



Sustainability Accounting Compliance Under IFRS S2: Carbon Emission Disclosure in Public Enterprises Across Three Regulatory Phases, A Systematic Literature Review

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ARTICLE INFO

Article History

Received : 10.04.2026

Revised : 15.06.2026

Accepted : 23.06.2026

Article Type: Literature Review

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ABSTRACT

This review examines how public enterprises across three regulatory phases which are voluntary disclosure, mandatory adoption, and early enforcement comply with carbon emission disclosure requirements under IFRS S2 Climate-related Disclosures, issued by the International Sustainability Standards Board in June 2023. Despite the growing urgency of climate accountability, empirical evidence on whether public enterprises genuinely meet IFRS S2 obligations, and what explains variation in compliance quality, remains fragmented. A systematic search of four databases (Google Scholar, Semantic Scholar, Scopus, and CrossRef) produced a final corpus of 154 peer-reviewed articles, book chapters, and conference papers published between 2006 and 2026, screened according to PRISMA guidelines. Thematic synthesis identified three overlapping evidence clusters: standard adoption readiness in emerging economies, governance and board-level determinants of disclosure quality, and the role of digital data infrastructure in enabling compliance. Findings show that larger, state-affiliated enterprises in jurisdictions with pre-existing mandatory frameworks tend to disclose more completely, while most developing-country evidence points to moderate disclosure indices, persistent Scope 3 gaps, and significant institutional capacity deficits. The review supports three empirical hypotheses: compliance quality improves with regulatory phase progression, board governance quality positively moderates that relationship, and digital data capability independently predicts compliance quality across all three phases. Practically, the findings argue for sequenced implementation strategies that align regulatory mandates with investments in governance structures, carbon accounting capacity, and ESG data infrastructure. IFRS S2 compliance is not purely a technical reporting exercise; it is a function of institutional commitment, organisational governance, and digital readiness.

Keywords: Carbon Emission Disclosure, IFRS S2, Public Enterprises, Sustainability Reporting Compliance, Systematic Literature Review

1. Introduction

Carbon emission disclosure has moved decisively from the margins of voluntary corporate reporting to the centre of global financial regulation. For decades, companies including state-owned and publicly listed enterprises published environmental data selectively, using whichever framework best served their reputational interests rather than one that gave investors genuinely comparable and decision-useful

information. That era is effectively over. In June 2023, the International Sustainability Standards Board (ISSB) finalised IFRS S2, a standard that mandates structured disclosure of climate-related risks, opportunities, and greenhouse gas emissions across Scopes 1, 2, and 3 for entities applying the IFRS framework (Pratama et al., 2024). For public enterprises in particular which are companies operating under government ownership or formal capital-market listing obligations, the shift from discretionary to rule-based carbon reporting introduces compliance demands that many are not yet equipped to meet (Wahyoeni et al., 2025).

At the heart of the current literature lies a tension that no single study has resolved: the gap between what IFRS S2 formally requires and what public enterprises are actually capable of reporting. At the standard level, IFRS S2 demands disclosure that is financially material, verifiable, and comparable across industries and jurisdictions, requirements that assume a degree of internal data maturity that many public enterprises have not yet developed (Pratama et al., 2024). At the institutional level, adoption in many developing economies is proceeding ahead of the regulatory infrastructure needed to enforce it, creating conditions where formal compliance coexists with substantive gaps (Doloksaribu & Firmansyah, 2024). A particularly acute problem is Scope 3 emission reporting: while Scopes 1 and 2 require metered data from owned operations and energy consumption, Scope 3 demands that enterprises map and quantify emissions across their entire value chain. Kidambi et al. (2026) argue that Scope 3 accounting is inherently compromised in emerging markets by fragmented supplier data, inconsistent estimation methodologies, and the exclusion of high-emission activities from corporate boundaries. The upshot is that a compliance index which counts Scope 3 disclosure without assessing its quality will systematically overstate actual transparency.

The public enterprise dimension adds further complexity. State-owned enterprises operate within political accountability structures that do not always align with investor-oriented disclosure standards. Azizah et al. (2026), the only study in the reviewed corpus that explicitly maps compliance across three regulatory phases in an SOE context, show that even within a single country, Indonesia, disclosure quality varies substantially across stages of regulatory development, and that transitions between these stages are often accompanied by implementation challenges rather than smooth progression. The Chonco and Mvunabandi (2024) study of Johannesburg Stock Exchange listed firms found that existing sustainability disclosure levels were not significantly altered by IFRS S1 and S2 awareness, implying that compliance intent and compliance substance are not the same thing. Methodologically, the field has relied heavily on content analysis of published sustainability reports, which are vulnerable to the credibility of the documents themselves. Erdogan et al. (2026) applied natural language processing to first-year IFRS S2 reports from Turkish listed firms and found significant readability problems alongside signalling deficiencies, suggesting that while the presentation of reporting may be improving, the quality and usefulness of the underlying information remain limited.

Scholars have made meaningful progress on adjacent questions. Adams and Mueller (2022) documented a structural disconnect between academic community engagement and policymaker responsiveness in the ISSB's consultation process. Millar and Slack (2024) found that global investors viewed Scope 3 measurement obligations as both necessary and practically unachievable. Indyk (2022) demonstrated empirically that Polish companies were largely unprepared for the IFRS S1 and S2 exposure drafts. In developing-country contexts, Boakye and Bofo (2025) found that disclosure readiness in Ghana reached only 46% of the ISSB index, compared to 78% in South Africa, a gap driven primarily by regulatory enforcement strength and professional capacity. Despite this accumulating evidence, no systematic review has synthesised findings across the full arc of the three regulatory phases, nor examined specifically what drives compliance quality for public enterprises rather than the private-sector firms that dominate most empirical samples.

This review pursues three objectives. First, to map existing evidence on carbon emission disclosure compliance under IFRS S2 and its predecessor frameworks across different regulatory environments, with particular attention to public and state-affiliated enterprises. Second, to identify the organisational, institutional, and technological factors that explain variation in compliance quality across the three regulatory phases. Third, to synthesise practical and theoretical implications for policymakers, enterprise managers, auditors, and researchers in the sustainability accounting space. The review covers scholarship published between 2006 and 2026, with geographic breadth spanning Asia-Pacific, Africa, Europe, Latin America, and the Middle East, and sectoral coverage including banking, mining, energy, telecommunications,

manufacturing, and hospitals, all sectors where public enterprises are prominent and carbon exposure is significant.

The review is guided by three directional hypotheses. First, compliance quality among public enterprises is positively associated with regulatory phase progression. Second, governance quality, measured by board characteristics such as size and independence, moderates the relationship between regulatory phase and disclosure depth. Third, digital data capability is a significant and independent predictor of compliance quality across all three phases, regardless of firm size or ownership type. These hypotheses reflect a tension visible throughout the literature between those who regard regulatory mandates as sufficient drivers of compliance and those who argue that institutional and technical enablers must accompany any rule-based standard for it to produce genuine rather than merely formal disclosure. A systematic literature review is the appropriate methodological response because the field is too new for meta-analysis yet too large and fragmented for a conventional narrative review to handle responsibly.

2. Literature Review

2.1. IFRS S2 and the Global Disclosure Architecture

IFRS S2 is the first globally applicable mandatory standard for climate-related financial disclosures. Built on the four-pillar structure of the TCFD (governance, strategy, risk management, and metrics and targets), it requires entities to disclose Scope 1, 2, and 3 greenhouse gas emissions, climate-related risks and opportunities, and transition plans associated with stated emission targets (Pratama et al., 2024). The standard's effective date of January 2024 for early adopters compressed the timeline between finalisation and obligation in a way that drove both rapid scholarly response and significant enterprise anxiety about readiness (Baboukardos et al., 2022; Kasim & Martaba, 2025).

A central design tension in IFRS S2 is the primacy of investor-oriented financial materiality over broader impact materiality. Adams and Mueller (2022) argued that this orientation embeds assumptions about reporting audiences that do not reflect the stakeholder diversity faced by public enterprises, whose accountability extends to governments, civil society, and regulators as well as capital providers. Heyden (2025), analysing 718 comment letters on the IFRS S2 draft, found that firms with higher emission intensity lobbied most aggressively for modifications to Scope 3 requirements, a finding that directly challenges the assumption that mandatory status removes incentive conflicts over what to disclose.

2.2. Compliance Readiness in Emerging Economies

The largest body of literature on IFRS S2 compliance addresses readiness in emerging markets. Content analysis studies consistently find that voluntary-phase and preparation-phase disclosure indices rarely exceed 50% of required items, with Scope 3 emissions representing the most frequently omitted element (Boakye & Bofo, 2025; Indyk, 2022; J. J. Milhem, 2025). Geographic breadth is notable, spanning Indonesia, Ghana, Palestine, Brazil, Pakistan, and Turkey, yet the structural limitations identified are remarkably consistent: weak data systems, underdeveloped regulatory enforcement, and limited professional expertise in carbon accounting (Uzun Kocamış et al., 2025; Wahyoeni et al., 2025).

The Indonesian evidence is particularly instructive because of its depth and its specific focus on state-owned enterprises (SOEs). Azizah et al. (2026) applied operational compliance indicators to Indonesian SOEs across three regulatory phases and found that compliance scores improved modestly with phase progression, but Scope 3 disclosure remained low even under mandatory adoption. Firmansyah and Azhar (2025) extended this analysis to local government entities and found public-sector institutional capacity to be even more constrained than corporate capacity, raising concerns about the feasibility of mandatory adoption timelines for government-affiliated enterprises. The South African contrast is equally instructive: Chonco and Mvunabandi (2024) found that IFRS S2 awareness among JSE-listed firms did not produce significant changes in actual disclosure levels, while Boakye and Bofo (2025) attributed South Africa's 78% readiness score to the King IV corporate governance code and long-standing JSE sustainability reporting requirements that predate IFRS S2.

2.3. Theoretical Framework

Three theoretical traditions underpin this review. Legitimacy theory holds that organisations disclose information strategically to maintain social licence, which explains the moderate voluntary-phase disclosure indices observed in emerging markets (Boakye & Boafo, 2025; Schaltegger & Wagner, 2006). However, legitimacy theory cannot explain why some voluntary reporters achieve higher quality than others, nor does it adequately predict behaviour once reporting becomes mandatory. Stakeholder theory, particularly its managerial branch, aligns with IFRS S2's investor-focused mandate and frames disclosure as a mechanism for reducing information asymmetry between enterprises and capital providers (Tyvonchuk & Titov, 2026). For public enterprises, this creates tension because the relevant stakeholder set includes governments and civil society alongside investors.

Institutional theory, specifically DiMaggio and Powell's coercive, mimetic, and normative isomorphism, provides the most direct explanation of cross-country compliance patterns. Enterprises in jurisdictions with coercive enforcement display higher compliance, while mimetic pressures drive sector-level convergence on disclosure formats regardless of regulatory requirement (Chonco & Mvunabandi, 2024; Kusuma & Gani, 2024). Zaki (2026) argues that Indonesian disclosure research needs reframing around institutional theory rather than legitimacy alone, a call consistent with the broader evidence reviewed here.

3. Methodology

3.1. Research Design

This study employs a systematic literature review (SLR) design following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines adapted for social science and accounting research. The SLR design was chosen because the IFRS S2 literature is too new and heterogeneous for meta-analysis of quantitative effects, yet too large and fragmented for a conventional narrative review to handle responsibly. The review maps what has been studied, how, where, and with what findings, and synthesises results through thematic analysis across three identified evidence clusters.

3.2. Search Strategy and Database Coverage

The search was conducted across four databases, Google Scholar, Semantic Scholar, Scopus, and CrossRef, in March and April 2026. The primary query string combined "IFRS S2" with terms including "carbon disclosure," "emission," "sustainability reporting," "compliance," "public enterprise," and "state-owned enterprise." Secondary queries targeted predecessor frameworks relevant to the three regulatory phases, including "TCFD," "GRI carbon reporting," and "ISSB sustainability standards." The initial combined retrieval yielded 2,059 records. After automated deduplication based on title and year matching, 911 unique records remained.

3.3. Inclusion and Exclusion Criteria

A two-stage screening process was applied. Title and abstract screening reduced the pool to 154 studies. Full-text review confirmed eligibility based on three inclusion criteria: the paper addressed carbon or GHG emission disclosure under IFRS S2, IFRS S1, or a closely related predecessor standard; the paper examined enterprise-level compliance behaviour or determinants; and the paper was peer-reviewed or represented a reputable book chapter. Studies focused exclusively on financial IFRS standards (such as IFRS 9, 13, or 18) without substantive engagement with sustainability disclosure were excluded.

3.4. Corpus Characteristics

The final corpus of 154 studies spans publications from 2006 to 2026, with the bulk of relevant material concentrated in 2022-2026. Studies published prior to 2022 were classified as belonging to the voluntary regulatory phase based on the regulatory environment they describe, not their publication date, a standard methodological feature of reviews tracing field evolution across distinct policy periods. Unique source journals number more than 47. Data were synthesised through thematic analysis, with papers coded against three topic clusters and evaluated for their bearing on the three hypotheses.

4. Results and Discussion

4.1. Research Results

4.1.1. Bibliometric Profile

Publication volume accelerated sharply after 2022, with 59 relevant studies appearing in 2025 alone, more than in the entire preceding decade of IFRS-related sustainability research. This reflects the urgency created by the ISSB's June 2023 publication and the January 2024 effective date, which compressed the standard-release-to-obligation timeline. Among the most influential papers, Adams and Mueller (2022) accumulate 63 citations, reflecting the foundational importance of their analysis of the ISSB consultation process. The keyword frequency analysis confirms that sustainability reporting, compliance, IFRS S1 and S2, and climate dominate the discourse, while GHG and Scope 3 appear with sufficient frequency to confirm that emission-specific research is a meaningful sub-strand distinct from general sustainability reporting work. Methodologically, content analysis and qualitative approaches account for approximately 56% of the corpus, quantitative empirical studies for 22%, and systematic reviews for 18%.

4.1.2. Thematic Synthesis: Cluster A → Adoption Readiness in Emerging Economies

The largest evidence cluster addresses readiness in emerging and developing economies. Despite geographic diversity spanning Indonesia, Ghana, Palestine, Brazil, Pakistan, and Turkey, findings converge on consistent structural limitations: disclosure indices rarely exceed 50% of required items in the voluntary and preparation phases; Scope 3 emissions are the most frequently omitted element; and larger firms, Big Four-audited firms, and firms with prior GRI or TCFD experience consistently outperform peers (Boakye & Boafo, 2025; Oruç Erdoğan et al., 2026).

The Indonesian SOE evidence deserves particular attention. Azizah et al. (2026) found that compliance scores improved modestly between phases, but Scope 3 disclosure remained weak even under mandatory adoption, a pattern that reflects infrastructure gaps rather than strategic indifference. Firmansyah and Azhar (2025) found that local government institutional capacity is even more constrained than corporate capacity, raising serious questions about the feasibility of mandatory adoption timelines for government-affiliated enterprises in developing economies. The preparation-phase literature, which examines enterprises during the 2022-2023 consultation period, reveals a pattern of awareness without action: Indyk (2022) found that Polish companies had not begun substantive preparations despite awareness of the exposure drafts, and Baboukardos et al. (2022) found significant gaps even among TCFD-experienced companies, particularly in quantified transition plan disclosures.

4.1.3. Thematic Synthesis: Cluster B → Governance and Board Determinants

The second evidence cluster focuses on internal governance mechanisms. The central finding across most studies is that governance quality is a stronger predictor of voluntary disclosure quality than firm size or industry sector, though this relationship weakens in mandatory regimes where minimum floor requirements override governance discretion. Dewi and Kamiliya (2025) provide the most direct test in the IFRS S2 context, finding that board size and director independence positively predict readiness among Indonesian non-financial listed firms. Kasim and Martaba (2025) find that profitability and sustainability reporting experience positively influence IFRS S1 and S2 implementation in the banking sector.

The lobbying literature adds governance questions at the standard-setting level. Heyden (2025) analysis of 718 comment letters found that high-emission firms were most likely to seek Scope 3 modifications, creating a structural tension between those bearing the highest compliance costs and those, investors and civil society, who would benefit most from comprehensive disclosure. The CEO characteristics evidence from Adlina and Junaidda (2025) is also instructive: science and engineering credentials positively influence climate change disclosure quality among Malaysian listed firms, suggesting that human capital embedded in governance structures matters as much as structural board composition. Governance structures are necessary but not sufficient; the expertise of the people within those structures determines whether disclosure quality is high or merely formally adequate (Kamal, 2025).

4.1.4. Thematic Synthesis: Cluster C → Technology, Data Capability, and Compliance Infrastructure

The third cluster, less theorised but increasingly central to practice, addresses the role of digital data management in enabling verifiable carbon emission disclosure. The core argument is that IFRS S2 compliance is fundamentally a data problem before it is a reporting problem. Manh Huy and Tuan Vu (2026) construct a quantitative model of compliance quality determinants among Vietnamese enterprises and find that data capability mediates the relationship between strategic orientation and compliance quality, such that firms committed to sustainability but lacking adequate data systems produce lower-quality disclosures than those with both strategic commitment and digital infrastructure. This mediation finding provides the strongest evidence for H3 across the entire corpus.

In Indonesia, Pupsitsari and Nawangsari (2026) document the absence of national carbon accounting standards, limited technical capacity among preparers, and insufficient digital infrastructure as the three primary constraints. This is consistent with Mahaini (2023) argument that Indonesian accountants need to transform from financial statement compilers into sustainability data managers before the country can implement IFRS sustainability standards at scale. The AI and digital tools dimension of this cluster is the most forward-looking: Malik et al. (2025) argue that AI-enabled ESG reporting has the potential to bridge the gap between IFRS S2's data demands and enterprise capacity, while Wu (2025) demonstrates through a port logistics case study that Sustainability Balanced Scorecard integration can embed compliance into routine data collection rather than treating it as a periodic reporting exercise.

4.1.5. Hypothesis Evaluation

H1 that compliance quality increases with regulatory phase progression receives strong support, with one important qualification. Comparative evidence from South Africa versus Ghana (Boakye & Boafo, 2025), the JSE-listed firms study (Chonco & Mvunabandi, 2024), and the Indonesian SOE three-phase analysis (Azizah et al., 2026) all confirm that enterprises under mandatory frameworks produce higher disclosure quality. The qualification is that mandatory adoption without enforcement capacity produces minimal improvement over voluntary reporting: Indonesian mandatory-phase companies still reported significant Scope 3 gaps, and Palestinian listed companies showed readiness levels that did not substantially exceed those of Polish firms in the preparation phase two years earlier (Milhem, 2025; Indyk, 2022). H1 is supported with the proviso that phase progression must be accompanied by enforcement credibility.

H2 that governance quality moderates the regulatory phase-compliance relationship receives partial support. Dewi and Kamiliya (2025) and Kasim and Martaba (2025) confirm a positive governance-compliance relationship in Indonesia. The CEO characteristics evidence from Adlina and Junaidda (2025) is consistent with this. However, evidence that governance specifically moderates the phase-compliance relationship rather than being independently associated with compliance is less conclusive. Chonco and Mvunabandi (2024) found that governance advantages did not automatically translate into compliance improvements when the regulatory signal was unclear. H2 is partially supported: governance quality predicts compliance, but its moderating role across phases requires longitudinal testing before it can be confirmed.

H3 that digital data capability independently predicts compliance quality receives the strongest support across all three hypotheses. Huy and Vu (2026) mediation finding in Vietnam, Pupsitsari and Nawangsari (2026) infrastructure gap analysis in Indonesia, Andika (2025) comparative synthesis, and the AI tools evidence from Malik et al. (2025) all point consistently to data capability as the proximate determinant of whether strategic commitment translates into actual disclosure quality. H3 is fully supported.

4.2. Discussion

The preceding section sets out what the evidence shows; this section interprets what it means for theory and practice. Three questions organise the discussion: which factors consistently separate genuine compliance from formal compliance, how those factors work together as a system rather than a checklist, and where the evidence base still falls short. Read together, the findings point to a clear position: IFRS S2 compliance is less a reporting problem than a problem of institutional and technical readiness, and treating it as the former is the main reason early adoption so often yields disclosure that is complete on paper yet thin in substance.

4.2.1. Critical Success Factors

Six critical success factors emerge from the synthesis. First, regulatory mandates need enforcement credibility: the South Africa-Ghana contrast demonstrates that formal obligation without effective sanctions produces limited gains (Boakye & Bofo, 2025; Firmansyah & Azhar, 2025). Second, board-level sustainability governance, including independent directors and dedicated sustainability committees, consistently predicts disclosure completeness and accuracy (Dewi & Kamiliya, 2025; Adlina & Junaidda, 2025). Third, digital data infrastructure and ESG management systems are not optional enhancements but binding constraints in most developing-country public enterprise contexts (Huy & Vu, 2026; Wu, 2025). Fourth, professional capacity building in carbon accounting is essential, as the expertise required for IFRS S2 compliance, including GHG Protocol methodologies, emissions factor selection, and climate scenario modelling, is qualitatively different from traditional financial reporting (Bhalla & Sarkar, 2025; Iriyadi et al., 2026). Fifth, sustainability and financial reporting systems require genuine integration: enterprises that treat sustainability disclosure as parallel rather than connected to financial reporting will fail to produce the integrated outputs IFRS S2 requires (Castillo & Díaz-Peña, 2025; Komala & Murtanto, 2024). Sixth, assurance and external verification readiness under ISSA 5000 is both an emerging requirement and a currently under-resourced element of the compliance ecosystem (Kucheriava & Shvaher, 2025; J. J. M. Milhem, 2026).

4.2.2. Interpretive Integration

The relationship between the three hypotheses and the six critical success factors is systemic rather than additive. Regulatory mandate creates the external pressure that makes compliance a strategic necessity. Governance quality determines whether that pressure translates into genuine organisational action. Digital data capability determines whether the action produces disclosure of sufficient quality to be verifiable and decision-useful. Where all three are present, compliance quality is high and improving. Where any one is absent, the other two are insufficient: governance without data capability produces well-intentioned but incomplete disclosures; data capability without governance produces technically accurate reports without strategic coherence; regulatory mandate without either produces formal compliance that is substantively empty.

This systemic interpretation has an important implication for implementation sequencing. The evidence reviewed here strongly supports beginning with governance and strategy disclosure, which require institutional commitment but less data maturity, and building toward full metrics disclosure as digital infrastructure and professional capacity develop. This is the rationale behind IFRS S2's own proportionality provisions and transition reliefs, and the evidence here strongly supports treating those provisions as a genuine phased pathway rather than a permanent exemption from Scope 3 accountability.

4.2.3. Knowledge Gaps and Future Research Directions

Several significant gaps emerge from this review. First, longitudinal studies tracking compliance quality across multiple reporting periods for the same enterprise sample are almost entirely absent. The cross-sectional readiness scores that dominate the corpus provide no evidence of whether compliance genuinely improves over time as enterprises move through the three regulatory phases, or whether initial compliance investments plateau at a level sufficient to avoid regulatory sanction without delivering genuine investor utility. Longitudinal panel studies in jurisdictions that have already implemented mandatory IFRS S2 reporting, including Australia, New Zealand, and Singapore at the most advanced stage, would make a critical contribution to this line of inquiry.

Second, the comparative regulatory analysis needed to explain why some mandatory frameworks produce strong compliance and others do not is underdeveloped. Existing studies describe outcomes in individual countries but rarely construct formal comparative designs that hold industry and firm size constant while varying regulatory regime characteristics. The Adu Boakye and Bofo (2025) study of Ghana, Nigeria, and South Africa is a useful model, but this cross-country comparison needs to be extended toward more systematic institutional analysis, examining enforcement resources, auditor capacity, and political economy factors that determine whether mandatory standards are credibly applied.

Third, the interaction between IFRS S2 and other sustainability frameworks, particularly the European Sustainability Reporting Standards (ESRS), the Carbon Disclosure Project (CDP), and country-specific national

standards, has received insufficient attention. Public enterprises operating across multiple jurisdictions face overlapping disclosure obligations, and the extent to which IFRS S2 compliance reduces or increases this burden is largely unexplored. A systematic comparison of disclosure burden under competing frameworks would be of substantial practical value (Millar & Slack, 2024).

Fourth, auditor readiness under ISSA 5000 represents perhaps the most urgent research gap. The entire edifice of credible IFRS S2 compliance depends ultimately on whether external assurance providers can verify the accuracy of disclosed emission data. J. J. M. Milhem (2026) identifies significant readiness deficits among auditors in Jordan and Palestine, but the evidence base is far too thin to draw confident conclusions about global auditor capacity. Survey-based studies of auditor competencies, assurance methodologies, and engagement economics across multiple jurisdictions are a priority for the next research phase. Finally, Scope 3 emission disclosure warrants a dedicated systematic review. Questions of boundary definition, supplier engagement, data quality assurance, and the relationship between voluntary CDP reporting and mandatory IFRS S2 Scope 3 disclosure are each substantial research programmes in their own right (Kidambi et al., 2026).

5. Conclusion

This systematic review synthesises 154 studies on IFRS S2 carbon emission disclosure compliance across three regulatory phases, focusing on public enterprises in both developed and developing economies. The central conclusion is that IFRS S2 compliance depends on three interconnected factors: regulatory mandates with enforcement credibility, governance structures that translate institutional commitment into action, and digital data infrastructure that makes verifiable Scope 3 disclosure technically feasible. Enterprises that invest in all three consistently outperform those that address only one or two dimensions. The standard itself, with its four-pillar structure of governance, strategy, risk management, and metrics, is well designed to require all three. The challenge lies not in the standard but in implementation sequencing: most enterprises encounter the metrics requirements first, struggle to produce Scope 3 data, and consequently perceive IFRS S2 as technically infeasible. The evidence reviewed here strongly supports beginning with governance and strategy disclosure and progressively building toward full metrics disclosure as digital infrastructure and professional capacity develop.

For public enterprises specifically, including SOEs and listed state-affiliated firms, the implications are substantial. These organisations are typically large, high-emission entities operating in politically sensitive sectors with governance arrangements oriented toward public accountability rather than investor-focused reporting. Aligning these structures with IFRS S2 requires more than technical reporting upgrades; it demands institutional change, including sustainability committees with genuine decision-making authority, integration of emission reduction targets into corporate strategy and incentive systems, and data infrastructures capable of producing auditable evidence trails for assurance-ready disclosure. For policymakers, the evidence supports a sequenced implementation strategy in which coercive mandates are introduced with adequate transition periods and complemented by investments in professional capacity building, standardised emission factor databases, and clearer regulatory guidance on Scope 3 boundary definitions. The South African experience, where sustained governance-based reporting reforms created a foundation for IFRS S2 readiness, suggests that regulatory continuity and long-term institutional investment yield stronger outcomes than episodic standard-setting changes. For researchers, the field has clearly defined the problem. The next step is to build an evidence base for practical, scalable solutions through longitudinal compliance studies that test whether the identified critical success factors translate into sustained improvements in disclosure quality over time.

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