will be better placed to embed AI over the long term. In this way, AI can be used to augment ESG reporting workflows while maintaining final human-led accountability and sign-off, thus boosting reporting effectiveness and enhancing competitive differentiation.

# About the Authors

**Lorenzo Fantini** is a Managing Director & Partner from our Milan Office. He is responsible for our global efforts on ESG Risk & Compliance with a particular focus on sustainability disclosure.

**Johanna Puetz** is a Managing Director & Partner from our Berlin office. She is the leader of our Sustainability Practice Area in Central Europe.

**Vuk Trifkovic** is a Managing Director & Partner from our Copenhagen office. He is our topical leader at the intersection between Sustainability Regulation and Tech.

**Jannik Leiendecker** is a Partner and Associate Director from our Munich office. He co-leads our Center for Sustainability Policy and Regulation and has recently been nominated for EFRAG's Sustainability Reporting Technical Expert Group (SR TEG).\*

**Elisabeth Richenhagen** is a Principal from our Hamburg office. She is a core member of our Sustainability practice area in Central Europe.

## For Further Contact

If you would like to discuss this report, please contact the authors.

## Acknowledgments

The authors wish to thank their many colleagues who made valuable contributions to this report: Solène Chataigné, Julie Foucault, Constantine Karlis, Gabriel Gullett

\*The views articulated do not necessarily represent official EFRAG positions.



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