

**Environment and Sustainability from an Accounting and Financial Perspective  
–A Review of the Efforts and the Initiatives of Standards issuing organizations**

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**Abstract:**

The environmental dimension of sustainable development has gained a significant place in the literature and academic discourse in different fields, such as accounting and finance. This study aims to trace, examine, and present the range of international efforts and initiatives undertaken to integrate environmental considerations into financial accounting, with the goal of promoting sustainability and serving the interests of all relevant stakeholders. The descriptive and analytical methods were employed to highlight key developments introduced by various concerned bodies. The study concludes that there are no binding specialized accounting standards in place; Rather, two draft standards on environmental and climate-related disclosures are currently at an advanced stage of discussion. Existing efforts remain insufficient, being limited to certain guidelines, recommendations, and voluntary standards for reporting and disclosing environmental and social impacts. The study recommends the need for greater coordination among international bodies and both governmental and non-governmental organizations to develop mandatory standards and guidance that facilitate the identification, measurement, and disclosure of environmental and sustainability-related information.

**Keywords:** Environment; Sustainability; Stakeholders; Accounting; Standards.

**JEL Classifications:** D73; D83; L31; Q56.

## **Introduction**

Environmental pollution has become a major issue, particularly with the industrial growth seen worldwide. Many countries are responding to the harmful effects of industrial investment on the environment by creating laws for environmental protection. Environmental pressure groups play a significant role in pushing for the enforcement of these measures. Consequently, environmental issues are now priorities for international human rights and environmental organizations, moving beyond just government concerns.

Given this heightened awareness, accounting's role in protecting the environment and preserving natural resources is more crucial than ever. An effective accounting system can provide essential financial and non-financial information related to environmental impacts. This leads to better decision-making and sustainability, helping organizations avoid costly sanctions for failing to meet environmental standards. Without proper data, environmental impacts cannot be managed or reported.

The focus on environmental performance is critical in business management today. To achieve sustainability, companies need to implement accounting practices that reflect this priority. Accountants have a unique role in facilitating this change, needing the right tools to manage environmental information effectively. Following the COVID-19 pandemic and ongoing climate change challenges, it's vital to enhance accounting approaches and collaborate with various organizations to create frameworks that promote sustainability and environmental protection.

In this context, the present study seeks to address the following research question :

**To what extent has progress been made in adopting a comprehensive accounting and financial system for environmental protection and the promotion of sustainability?**

## **Conceptual Context**

### **First: Economic Links with the Environment**

The relationship between the economy and the environment is based on their interdependence. The environment provides essential resources for life, natural materials for production, waste absorption, and services that enhance well-being (Gorkhnath & Prakashe, 2018, p. 78) . Currently, economic discussions often focus on pollution linked to this relationship. Concepts like Natural Capital and Environmental Footprint have emerged to address environmental factors in economics. Natural Capital refers to the resources and services from the natural environment that support human life and activities (UN, 2015, p. 33). The Environmental Footprint measures the ecological demand of human activities (Ses.Webclass, 2021), including the land and water needed for consumption and waste absorption, reflecting the Earth's capacity to meet these demands (GFN, 2010, p. 08).

### **Second: The Environment in Accounting Thought**

Explaining the link between the environment and the economy requires a method that shares detailed information about environmental impacts. This is done through accounting methods that reveal how organizations affect the environment (Bebbington, 2021, p. 05). These methods address concerns like climate change and biodiversity loss, highlighting the threats posed by human actions to all life.

#### **The Adequacy of Traditional Accounting?**

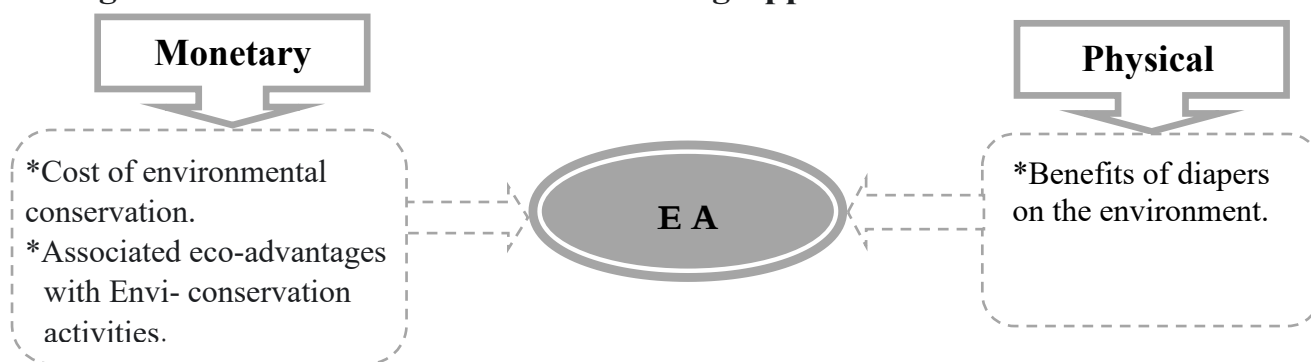
The financial accounting model mainly focuses on numbers, which has led to difficulties in understanding the environmental effects of business activities (Jones, 2013, p. 676). This has created a need for new ways to measure and report on environmental impacts. Two significant approaches are emerging from this need (Cuckston, 2013, p. 690):

The first approach calls for a new accounting method that accurately reflects the relationship between businesses and nature, stating that nature is a public good not

owned by anyone. The second approach aims to incorporate environmental issues and biodiversity loss into traditional financial accounting. This requires changes in how companies operate and respond to environmental challenges (Elwardi & Ben Rezzouk, 2018, p. 154). Interest in this approach has grown due to several factors, including the increased recognition of corporate environmental responsibility, where profit is no longer the sole objective. Accountants now need to analyze environmental impacts and report on costs and benefits (Sundarasan et al., 2024).

There is also rising pressure from governments and accounting bodies for better environmental disclosure in light of technological advancements and the need for consistent reporting standards (Satyavan, 2018, p. 07). Environmental accounting identifies and measures costs related to environmental protection and reports this information to stakeholders (Hezla & Zahwani, 2018, p. 202). It focuses on the relationship between businesses and their communities, integrating both financial and environmental data into comprehensive reports that measure performance and ensure accountability (Lako, 2018, p. 07). The information derived from environmental accounting is provided by economic institutions through two principal approaches : **monetary** and **physical** as illustrated in the following figure:

**Figure 1 : The Environmental Accounting Approaches**



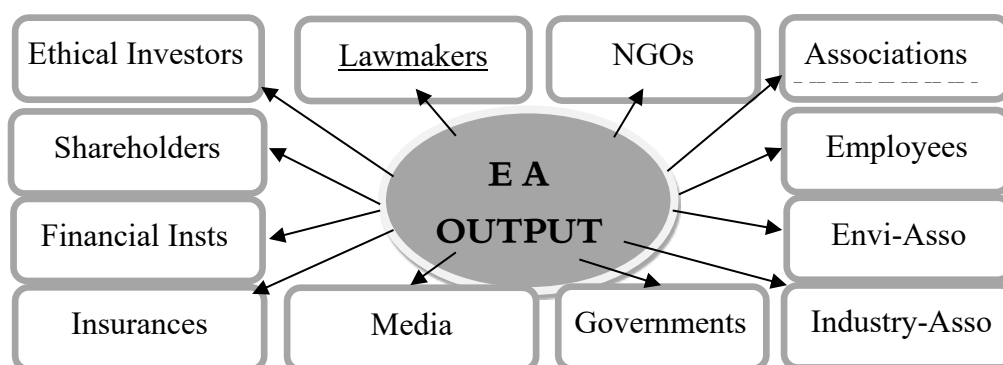
**Source:** Environmental Accounting Guidelines, Ministry of the Environment, japan, 2005, p 03.

The diagram illustrates that environmental accounting includes three main parts: costs of environmental conservation and economic benefits from preservation (monetary approach), which represent financial performance; and physical benefits of preservation, which show environmental performance in physical units (Baldarelli & Del Baldo, 2017, pp. 95-96). Traditional financial reporting does not fully reflect a company's strengths or long-term value, leading to difficulties for financial analysts and a lack of trust in financial reports. Non-accounting information includes non-financial metrics (Al battat & Hadjaoui, 2021, p. 236) like intangible assets, ESG standards, and societal and governance aspects.

### 3. Stakeholders Interested in Environmental Accounting

Environmental issues are increasingly attracting the attention of a broader array of users of accounting and financial information due to their **sensitive nature** and their engagement with **social and ethical dimensions**. Consequently, the range of stakeholders interested in such information continues to grow. The following figure illustrates the distribution of these stakeholder groups as follows:

**Figure 02 : Parties interested in environmental accounting**



**Source :** Authors

The text discusses the importance of environmental accounting and its role in providing relevant information to various stakeholders, including ethical investors, media, and organizations concerned about environmental issues. To effectively implement environmental accounting, a supportive infrastructure is needed, which

includes governmental oversight to enforce environmental laws, a professional regulatory body for environmental disclosure standards, mandatory environmental reporting, and reliable measurement tools for evaluating the costs and benefits of environmental efforts (Alrifai, 2018, p. 123).

Operational requirements for accurate reporting involve identifying environmental costs separately from total costs, measuring these costs fairly, and ensuring comprehensive disclosure of environmental information (Saidi Sief, 2014, p. 362). Such disclosures can be voluntary (Thabit & Jasim, 2017, p. 56), aimed at improving investor confidence, or mandatory (Senn, 2018), set by standard-setting bodies to meet stakeholder needs (Mouzarine & Berbri, 2017, p. 36). The text suggests that mandatory disclosures are more effective because they limit bias and discretionary decisions (Van De Burgwal & Vieira, 2014, p. 62).

Understanding environmental accounting requires a framework that collects and analyzes data related to natural resource usage, waste generation, and compliance costs (Ceballos-Rincón et al., 2022). This accounting supports long-term strategic planning for sustainability, aiding leaders in making informed decisions that consider the environment's response to company activities (Castelo Branco et al., 2024).

Sustainability, as described in the text, involves a business's ability to operate profitably while benefiting the community and preserving ecosystems (Jiao et al., 2023). The text recommends expanding traditional financial reporting to include sustainability impacts through sustainability accounting, which combines environmental, social, and financial information. This broader approach aims to assess environmental risks, determine essential financial disclosures, and integrate environmental accounting into existing financial systems (Joseph, 2016, p. 205). The goal is to align stakeholder interests with positive financial and social returns, promoting participation in sustainable investment projects (Smith, 2021, pp. 4-5).

### **What Are the Main Implementation Challenges?**

Complicated due to several obstacles. These challenges differ by country, institution, or industry. Key issues include the lack of a common agreement among practitioners, which leads to problems with comparability and selecting the right framework (Olubukola et al., 2021). There is also inadequate environmental legislation and no mandatory compliance for stock exchange listings, especially in developing countries. Additionally, there are insufficient resources and a lack of skilled personnel, making implementation difficult. Conflicting interests between economic and environmental welfare also hinder progress. Many accountants lack awareness of environmental accounting's importance, and there are few educational programs available. Challenges in measuring and separating environmental costs further complicate the situation.

**Provide a discussion and analysis of the most notable efforts made to meet environmental accounting requirements and achieve sustainability**

Several accounting bodies focused on financial measurement and environmental protection have released instructions and guidelines for companies. This section will examine these efforts and the progress in creating a framework for integrated accounting systems.

**First – Professional Accounting Organizations:**

**The International Accounting Standards Board (IASB) and International Financial Reporting Standards (IFRS):** The focus is on environmental and climate impacts in international accounting and financial reporting standards, highlighting the absence of specific standards for environmental issues.

**Table 1: Effects of climate-related matters on financial statements**

<b>IAS-IFRS Accounting Standards</b>	<b>Effects of climate-related matters on financial statements</b>
IAS 1 Presentation of Financial Statements Paragraphs 25–26, 122–124,	Companies must disclose significant risks in their future forecasts that could materially affect their asset and liability valuations in the upcoming fiscal year, including risks related to the environment and climate. This disclosure should aid investors in making informed decisions. Additionally, management is

133–125	required to assess the company's ability to continue operations for at least the next 12 months when preparing financial statements, and any uncertainties regarding this ability, especially those stemming from environmental issues, must also be disclosed.
IAS 2 Inventories Paragraphs 33–28	Climate change can negatively impact a company's inventory value. IAS 2 mandates that companies write down inventories to their net realizable value if climate-related issues render their costs unrecoverable. Net realizable value estimates should be based on the most reliable evidence available at the time of estimation.
IAS 12 Income Taxes Paragraphs 24, 27–31, 34, 56	IAS 12 mandates the recognition of deferred tax assets for deductible temporary differences, unused tax losses, and credits, provided future taxable profit makes their utilization probable. Climate-related issues can impact estimations of future taxable profits, potentially leading to the non-recognition or derecognition of deferred tax assets.
IAS 16 Property, Plant and Equipment and IAS 38 Intangible Assets IAS 16 paragraphs 7, 51, 73, 76 IAS 38 paragraphs 9–64, 102, 104, 118, 121, 126	Climate-related issues can necessitate changes in business operations, potentially impacting research and development expenditures. IAS 16 and IAS 38 outline the criteria for recognizing costs as assets and mandate the disclosure of research and development expenses recognized during a reporting period. These standards also require annual reviews of assets' residual values and useful lives, with adjustments made for climate-related changes affecting depreciation or amortization. Climate change can impact residual values and useful lives due to factors like obsolescence or legal restrictions. Companies must disclose the expected useful lives for each asset class and any changes in estimated residual values or useful lives.
IAS 36 Impairment of Assets Paragraphs 9–14, 30, 33, 44, 130, 132, 134–135	IAS 36 outlines the requirements for companies to estimate recoverable amounts for impairment assessment of assets like goodwill, property, plant, and equipment. Companies must assess impairment indicators at each reporting period, and climate-related matters, such as declining demand for emission-heavy products or environmental regulation

	<p>changes, can trigger impairment testing. When using value in use, cash flow projections must be based on reasonable assumptions reflecting management's best estimate of future economic conditions, considering climate-related impacts. IAS 36 also mandates disclosures about events leading to impairment losses and key assumptions used in estimating the asset's recoverable amount.</p>
<p>IAS 37 Provisions, Contingent Liabilities and Contingent Assets and IFRIC 21 Levies IAS 37 paragraphs 14–83, 85–86 IFRIC 21 paragraphs 8–14</p>	<p>The recognition, measurement, and disclosure of liabilities in financial statements under IAS 37 can be impacted by climate-related issues. This includes levies for failing to meet climate targets, environmental remediation requirements, onerous contracts due to changes in climate legislation, and restructurings for climate-related product design. IAS 37 stipulates that provisions or contingent liabilities must be disclosed, along with any uncertainties regarding the amount or timing of outflows, and major assumptions about future events that are reflected in the provision amount.</p>
<p>IFRS 7 Financial Instruments: Disclosures Paragraphs 31–42, B8</p>	<p>IFRS 7 requires a company to disclose information about its financial instruments, specifically regarding risks and how they are managed. These instruments may be exposed to risks due to climate-related issues. The impact of climate change on expected credit losses or credit risk concentrations may require lenders to disclose it. Equity investment holders may need to disclose sector-specific investments that are exposed to climate risks when detailing market risk concentrations.</p>
<p>IFRS 9 Financial Instruments Paragraphs 4.1.1(b), 4.1.2A(b), 4.3.1, 5.5.1 5.5.20, B4.1.7</p>	<p>Climate-related issues can significantly impact the accounting for financial instruments. Loan contracts with terms linked to climate targets can affect loan classification and measurement for lenders, and potentially create embedded derivatives for borrowers. Climate change can also increase a lender's exposure to credit losses due to events like wildfires, floods, or regulatory changes, which can impair a borrower's ability to repay debt and devalue collateral. IFRS 9 requires the use of all reasonable and supportable information, making climate-related</p>

	matters relevant in assessing credit risk, potential economic scenarios, and the measurement of expected credit losses.
IFRS 13 Fair Value Measurement Paragraphs 22, 73–75, 87, 93	Climate-related issues can impact the fair value measurement of assets and liabilities in financial statements. Market perceptions of potential climate legislation, for instance, can influence an asset or liability's fair value. Furthermore, these issues can affect disclosures related to fair value measurements, particularly those categorized as Level 3, which rely on unobservable inputs. IFRS 13 mandates that these inputs reflect market participant assumptions, including climate-related risks, and requires disclosure of these inputs. It also necessitates a narrative description of the sensitivity of fair value measurements to changes in unobservable inputs if such changes could significantly alter the fair value.
IFRS 17 Insurance Contracts Paragraphs 33, 40, 117 and 121–128, Appendix A	Climate-related issues can increase the frequency and severity of insured events like business interruption, property damage, illness, and death. Consequently, these issues can impact the assumptions used in measuring insurance contract liabilities under IFRS 17. Furthermore, climate-related matters may necessitate specific disclosures regarding significant judgments, changes in judgments, a company's risk exposure and management strategies, and sensitivity analyses related to risk variables.

**Source :** IFRS, Effects of climate-related matters on financial statements, 2020, pp2-6

In addition to what was presented in Table 01, the following points can be clarified:

**International Accounting Standards (IAS)**

- **IAS 01 – Presentation of Financial Statements:** The text discusses the IAS and IFRS with a focus on their treatment of environmental issues in accounting. Starting with IAS, IAS 01 outlines the need for separate disclosure regarding environmental costs and liabilities, suggesting that companies should clarify what these costs include and how they are measured. It highlights the difficulties in measuring these costs due

to the timing and reliability of accounting records, and notes the potential undermining of the going concern principle from changes in environmental legislation.

IAS 16 addresses property, plant, and equipment, indicating that while environmental investments may not directly boost economic benefits, they are necessary for compliance with technical and legal requirements, potentially leading to greater long-term benefits .

IAS 37 has a limited approach in addressing environmental liabilities and requires more guidance on estimating these liabilities, especially when the potential loss from environmental damage is difficult to quantify (Hajnalka, 2011, pp. 185-187). The standard emphasizes that contingent liabilities depend on a company's awareness of environmental issues (Sreelatha & Sudheer, 2017, p. 36).

IAS 41 discusses agricultural activities tied to the environment and insists on the need for proper reporting to ensure environmental preservation .

Moving to IFRS, the need for broader financial reporting that includes environmental issues is emphasized. This type of reporting now covers both financial and non-financial environmental information. While practices may vary worldwide due to different social and economic contexts, key areas affected by these standards include capitalizing environmental expenditures, disclosing environmental risks, and managing asset alternatives .(Gopica & Ratheesh, 2020, pp. 15-16)

IFRS does not directly mention environmental issues but mandates companies to consider climate-related matters when applying these standards, especially when significant to financial statements (IFRS, 2020, p. 01). IFRS 3 deals with environmental liabilities in business combinations, outlining how these liabilities impact acquisition prices during mergers .

Uncertainties in recognizing environmental liabilities are linked to the ability to measure them under IFRS 3, suggesting accountants will likely assign higher values to these liabilities (Thistlethwaite, 2011, p. 88). IFRS 6 focuses on the exploration of

mineral resources, requiring environmental feasibility studies alongside financial assessments to avoid future costs and resource depletion .

IFRS 8 emphasizes the importance of disclosing information on operating segments, considering geographical and environmental factors that may affect asset and liability structures.

IFRIC 5 deals with environmental assets needing restoration, which could create contingent liabilities if not managed properly (Ca & Ansari, 2010, pp. 3-5)

The IASB is working on new projects related to climate risks and pollution pricing (KPMG, 2021), collaborating with the International Sustainability Standards Board (ISSB), which aims to develop sustainability disclosure standards to inform investors about risks and opportunities related to sustainability. The ISSB is working on initial proposed standards, including IFRS S1 for general sustainability disclosures and IFRS S2 on climate-related disclosures (IFRS, 2022).

**2. American Accounting Organizations and Associations:** Several American accounting organizations have contributed to environmental performance standards, but not through a specific standalone regulation (Alrifai, 2018, p. 141). The FASB focuses on environmental items within its broader framework on contingent items, particularly through Standard No. 5, which mandates disclosure of potential loss when a company may be liable. Key interpretations related to this by FASB include Interpretation No. 14, which deals with contingencies, and Interpretation No. 39 regarding settlements of specific contracts, contributing to the treatment of pollution remediation costs.

The A.A.A's Committee on Environmental Effects of Project Behavior, established in 1973, recommended including detailed footnote disclosures in financial statements, which should cover environmental issues like pollution control, the company's efforts to address these issues, progress made, and the impact on the company's finances.

In 1993, experts from the AICPA, FASB, and SEC joined to discuss environmental accounting challenges and the need for specific standards for such issues. They identified practical problems with applying GAAP to environmental matters and concluded that a dedicated accounting standard for environmental liabilities is needed. They also stressed the importance of keeping financial statement preparers and users informed about federal environmental laws and relevant accounting practices.

### **3. Other Professional Organizations**

Various organizations have shown interest in environmental accounting, including notable accounting bodies. The Canadian Institute of Chartered Accountants (CICA) focused on how to account for environmental costs and advocated for clear disclosure of environmental liabilities in financial statements. This includes reporting significant liabilities and uncertainties and detailing future environmental expenditures for at least five years (Alrifaie, 2018, p. 145).

The Institute of Chartered Accountants in Australia created a task force in 1994 to explore environmental impacts on organizations (Mehaouat, 2015, pp. 33-35), leading to multiple publications and a discussion paper in 1998 about environmental performance and auditing.

The Arab Society of Certified Accountants recommended disclosure of environmental cost information (Khadir, 2022, pp. 45-47). This includes classifying environmental costs, reporting amounts charged to income, and specifying accounting policies related to environmental liabilities and costs.

### **4. Governmental Organizations**

In the European Union, reporting non-financial information has gained importance, starting with Directive 2014/95, which mandated non-financial reporting. This led to the formation of the EU Project Task Force on Non-Financial Reporting Standards to align these disclosures with sustainability needs (Simões et al., 2022, pp. 77-78). In 2017, guidelines were introduced to help companies provide clear and consistent

Environmental, Social, and Governance (ESG) information, promoting sustainable growth and transparency. The link between financial and non-financial data has made it crucial to consider both in investment decisions. On January 5, 2023, the Corporate Sustainability Reporting Directive (CSRD) No. 2022/2464 introduced stricter rules for over 50,000 companies, enhancing the accessibility of sustainability information for assessing investment risks (Finance, 2023). Companies must follow the European Sustainability Reporting Standards (ESRS) and audit their sustainability reports starting in 2024.

## **5. Non-Governmental Organizations**

### **First – Global Reporting Initiative (GRI)**

The Global Reporting Initiative (GRI) is a non-governmental organization created in 1997 through a partnership between CERES and UNEP. In 2000, GRI released its first sustainability reporting guidelines, which have been updated several times, evolving into international standards for sustainability reporting. The GRI aims to create common rules for Environmental, Social, and Governance (ESG) reporting to enhance comparability and standardization. In 2016, the GRI introduced new Sustainability Reporting Standards, which are divided into three categories:

- A. Universal Standards (GRI 01, 02, 03) address broad topics like anti-corruption and biodiversity, providing guidance for reporting.
- B. Sector Standards (GRI 11–18) focus on specific industries and require disclosures about the company's context.
- C. Topic Standards (GRI 200–400) relate to specific sustainability issues, helping companies manage their impacts. These standards are regularly updated, including new topics like tax and waste. Developing countries in Africa, such as Egypt, Nigeria, and South Africa, have shown growing interest in sustainability reporting initiatives.

**Figure 3 : Standards and scope of application**



**Source:** Brochure GRI, 2022, p06

KPMG reports that 92% of the largest 250 companies and 73% of the top 100 companies include corporate responsibility information in annual reports. Most use GRI Guidelines, with 72% of standalone reports based on these standards. India, Indonesia, Malaysia, and South Africa lead in sustainability reporting among countries.

### **Second – Sustainability Accounting Standards Board (SASB)**

The Sustainability Accounting Standards Board (SASB) is a non-profit organization created in 2011 in San Francisco to develop standards for sustainability disclosure. SASB has established standards for over 79 industries across 11 sectors, focusing on the disclosure of sustainability information that is important to investors. SASB's governance was restructured in 2017 into a Board of Directors and a Standards Board, which is responsible for developing SASB Standards. The Value Reporting Foundation (VRF) was formed by SASB and the International Integrated Reporting Council (IIRC) in 2021 to promote integrated reporting. At the 2021 COP26 Climate Summit, SASB and the International Sustainability Standards Board (ISSB) were announced by the IFRS Foundation. The Value Reporting Foundation was integrated into the IFRS Foundation on August 1, 2022, leading to the ISSB managing SASB Standards and the introduction of the Sustainable Industry Classification System (SICS) (SASB, 2021).

Although their scope is small, the significant efforts of all parties represented in this study cannot be overlooked. Highlighting several strengths has been done, such as:

Attempts to integrate climate-related risks into core accounting standards;

Practical guidance can be found in IFRS 9 on credit risk and IFRS 13 on fair value.

Sustainability-related disclosures will be standardized through the launch of the International Sustainability Standards Board (ISSB);

Increasing the consistency with investor expectations, especially in regard to the transparency of climate risks.

The European Union model is unquestionably the most comprehensive and implementable model to date. The sustainability report serves the purpose of bridging the gap between financial and sustainability reporting by mandating standardized and auditable disclosures in the field of ESG. This represents a paradigm shift from voluntary, good-faith environmental reporting to legally binding disclosures with relevance to investors.

A prominent example of integration is the complementarity between the GRI and SASB. A large number of companies employ the GRI to involve all stakeholders and the SASB for investor-specific disclosures. This dual approach is increasingly encouraged, especially within the frameworks of integrated reporting.

The ISSB's consolidation of SASB indicates a shift towards global harmonization of ESG standards, which could aid in reducing reporting fatigue and improving decision-usefulness of ESG-related information.

Non-governmental bodies such as the GRI and SASB have filled a regulatory vacuum, often leading the way before governments and regulators caught up. The success of both organizations is a result of a demand-driven accounting evolution, which has reshaped both the content and method of corporate reporting.

However, several gaps and weaknesses remain. The absence of dedicated environmental accounting standards, as well as measurement challenges and

uncertainties in identifying obligations, makes it difficult to identify obligations. The use of voluntary frameworks continues to dominate; implementation is still weak, and there is a pressing need for more coordination among diverse stakeholders.

## **Conclusion**

The International Accounting Standards Board (IASB) and the International Financial Reporting Standards (IFRS) have made significant attempts to address climate change and sustainability by adapting existing standards, a more transformative approach is now underway with the sustainability disclosure standards issued by the IASB. This development is a crucial step forward in integrating Environmental, Social, and Governance (ESG) factors into mainstream financial reporting, which is necessary for corporate credibility and long-term sustainability.

Advancing environmental accounting and sustainability has been made possible by non-governmental organizations such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Their standards have become central to global reporting practices, shaping how companies disclose environmental impacts, risks, and opportunities. Although the GRI is the leader in encouraging stakeholder transparency, SASB has successfully connected ESG concerns to investor relevance, which is now vital to advancing broader goals of accountability, comparability, and the creation of sustainable value.

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