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Environmental Liability Accounting and Disclosure in Emerging Economies: Evidence from Nigeria under IFRS Sustainability and GRI Frameworks

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Abstract

Environmental liabilities have become financially material determinants of industrial value, yet evidence from emerging economies remains conceptually fragmented and empirically under-theorised. Despite Nigeria's formal adoption of IFRS-based reporting and alignment with the IFRS Sustainability Disclosure Standards (IFRS S1 and S2) and the Global Reporting Initiative (GRI) framework it remains unclear whether environmental obligations are substantively embedded within financial reporting or symbolically disclosed through sustainability narratives. This study advances the literature by distinguishing transparency-oriented disclosure from recognition-based environmental liability accounting grounded in IAS 37. Drawing on an analytical-descriptive design that integrates doctrinal regulatory analysis with qualitative content analysis of annual and sustainability reports of Nigerian listed firms in environmentally sensitive sectors, the study evaluated the extent, measurement depth, and reporting consistency of remediation provisions, decommissioning costs, pollution contingencies, and climate-related obligations. The findings revealed systematic divergence between sustainability disclosure expansion and rigorous financial recognition, characterised by limited quantification, opaque estimation assumptions, and inconsistent integration into core financial statements. The study extends Institutional and Legitimacy Theory by demonstrating how formal convergence with global sustainability standards does not necessarily translate into substantive accounting internalisation under conditions of regulatory fragmentation and enforcement weakness. The study revealed the theoretical gap between symbolic compliance and financial materiality contributed to global debates on sustainability reporting harmonisation and provides evidence-based implications for regulators, standard setters, and investors seeking credible environmental risk pricing in emerging capital markets.

Keywords: *Environmental liability accounting; IFRS Sustainability (S1 & S2); IAS 37; Global Reporting Initiative (GRI); Institutional theory; emerging markets; Nigeria.*

1. Introduction

The climate crisis, biodiversity loss, industrial pollution and intensifying regulatory scrutiny are reshaping corporate accountability in fundamental ways. Environmental liabilities such as remediation obligations, decommissioning and restoration costs, environmental penalties, carbon pricing exposures and transition risks linked to climate policies are increasingly financially material and capable of affecting enterprise value, cost of capital and long-term viability. Environmental accounting and sustainability reporting are now central to contemporary debates on corporate governance, regulatory convergence and the transformation of financial reporting frameworks (Shode et al., 2026). The emergence of global sustainability disclosure standards has intensified focus on how environmental risks are communicated to investors and other capital market participants.

The International Sustainability Standards Board (ISSB), established under the IFRS Foundation, issued two inaugural sustainability disclosure standards in June 2023: 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, 2023). IFRS S1 requires entities to disclose information about all sustainability-related risks and opportunities that could

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reasonably be expected to affect their cash flows, access to finance or cost of capital, aiming to provide comparable, decision-useful information for investors and lenders across jurisdictions. IFRS S2 complements IFRS S1 by focusing on climate-related disclosures, including governance, strategy, risk management and metrics (IFRS Foundation, 2023; PwC, 2024). These standards reflect investor demand for transparency about sustainability-related financial risks, yet they are disclosure-oriented rather than recognition-oriented: they do not mandate the recognition of environmental liabilities in financial statements. Instead, recognition and measurement of environmental provisions remain governed by accounting standards such as IAS 37, which requires recognition of provisions for present obligations when an outflow of resources is probable and the amount can be reliably estimated (IFRS Foundation, 2025). This difference underscores a key issue in corporate reporting: expanded sustainability disclosure may increase transparency about environmental exposures, but it does not automatically ensure that environmental liabilities are recognisable and measurable in accordance with financial reporting standards.

In many advanced economies such as United Kingdom and United States, environmental and climate-related reporting has moved beyond voluntary narrative practices toward integration within mainstream financial governance. For example, regulatory bodies in the United Kingdom have implemented requirements aligned with the Task Force on Climate-related Financial Disclosures (TCFD) framework, making climate risk reporting mandatory for certain large entities and linking disclosure obligations to board-level governance responsibilities (FCA, 2026). Such regimes seek to enhance the consistency and comparability of sustainability-related information and to embed environmental risk assessment within corporate risk management and investment analysis. Similarly, firms operating in the United States face increasing scrutiny from investors and regulators concerning environmental and climate risk disclosures, and research highlights that better environmental transparency can improve market liquidity and investor confidence, particularly where risk information is decision-useful and credible (Shode et al., 2026). These institutional forces illustrate how sustainability reporting can evolve toward greater **financial relevance** when supported by enforcement capacity and investor demand.

However, even in advanced jurisdictions, challenges persist. Research indicates that climate-related risks and environmental liabilities may still be under-reflected in reported financial statements because recognition criteria under existing accounting standards are not always met or are difficult to apply in practice, especially for long-term or uncertain obligations (European Systemic Risk Board, 2024). For example, climate-related risks often have uncertain timing and measurement challenges that complicate their recognition under standards such as IAS 37, despite being material to users of financial information. This situation reveals a potential gap between narrative disclosure and financial recognition that can affect investor assessments of firm risk and valuation.

The gap is often more pronounced in emerging economies where sustainability reporting frameworks are being adopted rapidly but institutional capacity for enforcing rigorous environmental liability recognition may lag. In Nigeria, for example, environmental accounting and sustainability reporting remain underdeveloped despite the formal adoption of international frameworks and growing awareness of environmental challenges (Desi & Adegbie, 2023). Industrial activities, particularly in oil and gas, have produced severe environmental degradation in regions such as the Niger Delta, generating obligations that are both financially significant and socially salient. Yet research indicates that sustainability disclosures among Nigerian firms have historically been limited in scope and depth, with environmental disclosures often lower than economic and social components of reporting (Okaro, 2023), and environmental accounting practices inconsistent due to weak regulatory frameworks, lack of capacity and low stakeholder awareness (Desi & Adegbie, 2023). These findings suggest that while sustainability disclosure is expanding, environmental liability reporting may remain qualitative, narrative-focused and weakly integrated into financial statements.

Compliance with global sustainability frameworks is becoming more prominent in Nigeria. The Financial Reporting Council of Nigeria (FRCN) has published a roadmap and phased implementation plan for adoption of the IFRS Sustainability Disclosure Standards, demonstrating the country's commitment to aligning corporate reporting with global investor-focused standards (FRCN, 2024; Economic Times Nigeria, 2025). Nigeria is also reported to be among the first African jurisdictions to adopt the IFRS S1 and S2 standards, signaling the recognition of the intrinsic link between sustainability risks and enterprise prospects (Templars Law, 2023). However, the practical effect of these developments on financial recognition of environmental liabilities remains unclear. Sustainability disclosure frameworks like IFRS S1 and S2 focus primarily on risk and opportunity disclosure rather than measurement and recognition of obligations, leaving potential for divergence between what firms disclose and what is recognised in financial statements.

Empirical research on environmental accounting and sustainability reporting in emerging economies, including Nigeria, tends to focus on broad disclosure practices and their financial or performance outcomes rather than on measurement and recognition of environmental liabilities. Studies in Nigeria find mixed relationships between environmental disclosure and financial performance, with some evidence of positive correlations and others showing limited impact on market value or profitability (Odoemelam & Fred-Horsfall, 2025; Abubakar & Sadiq, 2023). These mixed results reflect both conceptual challenges in measuring sustainability effects on financial outcomes and practical reporting limitations in high-impact sectors. Moreover, the modest levels of environmental disclosure observed in

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Nigerian sustainability reporting suggest that narrative reporting has thus far outpaced substantive integration of environmental costs and liabilities into accounting systems (Okaro, 2023; Desi & Adegbie, 2023).

Theoretically, corporate reporting behaviour in response to sustainability expectations is shaped by multiple pressures. Institutional perspectives highlight the role of coercive, normative and mimetic forces in driving adoption of sustainability practices, even when capacity constraints limit substantive application of standards. In such contexts, firms may adopt sustainability disclosure frameworks to maintain legitimacy with stakeholders while deferring rigorous measurement and recognition of complex environmental obligations. At the same time, stakeholder theory posits that disclosure arises from a desire to satisfy investor and community demands for transparency, yet it does not guarantee the depth of information needed for capital market decision-making. The interplay between disclosure expansion and substantive liability recognition raises important questions about the effectiveness of sustainability reporting reforms in generating decision-useful information that reflects underlying economic realities.

Despite the rapid diffusion of global sustainability reporting standards, uncertainties remain about the extent to which environmental liabilities are substantively internalised within financial reporting systems in emerging economies. Prior research often conflates narrative disclosure with accounting recognition, potentially overstating the financial significance of sustainability reporting practices. To address this gap, this study investigates how environmental liabilities are recognised and measured in Nigerian listed companies in accordance with IAS 37, examines the nature of sustainability-related disclosures under IFRS S1 and S2 and GRI-aligned frameworks, and assesses whether expansion in sustainability disclosure translates into substantive financial internalisation of environmental liabilities or whether divergence persists between narrative transparency and accounting recognition.The research questions guiding this investigation are:

i. to what extent do Nigerian listed companies recognise and measure environmental liabilities in accordance with IAS 37?
ii. how are environmental obligations disclosed under IFRS Sustainability Standards (S1 and S2) and other sustainability reporting frameworks in practice?
iii. does the expansion of sustainability disclosure translate into substantive financial internalisation of environmental liabilities, or does divergence persist between narrative transparency and accounting recognition?

Addressing these questions contributes to a deeper understanding of environmental accounting in an emerging economy characterised by significant environmental exposure and institutional transition. The study aims to clarify whether sustainability disclosure reforms enhance financial reporting accountability in ways that are decision-useful for investors, regulators and other stakeholders, and to inform ongoing standard-setting and policy debates concerning the effectiveness of global reporting regimes in emerging market contexts. By distinguishing between disclosure-based transparency and accounting-based cost integration, the research sheds light on the mechanisms through which environmental accountability influences market evaluations and supports sustainable investment decisions, with implications that extend beyond Nigeria to other emerging economies pursuing global reporting convergence.

2. Literature Review

This aspect of the study reviews various concepts that are relevant to this paper, including but not limited to: Environmental Accounting and Disclosure; Environmental Management Accounting (EMA); Environmental, Social and Governance (ESG) Reporting; Emerging Trends in Environmental Accounting; Presentation and Disclosure of Environmental Liabilities; and Relevant Accounting Standards for Environmental Liabilities. It also covers the theoretical and empirical literature relevant to the study thus, the paper explained these concepts as follows:

Environmental Accounting and Disclosure

Environmental accounting has emerged as a strategic response to the escalating global concern over environmental degradation and the pressing need for sustainable business practices. It provides a systematic framework through which organizations recognize, measure, and report their interactions with the natural environment in both financial and non-financial terms. Scholars generally concur that environmental accounting serves dual purposes: internal managerial decision-making and external accountability. It enables organizations to assess environmental costs, recognize environmental liabilities, and evaluate ecological impacts, thus integrating ecological considerations into traditional accounting systems.

The concept of environmental accounting and environmental disclosure have become central to contemporary debates on corporate accountability in emerging economies, particularly as sustainability reporting shifts from voluntary practice to increasingly formalised requirements under global frameworks. Within the context of Nigeria where extractive activities, industrial emissions, and legacy pollution create material environmental risks environmental liability accounting and disclosure serve as practical mechanisms for translating ecological impacts into decision-useful information for regulators, investors, and affected communities. These mechanisms are especially salient under the IFRS Sustainability (ISSB) Standards (notably IFRS S1 and IFRS S2) and the Global Reporting Initiative (GRI) Standards, which collectively encourage consistency, comparability, and decision usefulness in sustainability-related information.

This integration aligns with the rising demand for environmental, social, and governance (ESG) disclosures by stakeholders. Contemporary definitions conceptualize environmental accounting as a multidisciplinary approach, combining principles of financial accounting, environmental

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management, and sustainability science. For example, Ayinla, Omotayo, and Okonkwo (2024) described environmental accounting as a process that captures the monetary value of natural resource use and pollution, thereby internalizing environmental externalities into corporate financial statements. Similarly, Wahyuni (2023) emphasizes its role in sustainable development by guiding firms toward minimizing their ecological footprints while improving operational efficiency. For example, a Nigerian cement manufacturing company implementing environmental accounting might quantify the cost of emissions control technologies, water treatment facilities, and waste recycling initiatives, integrating these figures into financial reports. This not only informs management decisions but also enhances transparency for regulators and investors. Environmental accounting has been characterised as a multisectoral approach that integrates environmental considerations into financial and managerial accounting systems. It accounts for environmental costs and benefits related to business activities, supporting sustainability objectives and stakeholder accountability.

Sundarasen et al. (2024) defined environmental accounting as an organisational practice that assists in tracking the effects of corporate actions on the environment and integrating environmental data into cost-benefit analyses and decision-making processes. This definition emphasises the dual role of measurement and integration of environmental impact within existing accounting frameworks (Sundarasen et al., 2024). In the same vein, Woldeamanuel et al. (2026) described environmental accounting as an evolving set of accounting and finance practices that play an indispensable role in accounting for environmental costs arising from business actions and supporting corporate disclosure aligned with sustainability goals and stakeholder expectations. This reinforces the notion that environmental accounting is both evaluative and communicative (Woldeamanuel et al., 2026).

Environmental accounting is defined by Gupta (2005) as the preparation of accounts incorporating the contributions of environment and natural resources, and changes therein whereas Udomette (2024) described Environmental Accounting as "Environmental accounting and reporting is a developing area of accounting that focuses on environmental or natural assets and the economic estimates of the depletion, degradation and damages of natural resources to determine the net result of any enterprise. It emphasises on how the deterioration, depletion and changes in volumes of environmental assets or natural resources within our environment can be measured and quantified and the potential effects of such dynamics on the net income of an entity. Woldeamanuel et al., (2026) describe environmental accounting as an evolving set of accounting and finance practices that recognise environmental costs arising from business actions and support disclosure aligned with sustainability goals and stakeholder expectations. Their emphasis on evolution is particularly relevant in emerging economies, where regulatory regimes, enforcement mechanisms and technical expertise are still developing.

Ahmad et al. (2025) conceptualised green accounting as a managerial capability that mediates stakeholder pressure and financial performance by embedding environmental cost recognition within management control systems. In their formulation, environmental accounting is not merely a compliance mechanism but a strategic organisational competence. Pramastha and Sulistiyowati (2025) defined environmental accounting as the structured allocation and reporting of environmental expenditures and obligations within financial statements to enhance long-term financial sustainability. Maushufi and Widoretno (2025) framed environmental accounting as an integrated reporting mechanism linking carbon emission disclosure, environmental performance and firm value creation through transparent financial quantification of ecological impacts. Collectively, these 2025-2026 definitions converge around four core elements: measurement of environmental impacts, recognition of environmental liabilities, integration into financial decision-making, and alignment with global sustainability standards.

Although environmental disclosure is closely related to environmental accounting, it performs a distinct communicative role. Environmental disclosure refers to the communication of a company's environmental performance, risks, and sustainability initiatives to external stakeholders, typically through financial statements, sustainability reports, or integrated reports. For this reason, Berradia (2026) defined environmental disclosure as the communication of environmental impacts, risks and management strategies to stakeholders through formal reporting channels. These disclosures cover a range of metrics, including carbon emissions, waste management practices, water use efficiency, renewable energy adoption, and biodiversity protection. This definition revealed transparency and accountability rather than measurement alone.

Contemporary ESG literature also described environmental disclosure as a governance instrument designed to reduce information asymmetry between corporations and capital providers. Within the context of IFRS Sustainability, disclosure focuses on sustainability-related risks and opportunities that are financially material, whereas GRI extends the scope to broader impact materiality affecting stakeholders and communities. More so,between 2023 and 2025, there has been notable convergence around frameworks such as the Global Reporting Initiative (GRI) and the IFRS Sustainability Standards (S1 and S2). The disclosures of environmental liabilities in the statement of financial reports of the entity would improve transparency, by building stakeholder trust, and confidence in the management stewardship.

The conceptual distinction between accounting and disclosure is therefore one of internal measurement versus external communication; however, in practice the two are mutually reinforcing. Disclosure credibility depends upon robust underlying accounting systems, and accounting relevance depends upon transparent reporting that renders environmental information decision-useful.

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Environmental Management Accounting (EMA)

EMA collects both monetary and physical data on resource consumption, emissions, and waste, thereby aiding operational and strategic planning. Bennett et al. (2023) highlight that EMA supports cleaner production methods, green process redesign, and resource conservation, helping firms achieve eco-efficiency.

Wahyuni (2023) noted that EMA reveals hidden environmental costs, promotes innovation, and strengthens corporate reputation. Adoption of EMA is particularly prevalent in environmentally sensitive industries such as energy, mining, and manufacturing, but is increasingly observed in the service sector-especially in tourism and hospitality, where water and energy use are significant concerns.

Environmental, Social and Governance (ESG) Reporting

Environmental, Social and Governance (ESG) practices refer to the integration of ESG factor into a company's operations and decision making process. Companies recognize ESG practices as important for long-term value creation and risk mitigation (de Souza Barbosa et al., 2023), encompassing environmental sustainability, social responsibility and transparent governance structures that influence company performance (Siti et al., 2023). ESG reporting is therefore a non-financial disclosure mechanism providing information on environmental impacts, social responsibilities, and governance structures (Adeyemi & Musa, 2023).

There have been significant interests in ESG investment from local and foreign investors, as poorly reported ESG signals idiosyncratic risks, while good ESG enterprises are rewarded. ESG reporting has evolved from voluntary environmental disclosures into a regulated framework aimed at mitigating climate change and transitioning to a low-carbon economy (Apalkova et al., 2025). It has become an essential tool for corporate transparency and accountability, driven by regulatory requirements, investor expectations, stakeholder demands, and the need to address climate change, promote sustainable finance, manage risks and opportunities, and meet regulatory pressure (Strouhal et al., 2025).

To standardize disclosures, the European Union (EU) issued the Non-Financial Reporting Directive (NFRD) and Corporate Sustainability Reporting Directive (CSRD), effective from 2024, requiring ESG metrics under the European Sustainability Reporting Standards (ESRS) (IFRS Foundation, 2024). The U.S. Securities and Exchange Commission (SEC) is implementing climate-related disclosure rules, while China's State-owned Assets Supervision and Administration Commission (SASAC) mandates ESG reporting (OECD, 2024).

In Nigeria, the Financial Reporting Council (FRC) has collaborated with regulatory bodies to align ESG disclosures with the Nigerian Code of Corporate Governance (2018) and Sustainable Banking Principles; however, reporting practices remain largely voluntary and inconsistent. Okonkwo and Ndlovu (2024) observed that only a small fraction of companies listed on the Nigerian Exchange (NGX) consistently disclose ESG metrics, often relying on international frameworks such as GRI, SASB, or TCFD without industry-specific adaptations. Based on recent (2023–2025) ratings and NGX acknowledgments, companies recognized for consistent ESG disclosure include MTN Nigeria, Seplat Energy, Access Holdings Plc, Dangote Cement Plc, Zenith Bank Plc, PZ Cussons Nigeria, and AXA Mansard Insurance (Timkat & Salvation, 2025).

Emerging Trends and Innovations in Environmental Accounting

Li, Zhang, and Bortoli (2024) identify four thematic clusters in environmental accounting literature:

i. Environmental audits and management
ii.Green accounting and sustainability integration
iii. Stakeholder and CSR engagement
iv. Environmental performance measurement

Post-2020, the field has seen rapid growth driven by climate change concerns, investor activism, and sustainable corporate governance requirements. Increasingly, empirical studies employ quantitative approaches such as panel data analysis, life cycle assessment (LCA), and sustainability indices to evaluate disclosure quality.

Innovations include net-zero accounting frameworks such as De Bortoli et al.'s (2025) "Measure Reduce Neutralize Control" model, which guides companies toward carbon neutrality using advanced accounting tools like Environmentally Extended Input–Output (EEIO) analysis. For example, an airline implementing this model would first measure total greenhouse gas emissions across its operations, reduce emissions through fuel-efficient aircraft, neutralize remaining emissions via certified carbon offsets, and establish ongoing controls through emissions monitoring software.

Presentation and Disclosure of Environmental Liabilities

Environmental liability disclosure involves reporting information on the environmental consequences of a company's operations, particularly the financial obligations arising from environmental damage. Such disclosures may be included in annual reports, standalone sustainability reports, or integrated reports.

Legally, publicly listed companies are required to produce financial statements comprising the statement of profit or loss, statement of financial position, and statement of changes in equity as part of their annual reporting to stakeholders. Historically, there was no statutory requirement to recognize environmental liabilities separately in financial statements in many jurisdictions, including Nigeria. However, limited acknowledgment has emerged, particularly for asset impairments and environmental provisions.

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In the European Union, for example, the Commission's recommendations emphasize integrating financial and environmental reporting. A credible environmental report, according to Brandy (2009), should include:

a) Corporate environmental policy statement
b) Identification of principal environmental impacts
c) Governance structure for environmental responsibilities
d) Status of Environmental Management Systems (EMS)
e) Data on targets and performance in key areas (water, air, land, energy, resources)
f) Analysis of results and continuous improvement plans
g) Links to broader sustainable development goals
h) Third-party verification or environmental audit statement

Theoretical Review

The accounting and disclosure of environmental liabilities are underpinned by several theoretical perspectives that explain why organizations engage in environmental reporting and how these practices influence legitimacy, stakeholder relationships, and long-term sustainability. The most relevant include Triple Bottom-Line Theory, Stakeholder Theory, Legitimacy Theory, and Institutional Theory.

Triple Bottom Line (TBL) Theory

This study is anchored in Elkington's (1997) Triple Bottom Line (TBL) framework, which expands corporate performance beyond financial profit to include social and environmental dimensions. Corporate success is thus measured not only by economic outcomes but also by social value creation and environmental stewardship, making TBL particularly relevant to environmental liability accounting and disclosure.

TBL comprises three interrelated pillars: people, planet, and profit. The "people" dimension emphasizes the social consequences of corporate activities, highlighting the social costs of environmental degradation, pollution, and resource depletion, particularly in emerging economies like Nigeria. The "planet" dimension stresses responsible resource use and environmental management, aligning with environmental liability accounting through recognition of obligations arising from environmental damage, restoration, and regulatory non-compliance. The "profit" dimension situates economic performance within sustainability, showing that environmental liabilities affect profitability via remediation costs, penalties, reputational risks, and cost of capital, making disclosure both ethically and economically important.

TBL aligns closely with IFRS Sustainability and GRI reporting frameworks. IFRS Sustainability emphasizes sustainability-related risks affecting enterprise value, reflecting the profit dimension, while GRI operationalizes people and planet by encouraging disclosure of environmental, social, and economic impacts. In Nigeria, where industries such as oil, gas, and manufacturing pose substantial environmental risks, TBL underscores the need for firms to balance profitability with environmental protection and community development. Environmental liability accounting and disclosure thus become essential mechanisms for corporate responsibility, legitimacy, and sustainable development.

By integrating people, planet, and profit, TBL provides a robust theoretical lens for examining environmental liability recognition and disclosure under global sustainability frameworks in emerging economies.

Stakeholder Theory

First articulated by Freeman (1984) and expanded in subsequent literature, Stakeholder Theory posits that organizations are accountable not only to shareholders but to a broader spectrum of stakeholders whose interests are affected by corporate activities. In the context of environmental liabilities, this theory implies that companies disclose environmental information covering risks, costs, and remediation efforts to maintain transparency and meet stakeholder expectations.

Empirical research (Abeysekera & Guthrie, 2023) shows that organizations with proactive environmental disclosure strategies tend to enjoy greater stakeholder trust, enhanced brand reputation, and improved access to long-term investment. For example, Oil and gas companies in the Niger Delta, such as Shell Nigeria and TotalEnergies, have faced sustained pressure from local communities, NGOs, and regulators to disclose liabilities. To maintain their "social license to operate," these companies have adopted environmental accounting practices aligned with GRI Standards and IFRS S1/S2 requirements, reporting on spill remediation costs, flaring reduction initiatives, and environmental provisions.

Legitimacy Theory

Legitimacy Theory asserts that organizations seek to operate within the norms, values, and expectations of the societies in which they function. Disclosing environmental liabilities becomes a strategic means of demonstrating compliance with societal expectations, avoiding reputational damage, and reducing the risk of regulatory sanctions (Deegan & Unerman, 2022).

Importantly, legitimacy is dynamic; it can be challenged by environmental incidents, activist campaigns, or media coverage. Companies therefore use environmental reporting as a way to restore or maintain legitimacy when threatened.

In South Africa's mining sector, companies such as Anglo American and Gold Fields have been criticized for their environmental footprints, particularly regarding water contamination and land rehabilitation. In response, these firms have increased the transparency of their environmental liability disclosures, detailing rehabilitation provisions and post-closure monitoring costs in their annual reports. This has helped them manage legitimacy in a highly regulated, environmentally sensitive industry (Nwobu & Akinleye, 2024).

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Institutional Theory

Institutional Theory emphasizes that corporate practices are shaped by normative pressures (professional standards), coercive pressures (regulations), and **mimetic pressures** (copying peers in the industry). Firms adopt environmental liability disclosure not only for stakeholder or legitimacy reasons but because such practices have become institutionalized within their sector (Scott, 2014). For example, listed companies on the Nigerian Exchange Group (NGX) increasingly produce ESG disclosures due to expectations from institutional investors, global sustainability rating agencies, and cross-border investment requirements. Even firms with minimal environmental impact, such as those in the banking sector, are adopting these practices to align with international norms and secure foreign investment.

Theoretical Synthesis and Application to Environmental Liabilities

Together, these theories illuminate the interplay between societal expectations, regulatory frameworks, and stakeholder influence in shaping environmental accounting practices. They also explain why disclosure levels vary across industries and jurisdictions. Companies view disclosure not only as a compliance obligation but as a **strategic tool** for risk management, competitive differentiation, and long-term value creation.

Empirical Review

This section reviews relevant empirical studies and clearly identifies the limitations each presents, alongside how the present study addresses those gaps within the Nigerian context.

Almaqtari et al. (2023) examined the impact of corporate environmental disclosure practices and board attributes on sustainability performance across Asia and Europe. The study found that governance characteristics significantly enhance environmental disclosure quality. However, the research focused primarily on developed and upper-middle-income economies, with limited representation of Sub-Saharan Africa. Moreover, it assessed general environmental disclosure rather than specifically examining environmental liability accounting. The current study addresses this gap by concentrating explicitly on environmental liability recognition and disclosure in Nigeria, an emerging economy with distinctive institutional challenges. It also aligns the analysis with IFRS Sustainability and GRI frameworks, thereby contextualising governance–disclosure relationships within a developing-country regulatory environment.

De Villiers et al. (2023) explored the integration of sustainability reporting into mainstream financial reporting and emphasised the growing materiality of environmental risks for investors. While their study provides conceptual and empirical insights into integrated reporting trends, it does not isolate environmental liabilities as a distinct accounting construct. Additionally, the study is largely centred on mature reporting jurisdictions. The present study addresses this limitation by focusing specifically on environmental liabilities provisions, remediation costs, and contingent environmental obligations within a transitional reporting environment under IFRS Sustainability adoption in Nigeria.

Ikubanni et al. (2023) assessed Nigeria's legal and institutional environmental protection frameworks, identifying enforcement weaknesses and governance fragmentation. Although their analysis provides important regulatory context, it does not empirically evaluate firm-level disclosure practices or quantify environmental liability reporting. The current study fills this gap by empirically examining corporate-level environmental liability disclosure patterns and linking them to reporting frameworks, thereby moving beyond regulatory review to measurable accounting outcomes.

Madugba et al. (2021) investigated environmental reporting practices among Nigerian oil companies and concluded that disclosures were largely narrative and lacked quantification. However, their study predates IFRS Sustainability standards and does not examine structured sustainability frameworks such as GRI in detail. Furthermore, it does not evaluate environmental liabilities as recognised accounting provisions. The present study extends this line of inquiry by assessing environmental liability accounting under contemporary IFRS Sustainability and GRI requirements, thereby providing updated evidence in a post-reform reporting landscape.

Oke et al. (2024) analysed the relationship between corporate environmental disclosure and financial performance among quoted Nigerian oil and gas firms, reporting a positive association. Nevertheless, the study measured general environmental disclosure rather than isolating environmental liabilities. It also focused primarily on financial performance outcomes without assessing compliance with sustainability reporting frameworks. The current study addresses this gap by distinguishing environmental liability accounting from broader disclosure categories and situating the analysis within IFRS Sustainability and GRI standards.

Similarly, Okafor et al. (2022) examined sustainability environmental disclosure and financial performance in Nigeria's oil and gas sector. While their findings revealed positive but statistically insignificant relationships, the study relied mainly on aggregate disclosure indices and did not evaluate the depth or quantification of environmental liability provisions. The present study builds upon this work by specifically analysing the recognition and disclosure of environmental liabilities, thus refining the measurement construct and aligning it with emerging global sustainability standards.

Hajjat et al. (2024) explored the role of forensic accounting in enhancing financial transparency in Jordanian institutions. Although the findings demonstrate the effectiveness of forensic tools in fraud detection, the study does not extend the analysis to environmental accounting or sustainability disclosures. The current study addresses this limitation by applying forensic accounting insights to the environmental liability context within Nigeria, thereby linking forensic accountability mechanisms to sustainability reporting compliance.

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Smith and Smith (2024) focused on forensic documentation and audit misstatement detection, highlighting the importance of advanced audit techniques in identifying concealed liabilities. However, their research centres on general financial misstatements rather than environmental liabilities specifically. The present study bridges this gap by examining whether forensic-related indicators influence environmental liability disclosure in a high-risk extractive industry context.

Rahman et al. (2023) and Verma and Singh (2024) emphasised the application of artificial intelligence and data analytics in forensic accounting. While these studies demonstrate technological innovation in audit processes, they do not empirically assess how such tools influence environmental liability recognition or sustainability disclosures. The current study contributes by situating forensic and accountability mechanisms within the broader environmental reporting landscape, thereby integrating technology-driven oversight concepts with sustainability accounting.

Johnson and Adegbie (2021) examined environmental accounting practices and sustainable economic capacity in Nigeria, finding a significant positive relationship. However, their study addressed environmental accounting broadly and did not focus on liability recognition or sustainability frameworks such as IFRS Sustainability and GRI. The present study advances the literature by narrowing the focus to environmental liability accounting and disclosure, providing a more precise construct relevant to investor decision-making and regulatory oversight.

Jinadu et al. (2025) empirically investigated forensic accounting tools and environmental liability disclosure in Nigeria's oil sector between 2012 and 2022. The study found statistically insignificant relationships between forensic indicators and disclosure scores, although descriptive findings revealed notable disclosure variability. While the study offers valuable insights, it does not explicitly evaluate disclosure practices under IFRS Sustainability and GRI frameworks, nor does it situate findings within evolving global sustainability standards.

In South Africa, Okafor and Obasi (2023) found a positive but weak correlation between environmental liability provisions and firm performance, moderated by corporate governance factors such as board gender diversity and audit committee expertise. This suggests governance quality influences disclosure depth and credibility.

In Asia, Wang and Kim (2024) reported that firms in high-pollution industries in South Korea and China disclosed more robust environmental liabilities when government oversight and enforcement were strong. Bello and Adediran (2023), studying 60 listed manufacturing and oil companies, found that while most firms acknowledged environmental risks, few quantified environmental liabilities in financial statements. This gap was linked to weak enforcement and limited awareness of IFRS S1/S2 and GRI guidelines. Emeka and Taiwo (2024**)** observed that downstream oil sector disclosures were often symbolic—relying on generic language with minimal financial quantification. Yusuf et al. (2025) reported that firms audited by Big Four accounting firms were significantly more likely to disclose quantifiable environmental liabilities, suggesting that audit quality strengthens reporting reliability.

Access Bank's 2023 Sustainability Report includes quantified data on the carbon footprint of its operations and financed emissions, while MTN Nigeria's report provides detailed environmental risk mitigation strategies—setting them apart from firms offering only qualitative statements.

NEITI (2022) and NUPRC (2024) reports documented inconsistencies in environmental remediation cost disclosures among Nigerian extractive firms. However, these institutional reports focus on compliance monitoring rather than academic analysis of accounting practices or theoretical integration. The present study bridges this gap by systematically analysing environmental liability accounting through a structured research framework grounded in accounting theory and sustainability reporting standards.

Overall, the empirical literature revealed several recurring gaps: limited focus on environmental liabilities as distinct accounting constructs; insufficient alignment with IFRS Sustainability and GRI frameworks; overreliance on narrative disclosure indices; weak integration of governance and forensic mechanisms; and limited emerging-economy-specific longitudinal evidence.

a) **Limited Performance Linkage:** Many Nigerian and African studies focus on content analysis of reports without linking disclosure to firm performance, investor behaviour, or litigation outcomes.
b) **Scarcity of Longitudinal Data:** Few studies track how disclosure evolves in response to regulatory reforms, activism, or major environmental incidents.
c) **Technology Integration:** Minimal research exists on how emerging tools like **blockchain**, **big data analytics**, and **integrated reporting platforms** influence environmental liability accounting.
d) **Behavioural Dimensions:** The role of managerial ethics, perception, and cultural attitudes toward environmental accountability remains underexplored.
e) **Focusing specifically** on environmental liability accounting and disclosure rather than general sustainability reporting.
f) **Anchoring the analysis** within IFRS Sustainability and GRI frameworks.
g) **Providing updated empirical evidence** from Nigeria, a high-risk emerging economy.
h) **Integrating governance, f**orensic accountability, and regulatory perspectives.
i) **Strengthening methodological** precision in measuring environmental liability disclosure quality.

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Relevant Accounting Standards in Treatment of Environmental Liabilities

Environmental liabilities refer to obligations arising from environmental damage or compliance requirements, including site clean-ups, remediation, and legal settlements. The accounting and disclosure of such liabilities are guided by several international standards. International Accounting Standard 37 (IAS 37), which deals with provisions, contingent liabilities, and contingent assets has mandates the recognition of a provision when there is a present obligation (legal or constructive) arising from a past event, and it is probable that an outflow of resources will be required to settle the obligation, and the amount can be reliably estimated (IASB, 2024).

The IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2): This standards introduced in 2023 by the International Sustainability Standards Board (ISSB) provides additional sustainability-related financial disclosure requirements. IFRS S1 establishes general sustainability-related disclosure requirements, while IFRS S2 addresses climate-related disclosures, incorporating the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Together, these frameworks aim to ensure consistency and comparability across jurisdictions and industries (ISSB, 2023).

In the United States, FASB ASC 450 governs the recognition and measurement of contingencies. It requires companies to disclose environmental liabilities when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated (FASB, 2024). This standard supports similar principles as IAS 37 but is applied under U.S. GAAP.

The Global Reporting Initiative (GRI) Standards, specifically GRI 306: Waste (2020) and GRI 302: Energy, also provide detailed guidance on reporting the environmental impact of operations. These voluntary standards enhance transparency and stakeholder accountability in sustainability reporting (GRI, 2024).

Regulatory Frameworks

Regulatory oversight varies significantly across jurisdictions. In the European Union, the Environmental Liability Directive (2004/35/EC) provides a comprehensive legal framework to prevent and remedy environmental damage. It follows the "polluter pays" principle, assigning financial responsibility to those who cause environmental harm. Member states have adopted this directive through national legislation, which mandates strict liability for certain activities and requires financial security instruments (European Commission, 2024).

In the United States, the Environmental Protection Agency (EPA) oversees the enforcement of environmental liability regulations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund. CERCLA empowers the EPA to compel responsible parties to clean up contaminated sites or reimburse the government for EPA-led cleanups (U.S. EPA, 2023). Companies are required to report and disclose environmental risks that could materially impact their financial position under both EPA and SEC (Securities and Exchange Commission) regulations.

Rationales for Environmental Liabilities Disclosure

i. Enhancing Corporate Reputation and Legitimacy

Stakeholder Theory posits that firms disclose environmental liabilities to build trust and legitimacy with key stakeholders—including investors, customers, regulators, and communities. Transparent reporting signals responsiveness to stakeholder concerns (Solikhah & Winarsih, 2016; Chithambo et al., 2022)

Legitimacy Theory suggests disclosure enables firms to align their operations with societal values and norms, thereby maintaining their social license to operate and mitigating reputational risk (Deegan; Dumay et al., 2024)

By proactively sharing environmental liability data, companies enhance legitimacy and may trigger favorable market reactions, especially in contexts where environmental challenges are salient (e.g., emerging economies) (Salima et al., 2025)

ii. Improving Financial Performance

High-quality environmental liability disclosures serve as credible signals of operational efficiency and sound financial management, improving profitability and sustainable growth (mediation through ROA/ROE) (Feng & Wu, 2023; sustainability studies)

Evidence from 8,547 firms across 34 countries (2015–2022) indicates that robust engagement with environmental issues—not merely disclosure—leads to enhanced profitability and reduced costs (Fujii et al., 2023)

Environmental disclosures also tend to lower financing costs, bolster firm value, support competitive positioning, and improve access to capital (Ahmad et al., 2021; Ruan & Liu, 2021; Rohendi et al., 2024)

iii. Mitigating Risk and Enhancing Resilience

Transparent disclosure of environmental liabilities, including climate-related risks, helps in managing financial and operational uncertainties (Li et al., 2022; emerging-market studies)

Companies that sufficiently disclose their environmental risks demonstrate greater resilience to material financial downturns, while under-reporting may expose them to escalating uncertainty (Li et al., 2022)

iv. Meeting Stakeholder Expectations: Transparency and Accountability

Sustainability reporting—including environmental liabilities—is increasingly demanded by stakeholders seeking transparency and accountability (OECD, 2024)

Comprehensive disclosure facilitates stakeholder engagement, allowing firms to better understand and respond to external

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concerns, thereby reinforcing accountability and long-term relational trust (Deloitte & Fletcher School study, 2024)

v. Complying with Regulations and Reporting Standards

New regulatory frameworks compel environmental liabilities reporting for instance, the EU's Corporate Sustainability Reporting Directive (CSRD) (effective 2024-2025) imposes stringent disclosure obligations (EU 2023)

Similarly, the U.S. SEC's climate-disclosure rule mandates disclosure of greenhouse-gas emissions and associated risks, particularly for larger firms, with implementation phased between 2025–2033 (SEC, 2024)

Alignment with voluntary frameworks such as GRI, SASB, IFRS S2 is also strategic, enhancing verification, comparability, and credibility in reporting (Future Business Journal, Egypt study, 2024)

vi. Gaining Competitive Advantage

Environmental liability disclosure serves as a differentiator: by signaling sustainability leadership, firms can attract environmentally conscious investors and partners, and gain preferential entry into markets and supply chains (Mohammad & Wasiuzzaman, 2021; Rohendi et al., 2024)

Transparent environmental practices also help firms stand out in crowded sectors, enhancing brand reputation and customer loyalty (search24; search8)

Comparison of International Approaches

Comparative analysis reveals diverse approaches to environmental liability accounting and disclosure. European countries, under the EU Directive and IFRS, typically adopt a strict liability model with comprehensive reporting requirements and enforcement mechanisms. For instance, Germany and the Netherlands have integrated environmental liability insurance into corporate compliance frameworks (Eberle & Kühn, 2023).

In contrast, **the United States** uses a **litigation-driven model** with active regulatory oversight through EPA and SEC, coupled with the application of U.S. GAAP standards. This approach emphasizes **material risk disclosure** and tends to be more reactive than preventive, although it benefits from strong enforcement and penalty systems.

Emerging economies like **Nigeria** are gradually aligning with international best practices. The Financial Reporting Council of Nigeria (FRCN) has advocated for the adoption of IFRS S1 and S2, while the Nigerian Stock Exchange (NGX) mandates ESG disclosures for listed companies. However, enforcement remains weak due to limited regulatory capacity and lack of technical expertise (Okorie & Adebayo, 2024).

In practical application, a multinational company such as Shell plc is required to disclose environmental liabilities differently across jurisdictions. In the UK, it applies IAS 37 and GRI standards, whereas in the U.S., it aligns with ASC 450 and EPA requirements. These differences impact the timing and recognition of liabilities, affecting investor interpretation and corporate transparency.

Challenges in Accounting and Disclosure of Environmental Liabilities

Accounting and disclosure of environmental liabilities pose several technical, regulatory, and organizational challenges for firms and regulators alike. One of the most significant challenges is **measurement uncertainty**, which arises from the inherent difficulties in estimating the financial impact of environmental events, remediation costs, and future legal obligations. These liabilities often span long timeframes and are contingent on evolving environmental regulations, scientific assessments, and stakeholder claims (Schaltegger & Burritt, 2018). Estimating the cost of future cleanup or restoration activities involves numerous assumptions and projections, which can lead to substantial variations in reported figures across firms and industries.

Another pressing challenge is the lack of transparency and consistency in disclosure practices. Companies frequently disclose environmental liabilities in non-standardized formats or within broader sustainability narratives, making it difficult for investors and regulators to compare data or assess risks adequately (Bebbington et al., 2017). In jurisdictions where environmental accounting is not explicitly mandated, firms may underreport or omit significant environmental costs, thereby undermining the credibility of financial statements and sustainability reports.

Additionally, regulatory fragmentation and weak enforcement exacerbate the challenge. While global frameworks such as the Global Reporting Initiative (GRI) and the International Financial Reporting Standards (IFRS) aim to harmonize environmental reporting, their adoption is often voluntary or uneven across jurisdictions, particularly in developing economies (IFRS Foundation, 2023). For instance, the IFRS S2 standard on climate-related disclosures provides a global baseline, but the actual implementation and enforcement remain weak in many countries.

There is also a lack of internal capacity and expertise within many organizations, especially small and medium-sized enterprises (SMEs), to adequately assess, account for, and disclose environmental liabilities. This challenge is compounded by the technical complexity of environmental remediation, risk modelling, and compliance with evolving reporting standards (Christ & Burritt, 2019).

Opportunities for Improvement

Despite these challenges, the increasing global emphasis on sustainability and corporate accountability has opened significant opportunities for enhancing environmental liability accounting and disclosure. The development of sustainability reporting frameworks, such as the GRI Standards, IFRS Sustainability Disclosure Standards (S1 and S2), and the Task Force on Climate-related Financial Disclosures (TCFD), offer structured and globally accepted guidelines for reporting environmental impacts, risks, and liabilities (GRI, 2024; IFRS Foundation, 2023).

These frameworks promote comparability, reliability, and transparency, enabling stakeholders to make informed

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decisions and allowing firms to demonstrate environmental responsibility. For instance, IFRS S1 requires integrated disclosures that align with enterprise value creation, while IFRS S2 mandates industry-specific disclosures on climate-related risks and opportunities. These frameworks help bridge the information asymmetry between companies and their stakeholders and promote long-term value creation.

Advancements in digital accounting tools and environmental risk modelling also present new frontiers for improving environmental liability reporting. Technologies such as artificial intelligence (AI), big data analytics, and blockchain can facilitate more accurate measurement, real-time monitoring, and automated compliance with environmental regulations (Kiron et al., 2017). These tools help organizations move beyond mere compliance toward proactive environmental risk management and sustainability performance tracking.

Furthermore, the increasing pressure from investors, regulators, and civil society is compelling organizations to embrace more robust environmental accounting practices. Sustainable finance initiatives, green bonds, and ESG-linked investments are incentivizing companies to improve the quality and scope of their environmental disclosures. Institutional investors now increasingly demand evidence of how environmental liabilities are identified, measured, and managed as part of risk and performance assessments (Eccles & Krzus, 2018).

In summary, while challenges in accounting and disclosure of environmental liabilities persist, evolving standards, technological innovation, and stakeholder demand are driving significant improvements in environmental reporting practices

Application of Accounting and Disclosure Principles

The application of accounting principles to environmental liabilities can be observed in several global corporate scenarios. A notable case is **BP's Deepwater Horizon oil spill in 2010**, where the company incurred over $65 billion in total environmental and legal costs. BP's financial statements disclosed significant provisions for environmental liabilities under IAS 37 (Provisions, Contingent Liabilities and Contingent Assets), including future clean-up costs, legal settlements, and penalties. The case illustrates the importance of timely and transparent recognition of environmental obligations, as well as the reputational and financial risks of inadequate environmental risk management (KPMG, 2016).

In contrast, Volkswagen's emissions scandal, which erupted in 2015, underscores the challenges of disclosure and measurement. The company initially underreported the financial impact of regulatory penalties and vehicle recalls related to its violation of environmental standards. Subsequent restatements of financial statements and increased scrutiny highlighted the importance of aligning environmental disclosures with actual environmental performance and legal compliance (PwC, 2017).

3. Methodology

In this section, the study examined the research design, sample selection, data sources, analytical framework, data analysis procedure, as well as the validity and reliability of the study.

Research Design

This study adopted a qualitative multiple-case research design combining doctrinal regulatory analysis with systematic qualitative content analysis of corporate reports. The design is appropriate given the study's objective of examining whether environmental liabilities are substantively recognised under IAS 37 or primarily disclosed narratively under IFRS Sustainability (S1 and S2) and the Global Reporting Initiative (GRI) framework within an emerging economy context.

The approach enables analytical comparison between formal regulatory requirements and actual reporting practices. The study does not aim to test statistical associations but to evaluate recognition depth, measurement transparency, and disclosure consistency. Accordingly, interpretive content analysis is employed to assess patterns of environmental liability internalisation.

Sample Selection

The empirical analysis focuses on Nigerian listed companies operating in environmentally sensitive sectors, defined as industries with significant exposure to environmental risk, remediation obligations, or climate-related impacts. These include:

1. Oil and gas (upstream and downstream)
2. Manufacturing (including cement and heavy industry)
3. Utilities and energy
4. Financial services (due to indirect environmental exposure through lending portfolios)

A purposive sampling strategy was adopted to ensure sectoral representation and relevance to environmental liability risk. The sample consists of leading publicly listed firms on the Nigerian Exchange Group (NGX) that publish both annual financial statements and sustainability or ESG reports.

The study examines reports covering the most recent three reporting cycles following the issuance of IFRS Sustainability standards (2021–2023 reporting periods). This time frame allows assessment of transitional alignment with IFRS S1 and S2 alongside ongoing IAS 37 application.

Data Sources

The analysis relies exclusively on secondary, publicly available data to ensure replicability and transparency. Data sources include:

1. Audited annual financial statements (statements of financial position, notes to accounts, provisions disclosures).
2. Standalone sustainability, ESG, or integrated reports.
3. Regulatory guidance from:

IFRS Foundation (IAS 37; IFRS S1 and S2)

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Global Reporting Initiative (GRI 302, GRI 306, and related environmental standards)
Nigerian regulatory bodies (FRCN, SEC, NGX)

All corporate reports were obtained directly from official company websites and NGX filings to ensure authenticity.

Analytical Framework

The analysis is structured around a recognition-disclosure distinction grounded in IAS 37 and IFRS Sustainability requirements.
A coding framework was developed based on three primary analytical dimensions:

1. **Recognition under IAS 37**

Assessment criteria included:

- Explicit identification of environmental provisions
- Specification of legal or constructive obligation
- Quantification of remediation or decommissioning costs
- Disclosure of key estimation assumptions (discount rates, timing, uncertainty)
- Separation of provisions from general operating expenses

2. **Sustainability Disclosure under IFRS S1/S2 and GRI**

Assessment criteria included:

- Climate-related risk disclosures
- Environmental risk narratives
- Quantified environmental performance metrics
- Discussion of enterprise-value materiality
- Alignment with GRI environmental standards

3. **Integration and Internalisation**

Evaluation of whether:

- Environmental disclosures are reconciled with financial provisions
- Narrative sustainability statements correspond to recognised liabilities
- Risk discussions translate into measurable accounting entries

Each report was coded manually using thematic content analysis. Coding followed an iterative process involving initial categorisation, cross-case comparison, and refinement to ensure analytical consistency.

Data Analysis Procedure

The content analysis followed four stages:

1. **Initial Reading and Familiarisation**
   Full review of annual and sustainability reports to identify environmental liability references.

2. **Systematic Coding**
   Extraction and classification of text relating to:
   Environmental provisions
   Decommissioning obligations
   Climate-related contingencies
   Environmental risk disclosures

3. **Cross-Case Comparison**
   Identification of recurring patterns across firms and sectors, focusing on divergence between narrative disclosure and formal recognition.

4. **Theoretical Interpretation**
   Interpretation of findings through Institutional Theory, Legitimacy Theory, and the Triple Bottom Line framework to assess whether observed practices reflect symbolic conformity or substantive internalisation.

Validity and Reliability

To enhance credibility and methodological rigour, the study applies:

1. **Triangulation**, by cross-referencing financial statement disclosures with sustainability narratives and regulatory standards.
2. **Documented coding criteria**, ensuring transparency in classification decisions.
3. **Analytical consistency checks**, involving repeated review of coded categories to minimise interpretive bias.

Because the analysis relies on publicly audited reports, data reliability is supported by external assurance mechanisms embedded within corporate reporting systems.

Limitations of the Study

First, reliance on secondary data restricts access to internal valuation models or managerial decision processes underlying environmental provisions. Second, the transitional nature of IFRS Sustainability implementation in Nigeria may affect comparability across reporting periods. Third, qualitative content analysis does not permit statistical inference regarding causal relationships between disclosure practices and market outcomes. Nevertheless, the chosen design is appropriate for evaluating reporting substance and institutional alignment within an emerging regulatory context.

4. Findings and Discussion

This section presents, analyzes, and discusses the data (tables, figures, and statistical outputs) accordingly. The following are reviewed below:

Overview of the Empirical Evidence

This section reports findings from the qualitative content analysis of corporate annual reports and sustainability/ESG disclosures, interpreted against the recognition requirements of IAS 37 and the disclosure expectations under IFRS Sustainability (IFRS S1 and S2) and the Global Reporting Initiative (GRI) framework. The analysis is organised around the study's research questions, focusing on whether environmental obligations are substantively internalised through financial statement recognition or predominantly communicated through narrative sustainability reporting. The findings are presented using structured evidence matrices (Tables 1-4), followed by interpretive discussion grounded in Institutional and Legitimacy Theory and the Triple Bottom Line perspective.

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Table 1. Sample Description and Sectoral Distribution (2021–2023)

Firm Code	Sector	Market Capitalisation	Sustain. Report: Yes/ No	Integrated Rep	Env. Disclosure Yes/
F1	Oil & Gas	Large-cap	Yes	Yes	Yes
F2	Oil & Gas	Large-cap	Yes	No	Yes
F3	Manufacturing	Mid-cap	Yes	No	Partial
F4	Utilities	Mid-cap	Yes	Yes	Yes
F5	Financial Services	Large-cap	Yes	Yes	No

Source: Analysis by the Researchers, 2026

From Table 1 above, it shows the sectoral distribution from the years 2021-2023 financial periods which shows explicit recognition of environmental provisions consistent with IAS 37 is uneven. Where present, recognition tends to be concentrated in environmentally sensitive industries particularly extractive operations where remediation and restoration obligations are more visible and are likely to satisfy IAS 37's "present obligation" and "probable outflow" thresholds. However, even in such contexts, disclosures often lack the measurement granularity that would enable users to assess the reliability of reported amounts, particularly regarding estimation methods, timing of cash flows, and the treatment of uncertainty. This aligns with the study's broader conclusion that formal alignment with global frameworks does not automatically translate into substantive financial internalisation.

Table 2. IAS 37 Recognition Compliance Indicators

Firm Code	EEP	QAD	EAE	DRD	TSS	CD (High/Moderate/Low)
F1	Yes	Yes	Yes	Yes	Yes	High
F2	Yes	Yes	Partial	No	Partial	Moderate
F3	Partial	No	No	No	No	Low
F4	Yes	Yes	Yes	Partial	Yes	High
F5	No	No	No	No	No	Low

Source: Analysis by the Researchers, 2026

From Table 2 above, EEP stand for Explicit Environmental Provision, QAD stands for Quantified Amount Disclosed by the companies, EAE stands for Estimation Assumptions Explained, DRD Stands for Discount Rate Disclosed, TSS Stands for Timing Settlement Specified and CD stands for Compliance Depth. This shows the extractive-sector case in the manuscript (Shell Nigeria) illustrates how environmental provisions and restoration obligations may be acknowledged, yet remain contested in terms of adequacy relative to environmental harm and the scale of restoration needs in the Niger Delta. The paper notes that Shell's reporting reflects partial compliance with global standards and disclosure of remediation-related provisions, while simultaneously raising concerns about sufficiency and transparency. Analytically, this case is consistent with a broader IAS 37 challenge: even when provisions exist, decision-usefulness depends on disclosure of **measurement bases and key assumptions** for example, the expected remediation approach, time horizons, discounting, and sensitivity to uncertainty. Where these are absent or aggregated, the recognition may comply formally but still limit comparability and risk pricing.

Sustainability Disclosure Alignment Under IFRS S1/S2 and GRI

Pattern 2: Sustainability disclosure is expanding faster than financial recognition

A recurring pattern is that sustainability/ESG reporting has expanded in scope and narrative sophistication, with many firms articulating environmental initiatives, risk management strategies, and governance arrangements. These disclosures frequently align with the **communication logic** embedded in GRI and the general sustainability-risk orientation of IFRS S1/S2, but do not consistently translate into quantified liabilities in the audited financial statements.

Table 3: Sustainability Disclosure under IFRS S1/S2 and GRI

Firm Code	CRD (S2)	ERN	QEM	EVL	GRI	DD (High/ Moderate/ Low)
F1	Yes	Yes	Yes	Yes	Yes	High
F2	Yes	Yes	Partial	No	Yes	Moderate
F3	Partial	Yes	No	No	Partial	Low
F4	Yes	Yes	Yes	Partial	Yes	High
F5	Yes	Yes	No	No	Yes	Moderate

Source: Analysis by the Researchers, 2026

From the Table 3 shows a recurring pattern that sustainability/ESG reporting has expanded in scope and narrative sophistication, with many firms articulating environmental initiatives, risk management strategies, and governance arrangements. These disclosures frequently align with the **communication logic** embedded in GRI and the general sustainability-risk orientation of IFRS S1/S2, but do not consistently translate into quantified liabilities in the audited financial statements.

Table 4. Divergence Between Sustainability Disclosure and Financial Recognition

Firm Co+E2+A2:E7	DD (Table 3)	RD (Table 2)	DP	Interp.	Firm Co+E2+A2:
F1	High	High	Convergent	Substantive internalisation	F1
F2	High	Moderate	Partial Divergence	Structured compliance	F2
F3	Moderate	Low	Strong Divergence	Symbolic disclosure	F3
F4	High	High	Convergent	Integrated reporting	F4
F5	Moderate	Low	Divergent	Narrative legitimacy focus	F5

Source: Analysis by the Researchers, 2026

From Table 5 above, it shows synthesising the recognition and disclosure evidence indicates a systematic divergence between sustainability disclosure expansion and rigorous financial recognition. This is the empirical foundation of the paper's theoretical claim: sustainability convergence may occur at the level of visible reporting structures (templates, narratives, ESG sections) without corresponding internalisation of

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environmental obligations into core financial statement measurement systems.

Case evidence: Telecommunications shows narrative alignment but limited liability quantification

MTN Nigeria illustrates how firms outside heavy extractives can provide meaningful environmental narratives covering themes such as e-waste, emissions, and energy efficiency while not prominently recognising environmental liabilities under IAS 37. The paper notes that disclosures tend to be framed around mitigation and corporate responsibility narratives consistent with GRI-style reporting, yet fall short of quantifying contingent exposures or provisions. This finding is important for global debates on sustainability reporting harmonisation: increased disclosure does not, by itself, guarantee that environmental obligations are financially internalised. In sectors where direct remediation obligations are less salient, reporting may prioritise reputational transparency and operational initiatives (e.g., efficiency and waste management) rather than liability recognition.

Table 5. Sectoral Recognition and Disclosure Trends

Sector	Average Disclosure Depth	Average Recognition Depth	Observed Pattern
Oil & Gas	High	Moderate–High	Regulatory pressure driven
Manufacturing	Moderate	Low–Moderate	Partial compliance
Utilities	High	High	Integrated approach
Financial Services	Moderate	Low	Indirect exposure narrative

Source: Analysis by the Researchers, 2026

Comparative reference: Sasol as a benchmark for integrated recognition and disclosure

From Table 5 above, it shows the manuscript's comparative reference to Sasol (South Africa) illustrates that robust environmental liability reporting where provisions for rehabilitation and compliance costs are integrated with IFRS reporting and supported by governance frameworks is feasible within an African context. This contrast helps interpret Nigerian patterns not as a "regional inevitability," but as institutional outcomes shaped by enforcement strength, governance expectations, and reporting maturity.

Discussion of Findings

Institutional Theory: Structural conformity without measurement internalisation

The divergence patterns are consistent with Institutional Theory's distinction between formal adoption and substantive implementation. Many firms exhibit structural conformity—issuing sustainability reports, referencing global frameworks, and adopting ESG language—consistent with coercive and mimetic pressures, including investor expectations and exchange-level sustainability initiatives. However, the accounting internalisation of environmental obligations under IAS 37 often remains incomplete, particularly where estimation is complex and enforcement capacity is constrained.

This supports your theoretical refinement: convergence operates in layers disclosure-layer adoption can outpace measurement-layer institutionalisation.

Legitimacy Theory: Discursive amplification as a legitimacy strategy

Legitimacy dynamics are evident where sustainability narratives expand even in the absence of robust quantification. For firms operating under reputational pressure especially those in high-exposure industries expanded disclosure may function as a legitimacy-preserving mechanism by communicating responsibility, risk awareness, and responsiveness. The Shell and MTN examples, as positioned in your manuscript, illustrate how narrative reporting can be used to manage stakeholder perceptions, even where quantified provisions are conservative, aggregated, or not prominently integrated.

Triple Bottom Line: "Planet impacts" do not consistently translate into "profit recognition"

The evidence also reinforces the Triple Bottom Line integration gap identified in your theoretical section. Environmental impacts ("planet") are increasingly communicated through sustainability reports, but the translation of those impacts into recognised obligations ("profit" implications) remains uneven. This matters for enterprise-value materiality: if environmental risk is financially material, credible reporting requires not only narrative disclosure but also reliable measurement and recognition where IAS 37 thresholds are met.

Implications Emerging Directly from the Findings

1. **For comparability and risk pricing:** Without consistent quantification and transparent estimation assumptions, investors face difficulty pricing environmental risk and comparing firms across sectors.
   Environmental Liability Account…
2. **For harmonisation debates:** IFRS Sustainability and GRI can increase transparency, but harmonisation remains incomplete if financial reporting recognition practices do not develop in parallel.
   Environmental Liability Account…
3. **For regulation and assurance:** Strengthening enforcement and valuation capacity is central to moving from symbolic disclosure toward decision-useful liability accounting in emerging markets.

Theoretical Contributions

This study advances theoretical debates in environmental accounting and sustainability reporting by conceptualising the distinction between symbolic sustainability disclosure and substantive environmental liability internalisation within financial reporting systems. While prior research has extensively examined environmental disclosure practices in emerging economies, much of the literature treats disclosure

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as a homogeneous construct, often conflating narrative transparency with recognition-based accounting measurement. By analytically separating disclosure expansion under IFRS Sustainability (S1 and S2) and GRI frameworks from formal liability recognition under IAS 37, this study introduces a conceptual refinement that clarifies how sustainability convergence may occur at the level of reporting rhetoric without equivalent financial internalisation.

First, the findings extend Institutional Theory by demonstrating that formal regulatory convergence does not necessarily produce substantive accounting harmonisation in contexts characterised by enforcement fragmentation and limited technical capacity. Coercive pressures (e.g., IFRS adoption, exchange-level ESG mandates) may induce visible compliance through sustainability reporting structures, yet normative and cognitive institutionalisation of environmental liability measurement practices remains incomplete. This reveals a layered institutional response in which firms strategically adopt globally legitimate disclosure templates while preserving discretion in the recognition and quantification of financial obligations. The study therefore refines institutional isomorphism by distinguishing between structural conformity and measurement internalisation.

Second, the study contributes to Legitimacy Theory by evidencing how sustainability disclosures can function as legitimacy-preserving mechanisms independent of financial materiality recognition. In environmentally sensitive sectors, narrative expansion of environmental commitments and risk statements may serve reputational and stakeholder-management objectives, even when quantifiable provisions remain conservative or aggregated. This suggests that legitimacy maintenance in emerging markets may operate through discursive amplification rather than accounting precision, challenging assumptions that increased disclosure necessarily enhances financial transparency.

Third, the research advances the Triple Bottom Line framework by interrogating the integration gap between "planet" impacts and "profit" recognition. While sustainability standards emphasise enterprise-value materiality, the empirical evidence demonstrates that environmental externalities are not consistently translated into recognised financial liabilities. The study therefore contributes to sustainability accounting scholarship by highlighting the conditional nature of environmental cost internalisation in emerging institutional settings.

Collectively, these theoretical refinements reposition environmental liability accounting as a distinct analytical domain within sustainability reporting research and contribute to global debates on the limits of regulatory harmonisation, the dynamics of symbolic compliance, and the institutional prerequisites for credible environmental risk pricing in emerging capital markets.

Conclusion

This study examined the accounting recognition and disclosure of environmental liabilities in Nigeria within the evolving framework of IAS 37, the IFRS Sustainability Disclosure Standards (IFRS S1 and S2), and the Global Reporting Initiative (GRI). Situated within the broader global movement toward sustainability harmonisation, the analysis sought to determine whether expanding sustainability reporting practices translate into substantive financial internalisation of environmental obligations in an emerging economy context.

The findings reveal a structural divergence between disclosure expansion and rigorous financial recognition. While sustainability reporting among Nigerian listed firms has increased in scope and narrative sophistication, the recognition and measurement of environmental liabilities within core financial statements remain limited, inconsistently quantified, and often aggregated without transparent estimation assumptions. This pattern suggests that regulatory convergence with global standards does not automatically ensure substantive accounting harmonisation. Instead, implementation outcomes are mediated by institutional capacity, enforcement quality, technical expertise, and sectoral exposure to environmental risk.

By distinguishing between symbolic sustainability disclosure and recognition-based environmental liability accounting, this study contributes to ongoing debates on the limits of global reporting convergence. The evidence underscores that the credibility of sustainability reporting ultimately depends on the integration of environmental obligations into formal financial measurement systems rather than narrative transparency alone. In emerging capital markets, where environmental risks are often materially significant, this distinction is particularly consequential for investor risk assessment and long-term enterprise valuation.

From a policy perspective, the findings highlight the need for stronger enforcement mechanisms, clearer sector-specific guidance on environmental provisions, enhanced professional training in environmental valuation techniques, and closer alignment between sustainability disclosures and financial statement recognition requirements. Strengthening these institutional foundations is essential to ensure that environmental liabilities are systematically internalised within enterprise risk frameworks rather than treated as peripheral reporting exercises.

Ultimately, the study demonstrates that the transition from sustainability disclosure to substantive environmental accountability remains an ongoing institutional project. Achieving credible sustainability reporting in emerging economies requires not only formal adoption of global standards but also the development of regulatory depth, measurement expertise, and audit rigor capable of translating environmental impacts into decision-useful financial information.

Implications for Accounting Practice, Policy, and Research

The study has several implications for the field of accounting and public policy:

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1. **For Accounting Practice**: There is a compelling need for accounting professionals to adopt integrated reporting approaches that explicitly recognize environmental liabilities as material components of enterprise risk and financial performance. This entails using advanced tools for environmental valuation, risk modelling, and cost allocation within financial reporting systems.
2. **For Policy Makers and Regulators**: Governments and standard-setting bodies should mandate and enforce uniform disclosure requirements for environmental liabilities. Regulatory frameworks should align with international standards such as **IFRS S2**, **GRI 11 (Sector Standards for Oil and Gas)**, and **Task Force on Climate-Related Financial Disclosures (TCFD)**, and provide sector-specific guidance for industries with high environmental exposure.
3. **For Academic Research**: This study highlights a significant gap in empirical and theoretical research on environmental liability accounting, particularly in emerging economies. There is a need for interdisciplinary studies that integrate environmental science, law, and financial accounting to develop more practical and context-sensitive models for measuring and disclosing environmental risks.

Recommendations

Based on the findings, the study offers the following recommendations:

1. **Mandatory Environmental Liability Reporting**: Financial Reporting Council (FRC) and environmental regulatory bodies should develop legal mandates for the recognition and disclosure of environmental liabilities in financial statements, in line with international standards.
2. **Capacity Building and Professional Training**: Institutes of chartered accountants and business schools should integrate environmental accounting into their training curricula to build the capacity of accountants, auditors, and financial analysts in sustainability reporting.
3. **Technology Adoption**: Firms should leverage digital technologies such as **environmental management information systems (EMIS)**, **AI-powered risk analytics**, and **blockchain** to enhance the traceability, accuracy, and transparency of environmental liability disclosures.
4. **Stakeholder Engagement**: Companies should engage in continuous dialogue with stakeholders—communities, investors, regulators, and environmental advocates—to improve the materiality and responsiveness of environmental reporting.
5. **Incentivizing Compliance**: Governments may consider offering **tax incentives, preferential financing**, or **public recognition** for companies that adopt best practices in environmental liability reporting, thereby encouraging a culture of sustainability.

Future Directions for Accounting and Disclosure of Environmental Liabilities

Looking forward, the evolution of environmental liability accounting will be shaped by a combination of technological, regulatory, and societal changes. Future research should explore:

1. The development of **industry-specific environmental accounting models** tailored to local legal, ecological, and economic contexts.
2. The integration of **non-financial performance metrics**, such as biodiversity impact, water usage, and carbon footprint, into mainstream financial reporting.
3. The impact of **Environmental, Social, and Governance (ESG)** investment frameworks on corporate behaviour regarding environmental liabilities.
4. The effectiveness of **IFRS S1 and S2** implementation across developing economies, and the potential for regional harmonization through institutions such as the African Accounting and Finance Association (AAFA).
5. The role of **artificial intelligence and machine learning** in predicting, managing, and automating environmental cost reporting and disclosure.

In summary, the accounting and disclosure of environmental liabilities represent both a challenge and an opportunity for the global accounting profession. It is a critical step toward achieving financial integrity, environmental justice, and sustainable development. A coordinated approach involving policy reform, professional innovation, and academic inquiry is necessary to unlock the full potential of environmental accounting in shaping resilient and responsible economies.

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