

Original Article

Accounting Foundations for Sustainability Disclosure: A Conceptual Framework on the Role of GAAP, IFRS S1 and IFRS S2 in Harmonising ESG Reporting

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Abstract: Environmental, social and governance (ESG) reporting has expanded through a proliferation of voluntary frameworks, regulatory initiatives and jurisdiction-specific rules, producing well-documented problems of fragmentation, inconsistent measurement, limited comparability and greenwashing risk. This conceptual paper examines whether, and how, Generally Accepted Accounting Principles (GAAP) and the broader financial reporting infrastructure they support can contribute to a more harmonised ESG reporting environment, and it evaluates the specific role of IFRS S1 (General Requirements for Disclosure of Sustainability-related Financial Information) and IFRS S2 (Climate-related Disclosures), issued by the International Sustainability Standards Board (ISSB), in that process. Drawing primarily on institutional theory, information asymmetry theory and agency theory, with stakeholder, legitimacy, decision-usefulness and standards-diffusion perspectives as supporting lenses, the paper develops and critically tests the thesis that accounting principles supply necessary but not sufficient conditions for harmonised sustainability reporting. It argues that GAAP-based recognition, measurement, materiality, comparability and assurance discipline can meaningfully discipline ESG disclosure, but that GAAP alone cannot resolve the boundary problems created by externalities, long time horizons, double materiality and impacts that fall outside enterprise-value considerations. IFRS S1 and IFRS S2 are analysed not as another voluntary ESG framework but as a structured, investor-focused extension of financial reporting architecture into sustainability-related information, built on, and partially superseding, the Task Force on Climate-related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB) and related initiatives. An original conceptual framework and a linked set of eight propositions connect accounting-principle inputs, reporting-mechanism disciplines and IFRS S1/S2 architecture to comparability, decision-usefulness and, conditionally, harmonisation, subject to jurisdictional, institutional, firm-size and assurance-capacity boundary conditions. The paper contributes a conceptual integration of literatures that have largely developed separately accounting-principle research, ESG disclosure research and ISSB-specific commentary and offers implications for standard-setters, regulators, preparers, assurance providers and researchers, with particular attention to micro, small and medium-sized enterprises (MSMEs) and developing-economy contexts, including India. The paper does not claim that global ESG reporting harmonisation has been achieved, or that IFRS S1/S2 constitute a comprehensive answer to stakeholder-oriented sustainability reporting; it argues only that they represent a conceptually significant, but bounded and contested, contribution.

Keywords: GAAP, ESG Reporting, IFRS S1, IFRS S2, ISSB, Harmonisation, Materiality, Sustainability-Related Financial Disclosure.

I. INTRODUCTION

Corporate reporting on environmental, social and governance (ESG) matters has grown from a marginal, voluntary practice into a central feature of capital-market infrastructure, yet its growth has not been orderly. Since the 1990s, companies seeking to communicate sustainability performance have been able to choose among an expanding menu of frameworks the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB), the International Integrated Reporting Framework, and the Carbon Disclosure Project (CDP), among others each with its own scope, materiality basis and intended audience. Regulators added further layers: the European Union's Non-Financial Reporting Directive and, later, the Corporate Sustainability Reporting Directive (CSRD) with its European Sustainability Reporting Standards (ESRS); national stock-exchange and securities-regulator requirements from Brazil to Singapore to India; and a variety of sector-specific or voluntary codes. The result, widely documented in the accounting literature, has been fragmentation: inconsistent definitions, incompatible measurement conventions, divergent materiality concepts, selective and self-serving disclosure, weak comparability across firms and jurisdictions, uneven assurance, and a persistent risk of greenwashing (Christensen et al., 2021).



Financial reporting faced an analogous, if narrower, problem in the second half of the twentieth century, and resolved a significant part of it through Generally Accepted Accounting Principles (GAAP) and, subsequently, through the international convergence project that produced IFRS Accounting Standards. GAAP-based systems did not eliminate national differences in financial reporting practice, and the literature on IFRS convergence is itself divided about how much real comparability uniform standards deliver once local enforcement, incentives and institutions are taken into account (Ball, 2006). Even so, GAAP-based infrastructure supplied something ESG reporting has largely lacked: a shared discipline of recognition, measurement, materiality assessment, disclosure, aggregation, consistency across periods, and third-party assurance, embedded in a Conceptual Framework that defines what makes financial information decision-useful (IFRS Foundation, 2018). This paper asks whether that accounting discipline not GAAP's specific rules, but its underlying principles and infrastructure can be extended, adapted or partially transferred to sustainability-related information, and whether doing so can reduce ESG reporting's fragmentation problem.

The question is no longer purely theoretical. In June 2023 the International Sustainability Standards Board (ISSB), formed under the IFRS Foundation at COP26 in November 2021 through the consolidation of the Value Reporting Foundation (itself the 2021 merger of SASB and the International Integrated Reporting Council) and the Climate Disclosure Standards Board (IFRS Foundation, 2021), issued its first two standards: IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures, effective for annual reporting periods beginning on or after 1 January 2024 (IFRS Foundation, 2023a, 2023b). Both standards were deliberately built on, and are intended to fully incorporate, the four-pillar structure-governance, strategy, risk management, metrics and targets of the TCFD recommendations; following the standards' publication, the Financial Stability Board judged the TCFD's work complete and the Task Force formally disbanded in October 2023, with the IFRS Foundation assuming responsibility for monitoring global progress on climate-related disclosure (Financial Stability Board, 2023; IFRS Foundation, n.d.-a). By January 2026, twenty-one jurisdictions had adopted or otherwise required use of the ISSB Standards, with a further sixteen at various stages of the adoption pathway, and the IFRS Foundation had begun publishing formal jurisdictional profiles analogous to those long maintained for IFRS Accounting Standards (IFRS Foundation, 2025; S&P Global Sustainable1, 2026a).

This paper's central contention is that IFRS S1 and IFRS S2 should not be treated as merely one more entrant in an already crowded field of voluntary ESG frameworks. They differ in kind, not only in degree, because they are issued by a board created under the same governance architecture as the International Accounting Standards Board (IASB), designed to be read alongside IFRS Accounting Standards, and explicitly framed around information that "could reasonably be expected to affect" an entity's cash flows, access to finance or cost of capital the same enterprise-value orientation that underlies mainstream financial reporting (IFRS Foundation, 2023a). Whether that positioning allows IFRS S1 and IFRS S2 to function as a credible bridge between GAAP-based financial reporting and the wider, more contested field of ESG reporting is the paper's organising problem.

At the same time, the paper resists a simplistic equation of GAAP with ESG reporting standards. GAAP, financial reporting standards, sustainability reporting standards, ESG reporting and sustainability-related financial disclosure are related but analytically distinct categories, and the paper's second contribution is to hold that distinction in place throughout rather than collapsing it for rhetorical convenience. Harmonisation, too, is treated as distinct from standardisation, convergence, comparability, consistency, interoperability and uniformity; the paper argues that global ESG reporting does not require and, given legitimate jurisdictional variation in institutional capacity, regulatory tradition and stakeholder expectations, probably should not pursue complete uniformity. A global baseline supplemented by jurisdictional adoption, regulatory layering and industry-specific guidance is treated as the more defensible model, consistent with the ISSB's own stated ambition of a "global baseline" rather than a single global standard (IFRS Foundation, 2023a).

The paper proceeds as follows. Section 2 sets out the conceptual and theoretical background. Section 3 reviews the literature thematically. Section 4 examines critically whether and how GAAP-based principles can support ESG reporting, and where they cannot. Sections 5 and 6 analyse IFRS S1 and IFRS S2 in turn. Section 7 develops the integration model linking GAAP, IFRS S1 and IFRS S2, and Section 8 addresses harmonisation, interoperability and the global reporting architecture, including the treatment of materiality. Section 9 presents an original conceptual framework, and Section 10 derives conceptual propositions. Sections 11 and 12 discuss the framework's implications, with Section 13 addressing MSMEs and developing economies, including India. Sections 14 to 16 set out limitations, a future research agenda and the conclusion. The paper's central argument, stated concisely, is that accounting principles and GAAP-based infrastructure can provide an essential, but incomplete, institutional foundation for harmonised ESG reporting; that IFRS S1 and IFRS S2 represent a conceptually significant bridge between financial and sustainability-related financial reporting; and that neither GAAP nor IFRS S1/S2 should be mistaken for a comprehensive solution to the broader, stakeholder-oriented ESG reporting problem that they were never designed to solve.

A) Research questions

The paper is organised around one overarching research question and five supporting conceptual questions, refined from an initial broader set to focus specifically on the conceptual boundary between accounting infrastructure and sustainability disclosure.

Primary research question: How can GAAP-based accounting principles and contemporary sustainability disclosure standards contribute to the harmonisation of ESG reporting, and what role do IFRS S1 and IFRS S2 play in bridging traditional financial reporting and sustainability-related financial disclosures?

- RQ1: Which conceptual characteristics of GAAP and accounting-standard systems are transferable to ESG reporting, and which are not?
- RQ2: Why has ESG reporting historically suffered from fragmentation and comparability problems that GAAP-based financial reporting largely avoided?
- RQ3: What are the conceptual boundaries of applying traditional recognition, measurement and materiality principles to sustainability-related information?
- RQ4: How do IFRS S1 and IFRS S2 address, and fail fully to address, existing ESG reporting fragmentation?
- RQ5: Under what institutional and jurisdictional conditions can IFRS S1 and IFRS S2 function as a foundation for greater global reporting harmonisation, and what limits remain?

II. CONCEPTUAL AND THEORETICAL BACKGROUND

A) Six Concepts that must not be Conflated

The paper's argument depends on holding six related concepts apart. GAAP refers to the jurisdiction-specific body of accounting principles, rules and conventions used to prepare general-purpose financial statements US GAAP being the most prominent example, alongside numerous national GAAP frameworks. Financial reporting standards is the broader category encompassing both national GAAP and IFRS Accounting Standards, the latter now required or permitted in the large majority of jurisdictions worldwide. Sustainability reporting standards refers to standards purpose-built for non-financial or sustainability content, of which the IFRS Sustainability Disclosure Standards (currently IFRS S1 and IFRS S2) are one instance among several, alongside GRI, ESRS and others. ESG reporting is broader still: a reporting domain, not a single standard, encompassing environmental, social and governance information regardless of which framework or none is used to produce it. Sustainability-related financial disclosure is narrower and more precisely defined than ESG reporting; in ISSB usage it refers specifically to information about sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects its cash flows, access to finance or cost of capital over the short, medium or long term (IFRS Foundation, 2023a). Harmonisation, finally, denotes the reduction of unnecessary differences in recognition, measurement, presentation, disclosure, terminology and reporting architecture, while tolerating and, where justified, protecting legitimate jurisdictional differences; it is therefore weaker than standardisation or uniformity and stronger than mere interoperability.

Collapsing these categories produces exactly the kind of overclaiming the paper seeks to avoid. To say "GAAP equals ESG reporting standards" mistakes an infrastructure (GAAP) for a domain (ESG reporting) and ignores that IFRS S1 and IFRS S2 are sustainability reporting standards built on, but distinct from, GAAP and IFRS Accounting Standards. Each section below therefore specifies which of the six concepts is being invoked.

B) Theoretical Framework

The paper draws on seven bodies of theory identified in prior ESG and accounting-standards research, but treats three as theoretically central and four as supporting perspectives, on the grounds that the central three most directly explain why standardised information infrastructure emerges and persists, while the remaining four explain complementary aspects of disclosure behaviour and stakeholder scope that the central three do not fully capture.

Institutional theory is treated as the most important lens because the paper's core object the diffusion of accounting-like discipline into sustainability reporting is itself an institutionalisation process. DiMaggio and Powell's (1983) account of coercive, mimetic and normative isomorphism explains why firms, once a critical mass of peers, regulators and professional bodies adopt a reporting logic, converge on similar practices even without a single binding rule: coercive pressure from regulators such as the EU or SEBI; mimetic pressure as firms copy perceived industry leaders under uncertainty about what "good" sustainability reporting looks like; and normative pressure transmitted through accounting and audit professions, business schools and professional bodies. Empirical work applying this lens to sustainability and non-financial reporting directives finds that these three mechanisms operate with different strength in different institutional settings, which is itself evidence against an assumption of automatic, uniform harmonisation (Posadas et al., 2023). Institutional theory therefore explains both why ISSB Standards might diffuse rapidly once adopted by influential jurisdictions, and why that diffusion is likely to remain uneven rather than universal.

Information asymmetry theory is the second central lens. Healy and Palepu's (2001) review of the disclosure literature establishes the basic logic that outside investors are less informed than managers about firm prospects, that voluntary and mandated disclosure can narrow this gap, and that disclosure quality affects the cost of capital and capital-allocation efficiency. Applied to sustainability information, this logic motivates the ISSB's investor-focused mandate directly: if climate-related and other sustainability-related risks affect future cash flows but are not disclosed in a comparable, verifiable form, capital is misallocated and the cost of capital fails to reflect true risk. This is the theoretical justification most explicitly mirrored in IFRS S1's own stated objective of informing decisions relating to providing resources to the entity (IFRS Foundation, 2023a).

Agency theory is the third central lens. Jensen and Meckling's (1976) analysis of the separation of ownership and control explains why managers, as agents, may have incentives to disclose sustainability information selectively favourably where it burnishes reputation or supports access to capital, and sparingly or vaguely where it exposes risk, cost or underperformance. Standardisation constrains this discretion by fixing what must be disclosed, in what form, and increasingly under what assurance regime, which is precisely the function GAAP performs for financial information and which IFRS S1/S2 attempt to perform for sustainability-related information.

Four further perspectives are used selectively as supporting lenses rather than as central pillars. Stakeholder theory (Freeman, 1984) is indispensable for identifying what the central three theories tend to obscure: an investor-focused disclosure architecture, however well designed, does not by construction serve the information needs of employees, affected communities, civil society or the environment itself, considered as ends rather than as sources of financial risk to the entity. This is not a minor caveat; it is the theoretical basis for the paper's later argument that IFRS S1/S2 cannot be read as a comprehensive ESG reporting solution. Legitimacy theory (Deegan, 2002) supplies a complementary account of disclosure motive: firms disclose, in part, to maintain congruence between their perceived and socially expected behaviour, which explains both the historical proliferation of voluntary, sometimes symbolic ESG reporting and the greenwashing risk that harmonisation efforts seek to reduce. Decision-usefulness theory, embedded directly in the IASB's Conceptual Framework for Financial Reporting (IFRS Foundation, 2018) and carried into IFRS S1's own qualitative-characteristics language, provides the normative standard-relevance, faithful representation, comparability, verifiability, timeliness and understandability against which any candidate harmonisation mechanism, accounting-based or otherwise, should be judged. Finally, a diffusion/convergence-of-standards perspective, informed by the long-running and still unsettled debate over whether uniform accounting standards produce uniform practice once local enforcement and incentives are taken into account (Ball, 2006), tempers the paper's expectations about how much harmonisation any single standard-setting initiative, including the ISSB, can realistically deliver.

C) An Integrated Reading

Read together, these theories generate a specific expectation rather than a generic one. Institutional pressures explain why an investor-oriented sustainability disclosure architecture is likely to diffuse once major capital-market jurisdictions adopt it; information asymmetry and agency theory explain why that architecture is valuable to capital markets and why it constrains managerial discretion; and stakeholder and legitimacy theory explain why that same architecture will remain contested and partial from the standpoint of non-investor stakeholders. Decision-usefulness theory supplies the evaluative criteria, and the convergence-diffusion literature supplies the realism check. This integrated reading, rather than a simple summation of seven theories, underlies the conceptual framework developed in Section 9.

III. CRITICAL LITERATURE REVIEW

The literature relevant to this paper has developed largely along three separate tracks that are rarely brought into direct conversation: research on accounting-principle transfer and comparability; research on ESG/CSR/non-financial disclosure, its determinants and its economic consequences; and, most recently, commentary specifically on the ISSB and IFRS S1/S2. The review below is organised thematically.

A) Evolution of ESG Reporting

Corporate non-financial reporting evolved from ad hoc, narrative corporate social responsibility disclosure in the 1990s toward more structured frameworks-GRI from 1997, the UN Global Compact, integrated reporting from 2013, and TCFD from 2017 each responding to a widening set of stakeholder demands without a shared institutional anchor comparable to the IASB or national standard-setters in financial reporting. Christensen et al. (2021) characterise this trajectory as producing two distinct approaches to sustainability reporting that differ in their overarching goals and materiality standards: an investor-oriented approach concerned with risks and opportunities that affect enterprise value, and a stakeholder-oriented approach concerned with the entity's impacts on the economy, environment and people regardless of whether those impacts are financially material to the entity itself. This distinction, developed independently of the ISSB project, anticipates almost exactly the single-materiality/double-materiality divide that later separated the ISSB's approach from that of the GRI and the EU's ESRS.

B) Fragmentation and Comparability Problems

The practical consequences of an uncoordinated multi-framework environment are well documented: firms could select among frameworks, disclose selectively within a chosen framework, and use inconsistent boundaries, denominators and time periods, such that even firms in the same industry reporting under nominally the same framework produced disclosures with limited comparability. Christensen et al. (2021) draw on the broader disclosure-regulation literature to note that mandatory disclosure regimes are not costless or automatically beneficial; they can impose compliance burdens, generate boilerplate rather than informative disclosure, and produce unintended consequences, a caution equally applicable to any assessment of GAAP-style harmonisation of ESG reporting.

C) Accounting Principles and Non-Financial Information

A smaller literature has examined directly whether financial-reporting concepts recognition, measurement, materiality, faithful representation can be transferred to non-financial or sustainability information. The consistent finding is qualified transferability: concepts such as comparability, consistency and verifiability travel reasonably well as aspirations, but their operationalisation is harder outside a monetary unit of account, particularly where impacts are diffuse, cumulative, uncertain or realised over decades rather than reporting periods. This is precisely the boundary problem examined in Section 4 below.

D) GAAP and Sustainability Reporting

Prior to the ISSB's creation, research on GAAP's relevance to sustainability reporting was largely indirect, proceeding through studies of voluntary CSR disclosure quality, environmental cost accounting, and the connectivity (or lack of it) between financial statements and sustainability narratives in annual reports. Bathla et al.'s (2023) bibliometric review of the IFRS-adoption literature finds a large and growing body of behavioural accounting research on stakeholder responses to IFRS adoption and convergence, but notes that this literature has focused overwhelmingly on financial, not sustainability, reporting quality underscoring the research gap this paper addresses.

E) Materiality and ESG Reporting

Materiality is the single most contested conceptual issue in this literature. Baumüller and Sopp (2022) trace the evolution of the materiality principle in European accounting and reporting law from the 2003 Modernisation Directive through the 2014 Non-Financial Reporting Directive to the proposals that became the CSRD, showing that ambiguity between single (financial) and double (financial-plus-impact) materiality was not merely a drafting oversight but reflected genuine, unresolved disagreement among legislators, standard-setters and preparers about the purpose of non-financial reporting. Their analysis anticipates the position the ISSB would later take explicitly: a single, financial-materiality basis, with double materiality left to other standard-setters such as the GRI and, in the EU, to the ESRS under the CSRD.

F) Financial Reporting-Sustainability Reporting Connectivity

"Connectivity" the requirement that sustainability-related financial disclosures be clearly linked to related information in the financial statements recurs throughout IFRS S1 as a distinguishing design feature relative to earlier voluntary frameworks (IFRS Foundation, 2023a). The literature on integrated reporting had already identified connectivity, or its absence, as a central weakness of pre-ISSB sustainability reporting, in which narrative ESG sections of annual reports frequently bore only a loose relationship to the recognised assets, liabilities, income and expenses reported nearby.

G) Emergence of the ISSB

The ISSB's formation is well documented in IFRS Foundation and financial-press sources rather than in peer-reviewed academic literature, reflecting its recency: announced at COP26 in November 2021, it consolidated the Value Reporting Foundation (the 2021 merger of SASB and the International Integrated Reporting Council) in August 2022 and the Climate Disclosure Standards Board in January 2022, explicitly to end what commentators at the time called an "alphabet soup" of competing sustainability disclosure initiatives (IFRS Foundation, 2021, n.d.-b). The G7 and the International Organization of Securities Commissions (IOSCO) had by then both called publicly for consolidation among sustainability standard-setters, giving the ISSB's creation an institutional legitimacy that no single predecessor framework possessed alone.

H) IFRS S1

Early empirical engagement with IFRS S1 remains limited given the standard's recency, but a small and growing literature has begun to appear. Pratama et al. (2024) map the research agenda opened up by IFRS S1 and IFRS S2, arguing that their integration of financial and sustainability reporting into a single corporate reporting architecture is unprecedented and creates substantial opportunities and unresolved questions for accounting research, particularly regarding how "connected information" should be operationalised in practice.

I) IFRS S2

Empirical readiness studies have emerged more quickly for IFRS S2, reflecting the more advanced state of climate-related reporting practice built up under TCFD since 2017. Fianko et al. (2025), surveying 241 public-interest entities across eleven

sectors in an emerging-market setting, find generally high awareness of IFRS S1 and IFRS S2 (82 per cent) but substantially lower detailed implementation knowledge (55.6 per cent), and develop a market-readiness index across the governance, strategy, risk-management and metrics-and-targets pillars evidence consistent with this paper's later argument that formal adoption and substantive implementation capacity are analytically distinct and empirically divergent, especially outside the largest capital markets.

J) Global Harmonisation and Interoperability

A further strand examines interoperability among surviving standard-setters after ISSB consolidation. The IFRS Foundation and the GRI, operating under a 2022 memorandum of understanding, have progressively narrowed the practical overlap between their standards, including a 2025 determination by the Global Sustainability Standards Board that IFRS S2's greenhouse-gas emissions disclosures are equivalent to the corresponding GRI requirement (GRI & IFRS Foundation, 2024). The EU's EFRAG and the GRI issued a parallel joint statement of interoperability for impact-related disclosures. This literature and practice base supports the paper's later distinction between harmonisation (compatible, mutually recognised systems) and standardisation (a single system).

K) Research Gaps

Three gaps recur across the reviewed literature. First, accounting-principle research and ESG-disclosure research have developed largely in isolation, so that the conceptual transferability of recognition, measurement and materiality concepts to sustainability information has been asserted more often than systematically examined. Second, IFRS S1/S2-specific literature remains overwhelmingly descriptive or survey-based, reflecting the standards' short history, with limited critical, theory-grounded conceptual work situating them within the longer trajectory of accounting-standards harmonisation research. Third, the MSME and developing-economy dimension of ISSB adoption flagged as a concern by the Financial Stability Board itself, which called in 2024 for further work on challenges facing SMEs and emerging-market and developing economies in applying the ISSB Standards (Financial Stability Board, 2024) has received markedly less conceptual attention than large-firm, developed-market implementation. This paper addresses the first and second gaps directly and the third through a dedicated section.

IV. WHY GAAP MATTERS FOR ESG REPORTING AND WHERE IT DOES NOT

A) What GAAP-Style Infrastructure Can Offer

GAAP-based financial reporting infrastructure was not designed for sustainability information, but several of its structural features are, in principle, transferable. Reporting discipline the requirement that recognition and measurement follow pre-specified, consistently applied rules rather than ad hoc narrative choice is the most fundamental. Common terminology reduces the risk that two firms use the same label (for example, "carbon neutral" or "material ESG risk") to mean different things. Measurement discipline, even where sustainability metrics cannot be expressed in monetary units, can still borrow the logic of defined units, defined boundaries and defined calculation methods that financial reporting takes for granted; the requirement in IFRS S2 that greenhouse-gas emissions be measured using the GHG Protocol's Scope 1, 2 and 3 categories is a direct analogue. Consistency across reporting periods allows trend analysis; comparability across entities allows benchmarking; materiality assessment focuses disclosure on what is decision-useful rather than exhaustive; documentation, internal controls and audit trails create the evidentiary basis for external assurance; and assurance readiness itself is what ultimately converts disclosure from a management assertion into information markets can rely upon. Integration between financial and non-financial information connectivity, in ISSB terminology addresses a specific, long-standing weakness of pre-ISSB sustainability reporting identified in the literature (Section 3.6): the tendency for ESG narratives to sit alongside, rather than connect to, the financial statements. Cumulatively, these features are what generate investor confidence in reported information, and their absence is a large part of why voluntary ESG reporting attracted persistent scepticism and greenwashing accusations even where individual disclosures were accurate.

B) Where GAAP-Style Logic Runs Out

The paper does not, however, accept the proposition that GAAP-style discipline is sufficient for ESG reporting, for at least nine reasons developed in the literature and in the standards themselves. First, many environmental and social impacts do not meet traditional recognition criteria: a probable future outflow of resources that can be measured reliably is a demanding test that most externalities fail, not because they are unimportant but because their timing, magnitude and even causal attribution are uncertain. Second, many ESG impacts are difficult or impossible to quantify financially in a way all preparers would replicate consistently biodiversity loss and community impacts being paradigm cases. Third, externalities by definition often do not appear in financial statements at all, because the entity bears no legal or constructive obligation for costs it imposes on third parties; this is precisely the boundary that a single, enterprise-value-focused materiality standard is designed to respect rather than to erase. Fourth, sustainability-related time horizons frequently exceed the horizons over which financial reporting, and financial materiality judgements, are conventionally made, creating tension between short/medium-term financial materiality and long-term physical or transition risk. Fifth, uncertainty in sustainability information particularly forward-looking metrics such as

scenario analysis and transition plans can be substantially greater than the uncertainty financial reporting is accustomed to managing through concepts such as provisions and contingent liabilities. Sixth, stakeholder materiality (what matters to affected communities, workers or ecosystems) can diverge sharply from financial materiality (what matters to the entity's investors), and no amount of GAAP-style rigour resolves this divergence, because it is a difference of perspective, not of measurement quality. Seventh, much decision-useful ESG information is qualitative and forward-looking-governance narratives, transition strategy, target-setting-in ways that sit uneasily with GAAP's historical emphasis on verifiable, backward-looking transactions. Eighth, jurisdictional GAAP differences that persist even within nominally converged financial reporting will not disappear simply because a sustainability standard references "GAAP-consistent" concepts; if anything, they add a further layer of variation. Ninth, and most fundamentally, some of the ESG information stakeholders want extends beyond enterprise-value considerations altogether, addressing the entity's impact on the world rather than the world's impact on the entity the double-materiality problem examined in Section 8.3.

C) An Asymmetric Conclusion

These two subsections are not symmetric, and the asymmetry is the section's central point. Section 4.1 describes features that GAAP-style infrastructure can lend to ESG reporting; Section 4.2 describes limits that no amount of accounting rigour, however well designed, can overcome, because they are boundary problems inherent to what counts as decision-useful information for a specific class of primary user. The correct conceptual position, developed further in Section 9, is therefore neither "GAAP solves ESG reporting" nor "GAAP is irrelevant to ESG reporting," but that GAAP-based discipline is a necessary infrastructural input to one legitimate model of sustainability reporting the investor-focused, enterprise-value model that IFRS S1 and IFRS S2 instantiate while remaining insufficient for, and not directly applicable to, the broader stakeholder-oriented model that GRI-style double-materiality reporting instantiates. Table 1 synthesises this analysis, setting out the traditional financial reporting role, ESG relevance, opportunity, limitation and relevance to IFRS S1/S2 for the principles discussed above.

Table 1: Comparison of Financial Reporting Principles and Their Relevance to ESG Reporting

Principle	Traditional Financial Reporting Role	ESG Relevance	Opportunity	Limitation	Relevance to IFRS S1/S2
Relevance	Information capable of influencing users' economic decisions	Focuses ESG disclosure on decision-useful risks/opportunities rather than exhaustive reporting	Sharper, less voluminous disclosure	Relevance depends on which primary user is assumed – investor or broader stakeholder	Core to IFRS S1's "reasonably expected to affect prospects" test
Faithful representation (incl. neutrality, prudence)	Complete, neutral, error-free depiction of transactions	Requires ESG claims to reflect actual performance rather than aspiration	Curbs greenwashing and one-sided narrative	Many ESG effects (e.g., biodiversity loss) resist complete, neutral depiction in a single metric	Underlies IFRS S1's general disclosure objective and qualitative characteristics
Comparability	Enables cross-firm and cross-period benchmarking	Central objective of harmonisation efforts	Enables investor benchmarking across firms and sectors	Requires common boundaries/units still emerging for many ESG metrics	Delivered via shared four-pillar structure and industry-based guidance
Consistency	Same methods applied period to period	Enables trend analysis of ESG performance and targets	Supports credible target-tracking over time	Underlying methods (e.g., GHG protocols) are still evolving, complicating consistency	IFRS S2's GHG emissions measurement basis
Verifiability	Independent, objective confirmation is possible	Basis for third-party assurance of ESG claims	Enables development of a sustainability-assurance market	Forward-looking and qualitative ESG information is harder to verify than historical transactions	Metrics-and-targets pillar; growing assurance expectations
Understandability	Clear, classified and characterised presentation	Helps diverse, non-specialist users interpret ESG disclosure	Improves usability for investors and lenders	Technical/scientific content (e.g., climate scenario modelling) is inherently complex	General presentation and disclosure requirements
Materiality	Entity-specific threshold for what must be disclosed	Central, contested boundary between financial and impact-oriented reporting	Focuses disclosure and avoids	Financial materiality excludes impacts material only to non-investor stakeholders	Explicit single (financial) materiality basis adopted throughout

			information overload		
Recognition and measurement	Rules for when and how items enter the financial statements	Tests whether sustainability items meet probability/reliability thresholds	Disciplines quantification where feasible (e.g., GHG emissions)	Most externalities fail recognition criteria and remain outside the financial statements	GHG emissions measurement; linkage to recognised financial-statement items
Disclosure, aggregation and connectivity	Notes and MD&A supplement recognised amounts	Sustainability narrative must relate to, not merely accompany, the financial statements	Prevents ESG information sitting in a disconnected reporting silo	Requires a level of data-system maturity many entities do not yet have	IFRS S1's explicit "connected information" requirement
Auditability and assurance	External verification converts assertion into reliable information	Converts ESG disclosure from marketing claim into market-reliable information	Builds investor and regulatory confidence	Sustainability-assurance markets and skills are still developing in most jurisdictions	Assurance increasingly expected or mandated (e.g., BRSR Core, ISSA 5000)

V. IFRS S1: GENERAL REQUIREMENTS FOR DISCLOSURE OF SUSTAINABILITY-RELATED FINANCIAL INFORMATION

A) Objective and Scope

IFRS S1 requires an entity to disclose information about sustainability-related risks and opportunities that could reasonably be expected to affect its prospects defined as effects on cash flows, access to finance or cost of capital over the short, medium and long term so that this information is useful to the primary users of general purpose financial reports in decisions about providing resources to the entity (IFRS Foundation, 2023a). This scope restriction is deliberate and consequential: sustainability-related risks and opportunities that cannot reasonably be expected to affect assessments of enterprise value fall outside IFRS S1, a boundary the Exposure Draft stated explicitly. IFRS S1 is designed to be applied together with future ISSB standards, beginning with IFRS S2, and may be applied by entities whose financial statements are prepared under IFRS Accounting Standards or under other GAAP—a further sign that the ISSB positioned IFRS S1 as GAAP-agnostic infrastructure rather than as an IFRS-only extension.

B) Core Content and Connectivity

IFRS S1 organises disclosure around the same four content areas later confirmed in IFRS S2: governance (the processes, controls and procedures used to monitor, manage and oversee sustainability-related risks and opportunities); strategy (the approach to managing them); risk management; and metrics and targets. It introduces several concepts with no direct GAAP precedent: connected information, requiring an entity to explain the relationships between sustainability-related risks and opportunities and information in the related financial statements; value chain, extending the entity's disclosure boundary beyond its own operations to encompass resources, relationships and activities on which it depends; and industry-based guidance, drawing on the SASB Standards to identify industry-specific disclosure topics and metrics in the absence of a specific ISSB standard (IFRS Foundation, n.d.-b). All disclosures required under IFRS S1 are subject to an entity-specific assessment of materiality, mirroring, though not replicating exactly, the materiality judgement long familiar from financial reporting.

C) Contribution to Harmonisation, and its Limits

IFRS S1's contribution to comparability, consistency and decision-usefulness follows directly from the mechanisms just described: a common four-pillar structure, a shared definition of the primary user and materiality basis, mandatory connectivity to financial statements, and shared industry-based guidance all reduce the degrees of freedom available to preparers relative to the pre-ISSB environment. Its contribution to credibility follows from its housing within the same governance structure, due process and (in many jurisdictions) endorsement mechanisms as IFRS Accounting Standards, which historically has supported assurance and regulatory reliance in a way voluntary frameworks found harder to achieve. Its contribution to global harmonisation, however, remains conditional rather than automatic: IFRS S1 sets requirements that apply only once a jurisdiction has adopted, endorsed or otherwise required its use, and, as Section 8 discusses, adoption to date is real but partial. Implementation challenges already visible in early research include the practical difficulty of operationalising "connected information" without well-developed internal data systems (Pratama et al., 2024), the resource intensity of value-chain data collection, and the gap between general awareness of the standard and the more demanding capability to apply it in full (Fianko et al., 2025).

VI. IFRS S2: CLIMATE-RELATED DISCLOSURES

A) Objective and Structure

IFRS S2 requires an entity to disclose information about climate-related risks and opportunities physical risks (acute and chronic) and transition risks, together with related opportunities that could reasonably be expected to affect its prospects, applying the same four-pillar governance, strategy, risk-management and metrics-and-targets architecture as IFRS S1 and explicitly designed to be used together with it (IFRS Foundation, 2023b, n.d.-b). Because IFRS S2 was built directly on the TCFD recommendations, a company applying IFRS S1 and IFRS S2 in full need not separately apply the TCFD framework, a point the IFRS Foundation has stated explicitly and one that materially reduces duplicative reporting relative to the pre-2024 environment (IFRS Foundation, n.d.-b).

B) Metrics, Targets and Industry Guidance

IFRS S2's metrics-and-targets requirements include Scope 1 and Scope 2 greenhouse-gas emissions and, subject to relief provisions, Scope 3 emissions, measured in accordance with the GHG Protocol; industry-based metrics drawn from the SASB Standards; internal carbon pricing where used; climate-related targets, including any imposed by law or regulation; and, where an entity has one, its transition plan. Because Scope 3 measurement in particular proved to be a significant implementation burden, the ISSB issued Amendments to Greenhouse Gas Emissions Disclosures in December 2025 specifically to reduce complexity, the risk of duplicative reporting, and the cost of applying the Scope 3 and related requirements during the implementation phase, without, in the Board's assessment, significantly reducing the usefulness of the resulting information to users (IFRS Foundation, 2023b)an instructive example of the ISSB adjusting a global-baseline standard in response to observed implementation cost, discussed further in Section 8.

C) Why IFRS S2 Matters, and its Place within IFRS S1

IFRS S2 is conceptually significant because climate change is the sustainability-related risk category for which financial materiality, physical measurability (through GHG emissions) and cross-industry comparability are most readily achievable, making it a plausible first test of whether an investor-focused, accounting-adjacent architecture can achieve real comparability in a sustainability domain. It should not, however, be read as free-standing: IFRS S2 operationalises, for climate specifically, the general architecture materiality basis, connected information, value-chain boundary, industry guidance that IFRS S1 establishes generically, and every IFRS S2 disclosure remains subject to IFRS S1's overarching materiality and general presentation requirements. Future ISSB standards on other topics, such as the nature- and biodiversity-related disclosures anticipated on the Board's work plan for later in 2026, are expected to follow the same pattern of sitting within, rather than beside, IFRS S1's general architecture (IFRS Foundation, n.d.-b). Table 3 compares the two Standards directly across the dimensions discussed in Sections 5 and 6.

Table 2: IFRS S1 and IFRS S2 Compared

Dimension	IFRS S1	IFRS S2	Harmonisation Significance
Scope	General sustainability-related risks and opportunities, any topic	Specifically climate-related risks and opportunities (physical and transition)	Together define a topic-general / topic-specific pairing that later ISSB standards are expected to follow
Objective	Enable disclosure useful for resource-provision decisions	Enable disclosure of climate effects on an entity's prospects	Both anchored in the same enterprise-value / "prospects" test
Core content areas	Governance, strategy, risk management, metrics and targets (general)	Same four pillars, applied specifically to climate	Shared architecture reduces duplicative reporting logic across topics
Materiality basis	Entity-specific financial materiality	Entity-specific financial materiality (climate-specific application)	A consistent materiality basis is the single largest harmonisation lever in the pair
Industry guidance	References SASB disclosure topics generally	References SASB climate-related industry metrics specifically	Anchors both standards to a pre-existing, tested industry taxonomy
Key metrics	No universal metric; entity/topic-specific	Scope 1, 2 (and Scope 3) GHG emissions via the GHG Protocol; internal carbon price; targets	The common GHG metric is the most comparable data point in global ESG reporting to date
Relationship to TCFD/SASB	Structural template (four pillars) drawn from TCFD; industry guidance drawn from SASB	Full incorporation of TCFD recommendations; SASB climate metrics	Both eliminate the need to separately apply now-disbanded or absorbed predecessor frameworks

Effective date	Annual periods beginning on or after 1 January 2024	Annual periods beginning on or after 1 January 2024 (applied together with IFRS S1)	Simultaneous effective date signals intended joint, not sequential, application
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VII. GAAP, IFRS S1 AND IFRS S2: AN INTEGRATION MODEL

A) *The Proposed Sequence*

Section 4 established that GAAP-based principles supply necessary infrastructure without being sufficient for comprehensive ESG reporting; Sections 5 and 6 established what IFRS S1 and IFRS S2 specifically add. This section evaluates the sequence implied by combining them: GAAP and financial reporting principles create financial reporting infrastructure; that infrastructure embeds recognition, measurement, materiality, comparability, disclosure and assurance discipline; IFRS S1 extends that discipline into general sustainability-related financial disclosure; IFRS S2 operationalises it for climate specifically; the combination is intended to produce more consistent and comparable sustainability-related financial information; more consistent information is intended to improve decision-usefulness and reduce information asymmetry; and, cumulatively and conditionally, this is intended to support greater reporting harmonisation.

B) *Is the Sequence Defensible?*

The sequence is theoretically coherent as a chain of necessary conditions, but it is not a chain of sufficient conditions, and three qualifications are required before it can be accepted even provisionally. First, each link in the chain is probabilistic, not deterministic: GAAP-consistent infrastructure makes IFRS S1/S2-quality disclosure more likely but does not guarantee it, exactly as IFRS convergence made comparable financial reporting more likely without guaranteeing it once local enforcement and preparer incentives are taken into account (Ball, 2006). Second, the sequence's final steps from "more comparable information" to "reduced information asymmetry" to "greater harmonisation" depend on assurance quality, regulatory enforcement and market use of the disclosed information, none of which IFRS S1/S2 themselves can guarantee; a standard that is well designed but weakly assured or weakly enforced will not deliver the decision-usefulness the model assumes. Third, and most importantly, the sequence as stated describes only the investor-focused, enterprise-value branch of ESG reporting; it says nothing about, and should not be read as resolving, the stakeholder-oriented, double-materiality branch addressed by GRI and the ESRS, which follows a related but distinct logic examined in Section 8.3. With these three qualifications made explicit, the sequence is judged theoretically and practically defensible as a model of investor-focused sustainability-reporting harmonisation, but indefensible if generalised, without qualification, into a claim about ESG reporting harmonisation in the broadest sense.

VIII. HARMONISATION, INTEROPERABILITY AND THE GLOBAL REPORTING ARCHITECTURE

A) *Distinguishing Harmonisation from Standardisation*

The paper treats harmonisation, convergence, standardisation, comparability, consistency, interoperability and uniformity as points on a spectrum rather than synonyms. Uniformity and standardisation sit at one end: a single rule set, applied identically everywhere, of the kind no major jurisdiction has in fact adopted for sustainability reporting and few propose. Comparability and consistency are properties of information, not of rule-making architecture: information can be comparable across firms that follow different, but interoperable, standards, provided those standards produce equivalent disclosures for the same underlying phenomena precisely the outcome the 2025 GRI-ISSB equivalence determination on greenhouse-gas emissions disclosure sought to demonstrate (GRI & IFRS Foundation, 2024). Interoperability describes the design property that allows two distinct standards to be used together, or to be mapped onto each other, without requiring preparers to duplicate effort. Harmonisation, as used in this paper, denotes a deliberately weaker goal than standardisation: the reduction of unnecessary differences while tolerating, and in some cases protecting, jurisdiction-specific requirements that reflect legitimate local regulatory or stakeholder priorities.

B) *A Global Baseline Model, not a Single Global Standard*

The evidence reviewed in this paper supports a specific institutional model: a global baseline, set by the ISSB, supplemented by jurisdictional adoption decisions, further regulatory layering where jurisdictions choose to go beyond the baseline, and industry-specific guidance carried over from SASB. The ISSB's own description of IFRS S1/S2 as a "global baseline" rather than a global standard is consistent with this model, and jurisdictional practice to date bears it out: some jurisdictions (for example Nigeria, Hong Kong and Singapore) have moved toward mandatory adoption closely tracking the ISSB text; others (Japan, Indonesia, Bangladesh) are proceeding through consultation and phased proposals; the European Union has instead built its own, more extensive double-materiality regime under the CSRD and ESRS, while pursuing interoperability with the ISSB baseline for the climate-related subset of disclosures; and the United States has not adopted the ISSB Standards at all, although listed subsidiaries of US multinationals operating in ISSB-adopting jurisdictions may still be required to comply (S&P Global Sustainable1, 2026b). This heterogeneous pattern is better described as harmonisation-in-progress than as either fragmentation or standardisation, and it illustrates why the paper resists treating "harmonisation" and "uniform adoption" as equivalent outcomes.

C) Materiality as the central conceptual boundary

Materiality is where the harmonisation-versus-standardisation distinction becomes concrete and, arguably, unavoidable. Financial materiality, the basis IFRS S1 and IFRS S2 adopt, asks whether information is capable of influencing the decisions of the entity's existing and potential investors, lenders and other creditors. Double materiality, the basis GRI and the EU's ESRS adopt, asks that question and, in addition, whether the entity's activities have a material impact on the economy, environment or people, irrespective of whether that impact is financially material to the entity itself (Baumüller & Sopp, 2022). These are not two measurements of the same underlying quantity; they are two different questions, reflecting two different views of what corporate reporting is for. The ISSB has been explicit, rather than evasive, about occupying only the financial-materiality position, leaving impact materiality to standard-setters such as the GRI and to jurisdictions, such as the EU, that choose to mandate it. The practical consequence confirmed by the 2023 EFRAG-GRI and 2024/2025 ISSB-GRI joint statements is a layered rather than unified global architecture: an entity operating in the EU may need to satisfy ESRS double-materiality requirements in full, while an entity operating in a jurisdiction that has adopted only the ISSB baseline satisfies a narrower, investor-focused disclosure obligation, with the two systems designed to share underlying data (for example, GHG Protocol-based emissions figures) wherever their scopes overlap. This paper does not treat IFRS S1/S2 as a comprehensive ESG reporting system capable of satisfying every stakeholder's information needs, precisely because their designers did not intend them to be read that way.

D) The evolving global architecture

The pre-ISSB "alphabet soup" has consolidated substantially since 2021, though not into a single system. The IIRC and SASB merged into the Value Reporting Foundation in June 2021; the Value Reporting Foundation and the Climate Disclosure Standards Board were consolidated into the IFRS Foundation in 2022, forming the technical base for IFRS S1/S2; the TCFD, having supplied the four-pillar structure both standards adopted, formally disbanded in October 2023 once the Financial Stability Board judged its remit fulfilled, transferring climate-disclosure-progress monitoring to the IFRS Foundation (Financial Stability Board, 2023; IFRS Foundation, n.d.-a). The GRI alone among the major pre-ISSB bodies chose to remain independent, and has instead pursued deepening interoperability with the ISSB under their 2022 memorandum of understanding, most concretely through the 2025 GHG-emissions equivalence determination and joint work distinguishing common from complementary disclosures (GRI & IFRS Foundation, 2024). The European Union represents the most consequential case of continued, deliberate divergence from rather than convergence toward the ISSB baseline, having built the more extensive double-materiality ESRS regime under the CSRD; however, even this divergence has recently narrowed in scope rather than widened, as the EU's 2025-2026 "Omnibus" simplification process substantially reduced CSRD's scope (from companies with more than 500 employees to those with more than 1,000 employees and over 450 million euro turnover), delayed second- and third-wave reporting by two years, and instructed EFRAG to cut the mandatory ESRS datapoints by roughly sixty per cent, with the revised standards expected via a Commission delegated act around mid-2026 (Sidley Austin LLP, 2025; PwC, 2026). Whatever else this episode demonstrates, it is a clear illustration that even the most ambitious sustainability-reporting regime is subject to the same cost-benefit political economy that has always constrained financial reporting standard-setting a further reason for conceptual caution about how much harmonisation any standard-setting initiative can durably deliver. Table 2 traces this evolution across the principal frameworks and standards discussed in this section.

Table 3: Evolution of the ESG/Sustainability Reporting Architecture

Framework/Standard	Primary Focus	Materiality Orientation	Reporting Objective	Relationship with Financial Reporting	Contribution to Harmonisation
GRI Standards (1997–)	Broad ESG impacts on economy, environment and people	Double / impact materiality	Inform the full range of stakeholders about organisational impacts	Largely separate from the financial statements; increasingly mapped to ESRS/ISSB	Long-standing common reference point; now pursuing interoperability with the ISSB
TCFD Recommendations (2017–2023; disbanded)	Climate-related financial risk	Financial materiality (investor-focused)	Improve climate-risk disclosure for investors	Designed to sit alongside financial reporting	Supplied the four-pillar structure fully absorbed into IFRS S2
SASB Standards (2018–; now under ISSB)	Industry-specific, financially material ESG topics	Financial materiality	Identify decision-useful, industry-specific metrics for investors	Investor-focused, enterprise-value oriented	Now incorporated as IFRS S1/S2 industry-based guidance

Integrated Reporting Framework (2013–; merged into VRF, then ISSB)	Value creation across six capitals	Primarily financial / enterprise-value	Explain how strategy, governance and resources create value over time	Explicitly seeks connectivity with financial reporting	Contributed the “connectivity” and value-creation concepts embedded in IFRS S1
CDSB Framework (2007–2022; consolidated into IFRS Foundation)	Climate and natural-capital disclosure in mainstream reports	Financial materiality	Bring climate/natural-capital information into mainstream financial filings	Framework for embedding environmental information in financial reports	Technical basis absorbed into ISSB standard-setting
EU NFRD/CSRD and ESRS (2014–)	Broad sustainability impacts and risks	Double materiality (mandatory)	Comprehensive, assured sustainability reporting for EU-scoped entities	Positioned alongside, and cross-referenced to, the financial statements	Regional standard pursuing interoperability with the ISSB on shared topics (e.g., climate)
IFRS S1 (2023–)	General sustainability-related financial disclosure	Financial materiality	Inform investors of sustainability risks/opportunities affecting prospects	Explicit “connected information” requirement linking to the financial statements	Establishes the global-baseline general architecture
IFRS S2 (2023–)	Climate-related financial disclosure	Financial materiality	Inform investors of climate-related risks/opportunities	Operates within IFRS S1's general architecture	Global baseline for climate disclosure; absorbs TCFD and SASB climate guidance
India BRSR / BRSR Core (2012 / 2021 / 2023–)	Nine NGRBC principles; core ESG KPIs	Primarily stakeholder-oriented narrative, with an assured “core”	Mandatory listed-company ESG disclosure, proportionate to firm size	Filed alongside the annual report; increasingly cross-referenced to global frameworks	National baseline evolving toward interoperability with global standards

E) Conceptual barriers that no single standard resolves

The analysis in this section and in Section 4 points to seven recurring categories of barrier to harmonised ESG reporting, summarised in Table 4: conceptual barriers, arising from the coexistence of financial and double-materiality purposes that no single standard can serve simultaneously; measurement barriers, arising from diffuse, long-horizon or highly uncertain sustainability impacts; institutional barriers, arising from uneven regulatory capacity and enforcement quality across jurisdictions; regulatory barriers, arising from divergent jurisdictional policy choices and from the political-economy pressure toward simplification illustrated by the EU's Omnibus process; technological barriers, arising from uneven data-system maturity, particularly for value-chain and connected-information requirements; assurance barriers, arising from nascent sustainability-assurance markets and skills gaps outside the largest capital markets; and firm-size barriers, arising from the cost and capacity constraints facing MSMEs discussed further in Section 13. None of these barriers is resolved by IFRS S1 or IFRS S2 alone, and several particularly the conceptual and institutional categories are not resolvable by accounting standard-setting at all, since they concern the purpose of reporting and the capacity of the institutions that enforce it rather than the technical content of any given standard.

Table 4: Conceptual Barriers to Harmonised ESG Reporting

Barrier Category	Illustrative Manifestation	Implication for Harmonisation
Conceptual	Financial materiality and double materiality reflect different reporting purposes, not a measurement error to be corrected	No single standard can satisfy both purposes at once; a layered architecture is required instead
Measurement	Diffuse and long-horizon externalities; Scope 3 estimation uncertainty; scenario-analysis assumptions	Even entities applying the same standard can produce variable outputs absent shared measurement conventions
Institutional	Uneven regulatory capacity, professional-body maturity and enforcement quality across jurisdictions	Formal adoption of a standard diverges from substantive implementation quality

Regulatory	Divergent jurisdictional choices (e.g., EU double materiality vs ISSB single materiality); political pressure to simplify (EU Omnibus)	Harmonisation remains politically contingent, not purely a technical standard-setting outcome
Technological	Uneven digital and data-system maturity for value-chain and connected-information requirements	Constrains smaller firms' and developing-economy firms' ability to comply meaningfully rather than nominally
Assurance	Nascent sustainability-assurance markets and a skills gap outside the largest capital markets	Limits the credibility premium that harmonised standards are intended to deliver
Firm-size	MSME cost, capacity and technical-expertise constraints	Necessitates proportionate, phased approaches (e.g., BRSR Core's glide path, the EU's VSME standard)

IX. AN ORIGINAL CONCEPTUAL FRAMEWORK

A) Framework logic

Building on Sections 4 to 8, this paper proposes a conceptual framework linking accounting-principle inputs to ESG reporting outcomes through a defined set of reporting mechanisms and sustainability standards, subject to explicit boundary conditions. The framework is presented in two complementary representations. Figure 1 depicts the framework as a bounded, sequential pathway the form in which the paper's core thesis is easiest to state and critique. Figure 2 depicts the same underlying logic as a layered systems model inputs, mechanisms, standards, outputs and outcome with moderating boundary conditions acting on the system as a whole rather than on a single link in a chain. The two representations are offered together because a purely sequential model risks implying a determinism the paper explicitly rejects (Section 7.2), while a purely layered model risks obscuring the specific causal logic from accounting discipline, through the ISSB standards, to comparability that motivates the paper's central argument.

Figure 1. GAAP-ESG-IFRS S1/S2 Harmonisation Pathway

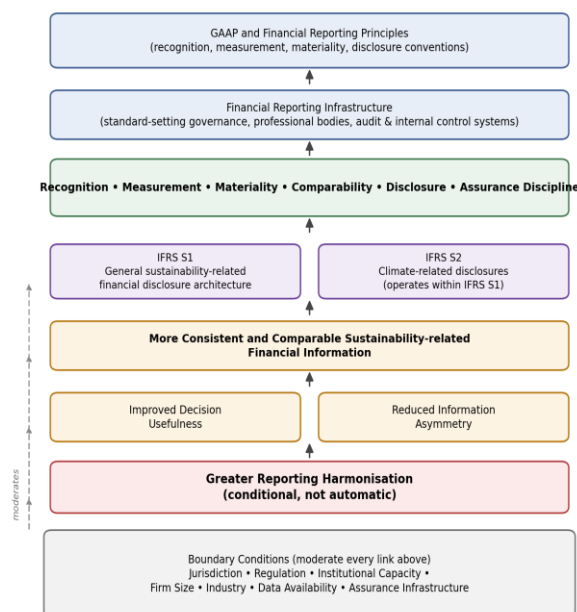


Figure 1. GAAP-ESG-IFRS S1/S2 Harmonisation Pathway

Figure 1 traces the pathway from GAAP and financial reporting principles, through financial reporting infrastructure and its embedded recognition, measurement, materiality, comparability, disclosure and assurance discipline, into IFRS S1's general sustainability-related financial disclosure architecture and IFRS S2's climate-specific operationalisation of it, toward more consistent and comparable sustainability-related financial information, improved decision-usefulness and reduced information asymmetry, and, conditionally, greater reporting harmonisation. The boundary-condition box beneath the main pathway jurisdiction, regulation, institutional capacity, firm size, industry and data availability, and assurance infrastructure is not decorative; each arrow from the main pathway into an outcome box is understood to be moderated, not guaranteed, by these conditions, consistent with the qualifications set out in Section 7.2.

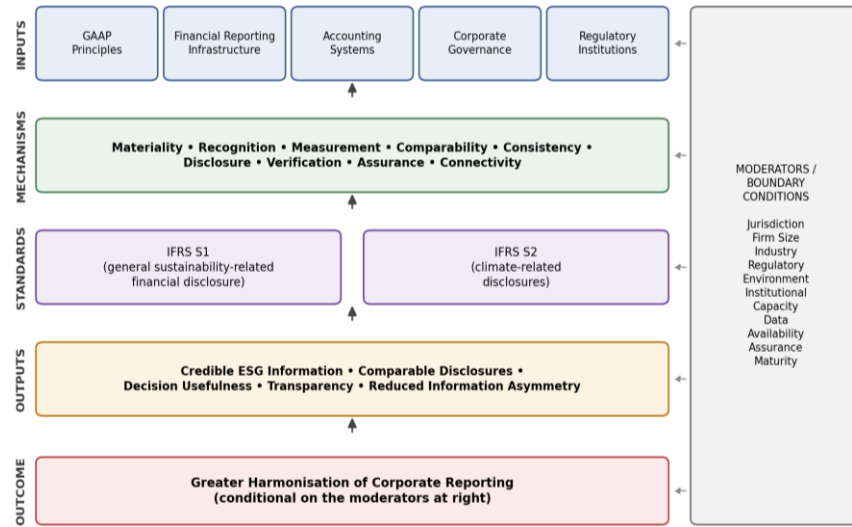


Figure 2. Conceptual Pathway from Accounting Principles to ESG Reporting Quality and Harmonisation

Figure 2 restates the same logic as a layered model with explicit categories. Inputs comprise GAAP principles, financial reporting infrastructure, accounting systems, corporate governance arrangements and the regulatory institutions that oversee them. Reporting mechanisms materiality assessment, recognition, measurement, comparability, consistency, disclosure, verification, assurance and connectivity are the operational disciplines through which inputs are converted into reportable information; this layer is where GAAP-style logic does its transferable work (Section 4.1) and where its limits (Section 4.2) are also first encountered. Sustainability standards currently IFRS S1 and IFRS S2, with further ISSB standards anticipated are the layer that channels the reporting mechanisms specifically toward investor-focused sustainability-related financial information. Outputs are the resulting properties of the disclosed information: credibility, comparability, decision-usefulness, transparency and reduced information asymmetry. The outcome, greater harmonisation of corporate reporting, sits at the top of the model as a conditional, not automatic, consequence of the layers beneath it. Moderators and boundary conditions jurisdiction, firm size, industry, regulatory environment, institutional capacity, data availability and assurance maturity are modelled as acting on the whole system, reflecting the finding in Section 3.9 and Section 13 that formal standard adoption and substantive implementation capacity diverge most sharply precisely along these dimensions.

B) What the framework does, and does not, claim

The framework is offered as this paper's original conceptual contribution, synthesising material that has not previously been brought together in a single model: accounting-principle transferability (Section 4), IFRS S1/S2's specific architecture (Sections 5-6), and the harmonisation-versus-standardisation distinction with its associated boundary conditions (Section 8). It does not claim to have been empirically tested, and Section 15 addresses this limitation directly. It also does not claim that the outcome box harmonisation has been achieved; the framework is a model of a process that is, at the time of writing, roughly two years into implementation in the jurisdictions that have adopted it, and evidently much less advanced in those that have not.

X. CONCEPTUAL PROPOSITIONS

The following eight propositions operationalise the framework in Section 9 for future empirical testing. Each is linked explicitly to the theory, literature or standards analysis from which it is derived.

- P1. Greater alignment between accounting principles (recognition, measurement, materiality, disclosure) and sustainability disclosure requirements is associated, conceptually, with greater comparability of sustainability-related financial information across entities applying the same standard. (Derived from Sections 4.1 and 7; grounded in decision-usefulness theory.)
- P2. The consistent application of defined recognition and measurement principles including standardised greenhouse-gas emissions methodologies improves the verifiability and, conditionally, the credibility of sustainability-related disclosures, but does not by itself resolve measurement uncertainty inherent in forward-looking or diffuse impacts. (Derived from Section 4 and Section 6.2; grounded in agency theory and information asymmetry theory.)
- P3. IFRS S1's connectivity and value-chain requirements strengthen the conceptual and practical linkage between sustainability-related financial information and conventional financial reporting relative to pre-ISSB voluntary

frameworks, but the strength of this linkage in practice depends on the maturity of an entity's internal data and control systems. (Derived from Section 5.2 and Section 3.6.)

- P4. IFRS S2's four-pillar architecture, built on and substantially incorporating the TCFD recommendations, increases the consistency of climate-related disclosure relative to the pre-2024 environment by establishing a common disclosure structure and a common GHG measurement basis, while leaving Scope 3 measurement subject to continuing methodological refinement. (Derived from Section 6.2; grounded in institutional theory's account of normative convergence around a dominant framework.)
- P5. The harmonisation benefits associated with IFRS S1 and IFRS S2 are moderated by jurisdictional regulatory capacity, institutional infrastructure, and assurance-market maturity, such that formal adoption of the Standards is not a reliable proxy for substantive implementation quality. (Derived from Sections 3.9 and 8.2; supported by Fianko et al., 2025, and by the Financial Stability Board's 2024 finding of continuing implementation challenges in SME and emerging-market and developing-economy contexts.)
- P6. GAAP-based accounting principles alone cannot achieve comprehensive ESG reporting, because material sustainability impacts recognised under a double-materiality or stakeholder-oriented lens may fall outside the enterprise-value boundary that GAAP-consistent recognition and measurement principles, and IFRS S1/S2 themselves, are designed to respect. (Derived from Sections 4.2 and 8.3; grounded in stakeholder theory.)
- P7. Institutional isomorphism-coercive, mimetic and normative is a more plausible mechanism for the diffusion of IFRS S1/S2 across jurisdictions than either purely voluntary adoption or centrally mandated global uniformity, implying that adoption patterns will continue to cluster around influential capital-market jurisdictions before diffusing further. (Derived from Section 2.2 and Section 8.2; grounded directly in DiMaggio and Powell, 1983, and supported by the observed clustering of early ISSB adoption around Asia-Pacific and selected emerging-market financial centres.)
- P8. Interoperability arrangements between the ISSB and other standard-setters (notably the GRI and, via ESRS, the EU) can substitute for full standardisation in achieving practical comparability for shared disclosure elements (for example, GHG emissions), even where the underlying materiality bases of the respective standards remain distinct. (Derived from Section 8.1 and Section 8.4.)

These propositions are stated in the hedged, conceptual language the paper adopts throughout ("is associated with," "can substitute for," "increases the consistency of") precisely because none has yet been subjected to the kind of archival or survey-based empirical testing the future research agenda in Section 16 calls for.

XI. DISCUSSION

A) *Comparison with Prior Literature*

The conceptual framework developed in Section 9 both confirms and complicates several strands of prior literature. It confirms Christensen et al.'s (2021) observation that sustainability reporting has developed along two distinct logics with different materiality bases, by showing precisely where IFRS S1/S2 sit within the investor-oriented logic and why they cannot be read across into the stakeholder-oriented logic without conceptual error. It confirms Baumüller and Sopp's (2022) finding that the single/double-materiality distinction is a structural, not merely definitional, feature of the post-2020 reporting landscape, by tracing how that same distinction now separates the ISSB baseline from the EU's ESRS regime globally rather than only within European law. It extends Ball's (2006) scepticism about uniform-standard outcomes from financial to sustainability reporting, arguing that the same enforcement- and incentive-dependent gap between de jure adoption and de facto comparability that limited IFRS convergence should be expected, if anything more acutely, in ISSB adoption, given the added measurement uncertainty inherent in sustainability information (Section 4.2). It is more optimistic than a purely institutional reading might suggest about the near-term speed of diffusion, because the ISSB's consolidation of previously competing initiatives (Section 8.4) removed a coordination failure competing frameworks with no dominant focal point that had slowed isomorphic convergence in the pre-2021 environment; once TCFD, SASB and the IIRC's frameworks were absorbed into a single board, mimetic and normative pressures had a single, clear focal point to converge upon in a way they previously lacked.

B) *Theoretical Implications*

The paper's theoretical contribution is to show that institutional theory, information asymmetry theory and agency theory, applied together rather than separately, generate a coherent account of why an investor-focused sustainability disclosure architecture would emerge, diffuse and constrain managerial discretion, while stakeholder and legitimacy theory are simultaneously required to explain why that same architecture leaves a residual, unresolved reporting need for non-investor stakeholders. This is a different theoretical claim from treating the seven theories as a menu of alternative explanations; it treats them as jointly necessary to explain a bifurcated reporting landscape rather than a unified one.

C) Accounting and Standard-Setting Implications

For accounting theory and standard-setting practice, the analysis implies that the historically useful fiction of a single, general-purpose set of financial reporting principles cannot be extended unmodified into sustainability reporting without first resolving which materiality basis, which primary user, and which reporting boundary the principles are meant to serve. The ISSB's decision to be explicit about occupying only the financial-materiality position, rather than attempting to serve all stakeholders simultaneously, is, on this reading, a defensible design choice rather than an evasion, precisely because attempting to serve both materiality bases within a single standard risks producing a standard that serves neither well.

D) Regulatory Implications

For regulators, the analysis implies that jurisdictional adoption decisions are not binary choices between "ISSB" and "no sustainability reporting requirement," but choices along the harmonisation-standardisation spectrum described in Section 8.1, with real trade-offs between comparability gains from closer ISSB alignment and the loss of jurisdiction-specific stakeholder protections that a broader, double-materiality regime such as the ESRS can provide. The EU's 2025-2026 Omnibus simplification episode (Section 8.4) further implies that regulators adopting an ambitious double-materiality regime should expect sustained political-economy pressure to narrow scope and reduce datapoint burden once implementation costs become visible to affected firms. A dynamic financial reporting standard-setters have faced repeatedly and sustainability standard-setters should now expect as a normal, not exceptional, part of the standard-setting lifecycle.

E) Corporate, Investor and Assurance Implications

For preparers, the framework implies that investment in the reporting mechanisms layer of Figure 2—internal data systems, cross-functional governance linking sustainability and finance functions, and documentation adequate for assurance—yields returns beyond compliance with any single standard, because the same mechanisms underpin credible reporting under IFRS S1/S2, under ESRS where applicable, and under any successor standards the ISSB's work plan will bring. For investors and other users, the framework implies that comparability gains should be expected to accrue unevenly, concentrated among entities in early-adopting jurisdictions with mature assurance markets, and that users should treat formal claims of "ISSB-aligned" reporting with the same scepticism long applied to claims of "IFRS-compliant" financial reporting from jurisdictions with weak enforcement (Ball, 2006). For assurance providers, the framework implies substantial near-term demand for sustainability-assurance capacity and methodology consistent with the International Auditing and Assurance Standards Board's own response in issuing ISSA 5000, a framework-neutral standard for sustainability assurance engagements and a corresponding skills gap in jurisdictions where that capacity is still developing.

XII. IMPLICATIONS

This section restates the paper's implications in the systematic, stakeholder-grouped form conventional in this literature, cross-referencing the fuller discussion in Section 11 rather than repeating it.

Theoretical implications. Institutional theory, information asymmetry theory and agency theory jointly explain the emergence and probable diffusion path of ISSB-style sustainability disclosure; stakeholder and legitimacy theory jointly explain why that same architecture cannot be read as a complete account of ESG reporting's purpose. Future theory-building in this domain should treat these as complementary rather than competing lenses.

Accounting implications. Recognition, measurement, comparability, consistency, verifiability and materiality are transferable in principle to sustainability-related financial information but require domain-specific operationalisation (for example, GHG Protocol-based emissions measurement in place of monetary valuation); accounting educators and professional bodies should treat sustainability-related financial disclosure as a distinct competency built on, rather than identical to, financial accounting competency.

Standard-setting implications. A global-baseline model, rather than a single global standard, is both the observed and the conceptually defensible outcome; standard-setters should expect, and design for, continued divergence at the margin (as with the EU's ESRS) alongside convergence at the core (as with GHG emissions measurement), and should treat interoperability determinations, such as the 2025 GRI-ISSB GHG equivalence finding, as a primary harmonisation tool in their own right.

Regulatory implications. Jurisdictional adoption decisions should be understood as choices along the harmonisation-standardisation spectrum, not binary adoption/non-adoption choices, and regulators should anticipate implementation-cost pressure to narrow scope over time, as the EU's 2025-2026 Omnibus process illustrates.

Managerial implications. Boards and management should treat investment in the underlying reporting mechanisms (data systems, governance, documentation) as the binding constraint on credible disclosure under any current or future standard, rather than treating compliance with a specific standard's checklist as the objective in itself; doing so is also the more defensible response

to legitimacy-theory-predicted greenwashing risk, since symbolic compliance without underlying data infrastructure is the pattern most likely to be exposed by assurance providers or regulators.

Assurance implications. The shift from voluntary, often limited-assurance ESG reporting to standard-based disclosure subject to increasing assurance requirements (illustrated by SEBI's move to reasonable assurance for BRSR Core in India, and by the IAASB's ISSA 5000) requires urgent capacity-building among auditors and other assurance providers, particularly outside the largest capital markets.

Implications for MSMEs. Addressed in full in Section 13.

Implications for developing economies. Addressed in full in Section 14.

XIII. IMPLICATIONS FOR MICRO, SMALL AND MEDIUM-SIZED ENTERPRISES

Most of this paper's analysis concerns public-interest entities and listed companies, the primary constituency for which IFRS S1 and IFRS S2 were designed. Micro, small and medium-sized enterprises (MSMEs) were not this paper's starting point, but they cannot be omitted from a conceptual account of harmonisation, because MSMEs are simultaneously the least equipped to absorb sustainability reporting costs and increasingly the most exposed to sustainability reporting demands transmitted indirectly through value chains.

The reporting-cost and capacity literature on SME sustainability disclosure identifies a consistent set of barriers: financial constraints, including the direct cost of data systems and external assurance; limited technical capacity and specialist knowledge; immature accounting-system infrastructure relative to large-firm peers; general-attitude and awareness barriers, including scepticism about the business case for reporting; and organisational barriers linked to the absence of dedicated sustainability or compliance functions (Setyaningsih et al., 2024). A broader systematic review of SME sustainability barriers more generally covering, but not limited to, reporting similarly identifies lack of resources, high initial implementation cost and lack of expertise as the most frequently cited obstacles across the literature (Álvarez Jaramillo et al., 2019). These findings predate IFRS S1/S2 but describe exactly the capacity gap that any harmonisation strategy reliant on GAAP-adjacent discipline must confront: the reporting mechanisms identified in Section 4.1 documentation, internal controls, audit trails presuppose an accounting infrastructure that many MSMEs, even in developed economies, do not yet have in place for financial reporting, let alone for sustainability-related financial reporting.

At the same time, MSMEs face mounting indirect pressure to produce sustainability information regardless of whether they are directly subject to any mandatory standard, because they sit in the value chains of larger, reporting entities whose IFRS S1 disclosures require value-chain information, and because lenders and investors increasingly request sustainability data as a condition of finance. This creates a genuine, and only partially resolved, proportionality problem: harmonised, comparable sustainability information could in principle improve MSME access to finance and market opportunities, by allowing lenders and larger customers to rely on a common data format rather than bespoke questionnaires, but the reporting burden of producing that information falls disproportionately on entities least able to bear it. The EU's response developing a simplified Voluntary SME (VSME) standard alongside the main ESRS, explicitly positioned as a proportionate reference point for value-chain requests rather than a mandatory obligation illustrates one policy answer to this problem, as does the phased, size-based "glide path" approach SEBI has taken to BRSR Core assurance in India (Section 14). Digitalisation of data collection, and simplified, decision-relevant rather than exhaustive disclosure requirements, are the two levers most consistently identified in the literature as capable of narrowing this gap; neither is a substitute for proportionate standard design, and this paper does not make unsupported claims about the net financial benefit MSMEs can expect to realise, which remains an open empirical question.

XIV. DEVELOPING ECONOMIES AND THE CASE OF INDIA

A) General Considerations

Developing economies face a distinctive combination of the institutional-capacity constraints discussed in Section 8.2 and the firm-size constraints discussed in Section 13, compounded in many cases by less mature capital markets, a smaller domestic assurance profession, and accounting infrastructure still being built out even for financial, let alone sustainability, reporting. The Financial Stability Board's own 2024 progress report explicitly identifies the position of SMEs and of emerging-market and developing economies as an area requiring further work before the ISSB Standards can be considered practically, rather than only formally, global (Financial Stability Board, 2024) an authoritative acknowledgement, from the body responsible for monitoring global financial stability, that adoption and implementation capacity are not the same thing.

B) India

India offers a particularly instructive context because its regulatory trajectory both anticipated and now runs in parallel with the ISSB project. The Securities and Exchange Board of India (SEBI) mandated Business Responsibility and Sustainability Reporting (BRSR) for the top 1,000 listed companies by market capitalisation from the 2022-23 financial year, building on

voluntary guidance dating back to 2009 and a Business Responsibility Report format introduced in 2012. In 2023, SEBI introduced BRSR Core, a subset of nine essential environmental, social and governance indicators subject to mandatory assurance, phased in by company size on a "glide path" beginning with the top 150 listed entities and expanding progressively to the full top 1,000 by the 2026-27 financial year; SEBI raised the assurance standard for BRSR Core from limited to reasonable assurance, a materially more demanding evidentiary standard than most jurisdictions have yet imposed on sustainability disclosure. This proportionate, phased design full narrative BRSR for the largest cohort, a smaller assured core for a size-based glide path of entities, and value-chain disclosure requirements layered in only once core reporting is established is a domestically-developed instance of exactly the proportionality principle this paper argues MSME-sensitive harmonisation requires, independent of, though increasingly discussed alongside, the ISSB baseline.

India has not adopted IFRS S1/S2 as such, and Indian corporate financial reporting itself continues to follow Ind AS (India's own convergence of IFRS Accounting Standards) rather than IFRS directly itself an illustration of the harmonisation-rather-than-uniformity pattern this paper describes at the financial reporting level, now being reproduced at the sustainability reporting level through BRSR's continuing evolution alongside, but distinct from, the ISSB Standards. The Institute of Chartered Accountants of India and Indian regulators have both signalled continuing engagement with global sustainability-reporting convergence, and the assurance profession's adaptation to reasonable-assurance BRSR Core requirements supported by the IAASB's framework-neutral ISSA 5000 illustrates the same assurance-capacity implication raised more generally in Section 12. India is not treated in this paper as the sole or even the primary developing-economy case; it is used because its combination of a large, sophisticated capital market, a phased and size-sensitive domestic sustainability-reporting regime, and continuing rather than completed convergence with global standards makes it a conceptually useful illustration of harmonisation-in-progress under real institutional constraints, rather than a template assumed to generalise unmodified to smaller or less capital-market-intensive developing economies.

XV. LIMITATIONS

This paper is conceptual, not empirical, and its propositions have not been tested against archival, survey or interview data; the conceptual framework in Section 9 should therefore be read as a set of testable claims rather than as an established finding. Its account of IFRS S1 and IFRS S2 describes standards that are, at the time of writing, in only their second or third year of mandatory application in the jurisdictions that have adopted them, so claims about their contribution to harmonisation are necessarily provisional and will need revisiting as implementation evidence accumulates. Jurisdictional practice is evolving rapidly the EU's Omnibus process alone changed materially between the paper's initial drafting and its current position and any snapshot of adoption status risks being partially superseded before publication; the paper has sought to flag this explicitly wherever a factual claim depends on a specific date. The reference base assembled for this conceptual paper, while every source has been verified against primary or peer-reviewed material rather than invented, is narrower than the full systematic literature review a dedicated review article would assemble from subscription academic databases, and a fuller version of this paper intended for journal submission would need to extend the literature review substantially, particularly in the fast-growing empirical literature on early ISSB adopters. Finally, the paper's India case study illustrates rather than statistically represents developing-economy experience, and generalising from it to other developing economies with different capital-market structures should be done cautiously.

XVI. FUTURE RESEARCH AGENDA

Several research designs follow directly from the propositions in Section 10. Archival studies could test P1, P2 and P4 by comparing the comparability, consistency and information content of sustainability disclosures before and after IFRS S1/S2 adoption within a single jurisdiction, using techniques already well established in the IFRS-adoption literature. Disclosure-content analyses could examine how "connected information" (P3) is operationalised in practice across early-adopting firms, and whether connectivity claims correspond to substantive linkage or to narrative assertion. Cross-country comparative studies could test P5 and P7 by relating the pace and depth of ISSB implementation to measures of institutional capacity, capital-market development and assurance-market maturity, building on the market-readiness index methodology introduced by Fianko et al. (2025). Survey and interview-based studies with preparers, assurance providers and users could examine how the financial-materiality and double-materiality bases are understood and reconciled in practice by entities subject to both the ISSB baseline and the ESRS (P6, P8). Assurance studies could examine how audit and assurance methodologies are adapting to reasonable-assurance sustainability engagements, using India's BRSR Core transition as one accessible setting. Firm-level adoption studies could examine the sequencing and determinants of voluntary early adoption ahead of jurisdictional mandates. Finally, dedicated MSME studies still scarce relative to large-firm research are needed to establish, empirically rather than by extrapolation, whether harmonised reporting formats in fact improve MSME access to finance sufficiently to offset their compliance cost, a question this paper has deliberately left open.

XVII. CONCLUSION

This paper asked whether GAAP-based accounting principles and contemporary sustainability disclosure standards can contribute to the harmonisation of ESG reporting, and what role IFRS S1 and IFRS S2 play in that process. The answer developed here is conditional rather than categorical. GAAP-based principles recognition and measurement discipline, comparability, consistency, verifiability, materiality assessment and assurance readiness supply an essential, transferable infrastructure that voluntary ESG reporting largely lacked, and their extension into sustainability-related financial disclosure through IFRS S1 and IFRS S2 represents a conceptually significant development: not another voluntary framework competing in an already crowded field, but a structured extension of financial reporting architecture, built under the same institutional governance as IFRS Accounting Standards and substantially absorbing the TCFD and SASB frameworks that preceded it. At the same time, this infrastructure is not sufficient for comprehensive ESG reporting, because significant categories of sustainability impact externalities, long-horizon and diffuse effects, and impacts material to stakeholders but not to enterprise value fall outside the enterprise-value boundary that GAAP-consistent principles, and IFRS S1/S2 themselves, are designed to respect. IFRS S1 and IFRS S2 should accordingly be understood as a conceptually important bridge between financial and sustainability-related financial reporting, occupying and clarifying the investor-focused branch of a necessarily bifurcated global reporting architecture, rather than as a comprehensive solution to ESG reporting's fragmentation problem in the fullest, stakeholder-inclusive sense of that term. Harmonisation, on the evidence reviewed here, is better understood as an ongoing, uneven, institutionally and politically contingent process visible in rising jurisdictional adoption, in ISSB-GRI interoperability work, and even in the EU's recent scaling back of its own more ambitious regime than as a condition that IFRS S1 and IFRS S2 have already achieved or can achieve alone.

XVIII. REFERENCES

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