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Review of the global state of sustainability accounting practices



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Tutor

prof. Elisa Ughetto

Candidate

Marguba Isokulova

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ABSTRACT

This thesis examines the current global landscape of sustainability accounting practices, exploring the adoption of various frameworks and standards across regions and industries. With increasing regulatory pressure and growing stakeholder demand for transparency, sustainability accounting has become a crucial part of corporate reporting. The research identifies the most commonly used frameworks, including the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and Task Force on Climate-related Financial Disclosures (TCFD), and investigates regional variations in their adoption.

Data reveals that the Asia-Pacific region leads in sustainability reporting, with 89% of companies adopting sustainability practices, followed by Europe (82%), the Americas (74%), and the Middle East & Africa (56%). The study also addresses the key challenges companies face in integrating sustainability accounting into existing reporting systems, such as data complexity, lack of standardization, and evolving regulatory requirements. Additionally, the impact of regulatory developments, such as the European Union's Corporate Sustainability Reporting Directive (CSRD), on global reporting practices is analyzed.

Emerging trends, such as the increased focus on double materiality and climate-related financial disclosures, suggest a shift toward more comprehensive sustainability reporting in the future. This research contributes to the understanding of how sustainability accounting practices are shaping the future of corporate transparency, highlighting the need for harmonized global standards to improve consistency and comparability across industries.

Keywords: Sustainability Accounting, Environmental, Social, and Governance (ESG), Corporate Social Responsibility (CSR), Sustainability Reporting, Global Reporting Initiative (GRI), Corporate Sustainability Reporting Directive (CSRD), Sustainability Reporting Frameworks

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INTRODUCTION

Sustainability accounting has rapidly evolved into a critical element of corporate governance and strategy as organizations globally recognize the need to balance financial performance with environmental, social, and governance (ESG) responsibilities. Amid intensifying concerns about climate change, resource depletion, biodiversity loss, and widening social inequalities, stakeholders—including investors, regulators, and consumers—are increasingly calling for transparency and accountability. Businesses are now expected not only to deliver financial returns but also to demonstrate how their operations impact the environment, social well-being, and broader societal goals. This shift marks a growing understanding that long-term financial success is intertwined with sustainable practices.

Sustainability accounting provides the framework for companies to track, assess, and report on these non-financial factors, offering a holistic view of corporate performance that goes beyond the traditional financial metrics. By systematically disclosing the environmental and social impacts of their activities, companies can provide stakeholders with actionable information on their efforts to mitigate climate risks, manage natural resources, and promote ethical labor practices. Furthermore, these disclosures allow businesses to identify opportunities for innovation, operational efficiency, and value creation, while aligning with global sustainability goals such as the United Nations' Sustainable Development Goals (SDGs).

Over the last decade, the adoption of sustainability accounting practices has surged, driven by an increasing number of frameworks and standards designed to facilitate transparent reporting. Among the most prominent are the Global Reporting Initiative (GRI), which offers comprehensive guidelines for ESG reporting; the Sustainability Accounting Standards Board (SASB), which focuses on industry-specific sustainability issues that are financially material; and the Task Force on Climate-related Financial Disclosures (TCFD), which promotes transparency in climate-related financial risks. These frameworks have gained traction worldwide, but the global sustainability reporting landscape remains fragmented. Divergences in regional regulatory environments, industry practices, and stakeholder expectations create challenges for achieving global consistency in sustainability accounting.

For example, the European Union has taken a pioneering role in mandating sustainability disclosures through initiatives such as the Corporate Sustainability Reporting Directive (CSRD), which requires companies to report detailed ESG information in a standardized format. This regulation underscores the EU's commitment to leading the global sustainability agenda by fostering transparency and comparability. In contrast, other regions, such as North America and Asia-Pacific, exhibit a more varied approach. In North America, for instance, sustainability reporting practices are largely market-driven, with frameworks like SASB and TCFD adopted voluntarily by companies responding to investor pressures and growing regulatory momentum. Similarly, in the Asia-Pacific region, while countries like Japan, South Korea, and Singapore are strengthening their sustainability reporting regimes, other markets lag in terms of regulatory oversight and corporate uptake.

Despite the growing importance of sustainability accounting, numerous challenges persist. These include the lack of standardized global frameworks, inconsistent reporting practices, and varying levels of stakeholder engagement across industries. Furthermore, the proliferation of reporting frameworks has led to confusion among companies on which standards to adopt,

resulting in fragmented disclosures that limit comparability. Efforts to harmonize these frameworks, such as the establishment of the International Sustainability Standards Board (ISSB) under the IFRS Foundation, represent a significant step toward creating a globally accepted sustainability accounting standard. Emerging regulatory frameworks like the EU's CSRD and the SEC's proposed climate disclosure rules in the U.S. are also expected to accelerate this trend, creating a more integrated global reporting ecosystem.

This thesis aims to review the global state of sustainability accounting practices, analyzing key frameworks, regional disparities, and industry-specific challenges in adopting these practices. It will investigate how companies are navigating the complexities of integrating sustainability metrics into their financial reporting systems and the role of digital tools in enhancing data accuracy and comparability. Moreover, the thesis will explore emerging trends, such as the increasing emphasis on climate-related disclosures, the growing focus on social equity and human rights reporting, and the importance of stakeholder engagement in shaping corporate sustainability strategies.

By examining these evolving dynamics, this research seeks to provide a comprehensive understanding of how sustainability accounting is reshaping corporate governance and strategic decision-making across the globe. Ultimately, the study will offer insights into the critical role that transparency and accountability play in fostering sustainable business practices, contributing to long-term value creation, and addressing the most pressing environmental and social challenges of our time.

CHAPTER 1. SUSTAINABILITY ACCOUNTING

This chapter introduces the concept of sustainability accounting and its growing importance in modern business practices. It outlines the definition of sustainability accounting, emphasizing its role in integrating environmental, social, and governance (ESG) factors into corporate reporting. The chapter explores the limitations of traditional accounting systems, which focus primarily on financial metrics, and explains why sustainability accounting has become essential in addressing these gaps. Additionally, it covers the historical evolution of sustainability accounting, its role in supporting both internal management decisions and external stakeholder engagement, and its growing necessity in the face of global sustainability challenges.

1.1 DEFINITION OF SUSTAINABILITY ACCOUNTING

Sustainability accounting integrates financial, social, and environmental performance into a unified framework, aimed at supporting long-term business sustainability. According to established frameworks, sustainability consists of three dimensions: economic, which emphasizes continuous growth for societal welfare; environmental, which ensures the preservation of ecosystems and natural resources; and social, which aims to promote equality, inclusion, and cultural diversity (Vavouras, 2010).

Traditional financial reporting, such as GDP, largely ignores critical aspects like natural resource depletion, pollution, and social welfare. This gap has led to the evolution of sustainability accounting, which offers a more holistic approach to measuring corporate performance by including non-financial factors such as environmental degradation and social impact alongside traditional economic indicators.

Sustainability accounting can be divided into internal and external applications. Internally, it guides management in making decisions regarding cost efficiency, resource allocation, and process optimization. For example, many organizations use sustainability management accounting to assess expenditures on pollution control or savings from energy-efficient equipment (Yusoff et al., 2013). Externally, it serves to disclose critical environmental and social data to stakeholders, ensuring transparency and aligning with corporate social responsibility goals (International Federation of Accountants, 2005).

The practice of sustainability accounting remains largely voluntary, although frameworks like the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) have seen increased adoption, reflecting growing regulatory and investor pressure for transparent ESG reporting. According to the Sigma Project (2019), sustainability accounting enhances corporate performance by helping businesses identify risks and opportunities, optimize resource use, and foster competitive advantage.

The relevance of sustainability accounting is highlighted across various industries. For example, manufacturing companies measure their environmental impact through life-cycle analysis, while energy firms focus on tracking emissions and renewable investments. In the financial sector, sustainability accounting evaluates the ESG risks associated with investments, helping firms mitigate long-term risks.

Sustainability accounting not only benefits companies by identifying opportunities for cost savings and innovation but also enhances transparency and accountability, contributing to broader societal goals.

1.2 THE WEAKNESSES AND GAPS OF TRADITIONAL ACCOUNTING

Traditional accounting systems are designed to focus primarily on financial metrics and economic transactions. While effective in providing information about a company's financial health, these systems have notable **weaknesses and gaps** in capturing the broader impacts of corporate activities, especially those related to **environmental** and **social** dimensions.

1. **Narrow Financial Focus:** Traditional accounting methods prioritize financial performance, such as revenue, expenses, assets, and liabilities, while largely ignoring **externalities** such as environmental degradation, social inequality, and resource depletion. These externalities, though indirectly impacting long-term financial stability, are often not accounted for in traditional reporting frameworks. As a result, companies can overlook significant **hidden costs**—like pollution or resource depletion—that may threaten their long-term viability.
2. **Short-Term Orientation:** Financial accounting often emphasizes short-term performance, such as quarterly profits, which can conflict with the long-term objectives of **sustainable development**. This narrow focus on short-term profitability fails to incentivize businesses to invest in sustainability initiatives that may only yield benefits over a longer time horizon.
3. **Exclusion of Intangible Assets:** Traditional accounting struggles to capture the value of **intangible assets** like a company's reputation, social capital, and environmental stewardship. These factors are increasingly important in today's business environment, where stakeholders are concerned about a company's environmental, social, and governance (ESG) performance. The inability to quantify and report on these non-financial metrics limits the ability of traditional accounting to offer a comprehensive view of a company's long-term sustainability.
4. **Inadequate Risk Assessment:** Sustainability risks, such as **climate change**, resource scarcity, and changing regulations, are becoming increasingly material for companies, especially in industries like manufacturing, energy, and agriculture. Traditional accounting frameworks, however, lack the tools to assess and report these risks effectively, leaving gaps in understanding a company's exposure to long-term risks associated with environmental and social issues.
5. **Lack of Stakeholder Inclusiveness:** Traditional financial reporting primarily caters to investors and creditors, focusing on financial returns. However, **sustainability accounting** requires a broader stakeholder approach that includes governments, NGOs, employees, customers, and communities who are affected by a company's environmental and social practices. Traditional accounting does not provide adequate mechanisms for engaging with or reporting to these stakeholders.

1.3 THE NECESSITY OF SUSTAINABILITY ACCOUNTING

The emergence of practices aimed at identifying, recording, and assessing the costs and advantages associated with the environmental impact of businesses, leading to the

development of sustainability accounting, was primarily driven by shareholder pressures, escalating costs related to environmental impacts, and the effects of globalization (Bennett & James, 1998; Schaltegger & Burritt, 2000).

Nevertheless, the voluntary nature of sustainability accounting is widely regarded as the primary factor contributing to the reluctance of many companies to compile environmental accounts. Therefore, it is crucial to adopt an environmental accounting system that can provide various benefits by recognizing, quantifying, and segregating environmental costs, benefits, assets, and liabilities (Burritt & Schaltegger, 2001).

Deegan & Rankin (1996) have discovered that disclosing environmental data can help improve the tarnished reputation of a business entity involved in environmental incidents or unfavorable occurrences. This observation is further supported by Guthrie & Parker (1990), who underscored that the implementation of corporate environmental initiatives justifies their ongoing operations (Niladri et al., 2008).

1.4 THE ROLE OF SUSTAINABILITY ACCOUNTING

Sustainability accounting plays a critical role in reshaping how businesses operate by integrating environmental, social, and governance (ESG) factors into decision-making and financial reporting. This type of accounting allows businesses to quantify and disclose their environmental and social impacts, creating transparency for stakeholders and aligning corporate practices with global sustainability goals. Key roles of sustainability accounting include:

1. **Incorporation of Environmental Costs:** Traditional accounting overlooks many environmental costs like resource depletion or pollution. Sustainability accounting corrects this by ensuring these costs are factored into financial statements. This leads to more accurate product pricing, better identification of profitable products, and improved understanding of overall business performance. For example, many companies now include carbon costs in their financial models to understand their exposure to climate-related risks (Bennett & James, 1998).
2. **Strategic Risk and Opportunity Identification:** By providing a clear view of the business's environmental and social impact, sustainability accounting helps businesses identify risks associated with regulatory changes, such as new environmental laws. It also uncovers opportunities, like improving efficiency through sustainable practices or developing eco-friendly products. This strategic insight positions businesses to adapt to changes and gain competitive advantages (Schaltegger & Burritt, 2001).
3. **Eco-Efficiency and Innovation:** Sustainability accounting helps companies identify cost savings opportunities through resource conservation and eco-efficient processes. Businesses can track their energy use, waste production, and material efficiency, enabling them to cut costs while reducing their environmental footprint. This has been particularly effective in industries like manufacturing and energy, where eco-efficiency can translate into significant savings and innovation opportunities, such as adopting renewable energy or sustainable sourcing (Gray & Bebbington, 2001).
4. **Enhanced Stakeholder Engagement and Transparency:** Sustainability accounting enables businesses to report on ESG performance to a range of stakeholders, including investors, regulators, and customers. This transparency builds trust, enhances reputation, and attracts sustainability-focused investors. Many global companies, particularly in the EU and the U.S., now disclose sustainability metrics like carbon

footprints and resource consumption to comply with regulatory requirements or meet investor demands. These metrics are often included in sustainability reports that highlight progress toward achieving corporate social responsibility goals.

5. **Linking to Corporate Strategy:** As sustainability becomes a core component of business strategy, sustainability accounting plays a pivotal role in aligning financial performance with broader corporate goals, such as reducing carbon emissions or enhancing community engagement. Companies that successfully integrate sustainability into their core strategy—by tracking relevant metrics and using them to guide decisions—are better positioned for long-term success.

The role of sustainability accounting is expanding globally, particularly as regulatory pressures increase. For example, in regions where sustainability reporting is mandatory, such as the European Union under the Non-Financial Reporting Directive (NFRD), businesses are required to disclose their environmental, social, and governance metrics. These disclosures are not only key for compliance but also crucial for securing investor confidence and meeting consumer expectations for corporate accountability.

By integrating sustainability accounting into their operations, companies can address emerging global challenges, improve operational efficiency, and strengthen their competitive positioning in increasingly sustainability-driven markets

1.5. HISTORICAL DEVELOPMENT OF SUSTAINABILITY ACCOUNTING AND REPORTING

A multitude of research exists on sustainability accounting in academic literature. However, this paragraph specifically concentrates on tracing the historical evolution of the discipline to provide a concise summary of the advancements made thus far and to evaluate potential future trends. To date the most cited studies intending to give a summary on the topic of sustainability accounting are Matthews (1997), Lamberton (2005), Thomson (2007), Burrit and Schaltegger (2010), while the most recent comprehensive study is utilized was by Hysrlova J., Beckova H., Kubankova M. (2015). All of the above mentioned works focus on sustainability accounting's history, as a consequence the starting points are placed rather in recent history of the end of the 20th century. This section attempts to provide an overview dating further back by examining the historical development of the initial disciplines first, then presenting the development of sustainability accounting in an organical continuity. Examining available scientific sources to understand the historical development of accountancy and the development of the idea of sustainability this research section mainly utilizes two comprehensive overviews, the "History of accountancy. A chronological approach" by Cindiana, M., Cindea, IM, Ciurariu, G., Trifu, A., Durdureanu, C. and "Sustainable development – historical roots of the concept" by Pisani, J.D. Accounting is not an achievement of the modern times. The rudimentary accounting (inventory of goods) is probably the same age as humanity. It's development is closely linked with the great discoveries of mankind, including the emergence of the trade of goods, the formation of currency, or the discovery of paper. Accounting records were found studying the Codex of Hammourabi from the age of antiquity, also there are traces of proof for the existence of the accounting profession as part of Egyptian, Roman and Greek history. Modern accounting began its conquest journey from Italy, following the work of Luca Paccioli, on the "double entry" basis laid down in 1494 in the "Summa de arithmetica, geometria, proportioni et proportionalita". It was characteristic of Italian companies in the 16th century to have several

international interests and subsidiaries, which used - and consequently disseminated - the Paccioli accounting system as a uniform practice. Some of these branches had an influence to gain government support to propagate their accounting system generally, thus accelerating its widespread adoption in several countries. Many of the basic practical achievements known today have been developed over the 16th century, such as the use of “closing accounts” or the construction of the income statement. In the 17th century, the practice of using sub-accounts specified for individual corporate activity became widespread, and the term “balance sheet” (introduction of the closing balance sheet) began to be used. In the 18th century, the use of accounting became widespread in the public sector, the use of technical accounts were introduced and valuation methods were developed. Eventually, during the 19th - and even more so in the 20th - century, accounting became a clearly independent and universally recognized discipline that went beyond “econometrics”, as a technical method used to calculate values and was widely used to study business (Cindiana, M., Cindea, IM, Ciurariu, G., Trifu, A., Durdureanu, C., 2011). The impact of demand for raw materials on the environment has been a constant issue in the history of mankind: the decline of soil fertility, salinisation and the consequences of deforestation have occupied us since ancient times. In a modern sense these are sustainability issues. However, problems only became global as a result of the Industrial Revolution. From the end of the 18th century the idea of “development” became the flagship of the West, according to which civilization was constantly (and linearly) moving towards a desirable state from a scientific (technological), moral, and material point of view. As the prospects of human existence intertwined with economic development from the end of the 18th century the need for growth and material development compelled people to transform nature into consumer goods as much and as quickly as possible. As a part of this, the destruction of the landscape was necessary and acceptable as they assigned value only to things produced by the industry, marketed for sale. As the benefits of the world economic system flowed primarily to countries with advanced industries, the gap between rich and poor societies has widened exponentially. Industrial development has caused worrying environmental degradation through a large-scale exploitation of raw materials. The idea of sustainability has emerged as an opposing idea to “progress”. The 20th century began with an optimistic outlook, with technological advances providing almost limitless opportunities that were broken by the two world wars and the economic crisis that followed. From the '50s and onwards, the seemingly unstoppable economic recovery brought back initial optimism, all the way to the onset of an impending ecological and / or economic crisis, increasingly visioned at the end of the 20th century. The latter has led people to reconsider their vision of limits of growth. Different ideas about development, sustainability, and growth have moved in a new direction since the '70s toward sustainable development, and the myth of progress has slowly lost ground due to its impact on society and the environment (Pisani, J.D., 2006). Linking the concept of sustainability and development together has spread since the '80s, with the term “sustainable development” first being used by the International Union for Conservation of Nature in it's World Conservation Strategy. As a milestone the UN has commissioned a group of 22 people to define long-term environmental strategies for the international community. This was the World Commission on Environment and Development (WCED), better known as the Brundtland Commission, which presented it's report in 1987 titled 'Our Common Future'. As the Brundtland Commission stated in 1987, “sustainable development is development, that meets the needs of present generations without compromising the ability to meet the similar needs of future generations. The concept interprets sustainable economic, ecological and social development in unity” (WCED, 1987). The Brundtland report was not left without any criticism: conservative critics interpreted sustainability as stagnation, which is not enough to meet the needs of growing populations, arguing that human ingenuity is a task of coping with growth and development,

making any sustainable development policies unnecessary (Mitcham C., 1995). To implement sustainability through accounting practices has become a popular research topic from the 90's. As a consequence, various regulatory frameworks, philosophical trends, training programs and empirical researches enriched the organically expanding literature. Still, an accepted and uniform definition of sustainability accounting has not been developed in the scientific literature to date. All that can be said, is that the literature is constantly growing and in order to classify researches into this field of science it must be in line with the wording of the Brundtland Committee of 1987. The literature of the last two decades a level of convergence could be observed. Studying researches publicized it seems relatively consistent regarding the 3 main aspects of sustainability accounting, which are the social, economic and environmental dimensions. There's also a purification in approaches, researches can be grouped in two main directions: a theoretical direction that emphasizes accountability, contribution to sustainability and steps leading to sustainability (strategic aspect) and another one, that focuses primarily on applicable management tools (e.g., metrics, information system, reporting), being thematically close to the discipline of financial accounting (Matthews, MR, 1997; Hódiné-Hernádi, B., 2014). As a milestone, Gray's work, presented at the World Summit on Sustainable Development in Johannesburg (2002) "Sustainability Accounting Guidelines" incorporated the 3 most important sustainability accounting methods into a structure of classical financial accounting (sustainability costs, stockpiling natural capital, inputoutput analysis) (Gray, 2002). To date, this is the most frequently cited methodological material on the subject. Geoff Lamberton created a "standard" sustainability accounting framework in 2005 by consolidating different approaches on the topic (building heavily on basic definitions laid down by Gray). The result of his research is a comprehensive framework, built on the main elements known in the modern literature of sustainability accounting (principles, tools, metrics, models), total cost accounting (Atkinson, 2002), and the "three bottom line" (TBL) (Elkington, 1999; Westing, 1996). Formal rules of sustainability reporting started to take shape over the last decades. In 1997 the Global Reporting Initiative (GRI) was established by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Program (UNEP), with the aim to create rules for reporting economic, environmental and social dimensions of organizations (the three bottom line) (Hyršlova J., Beckova H., Kubankova M., 2015). The European Union contributed to establish a regulatory framework for sustainability reporting (nonfinancial reporting): a directive was adopted in 2014 obliging a large number of companies (approximately the top 11.700) to disclose nonfinancial and diversity information (2014 / Directive 95 / EC). To facilitate it's implementation, the European Commission published a guide in June 2017 to help companies publish environmental and social information, which was complemented by the 2019 guidelines on climate change. On 21th April 2021, the Commission adopted a proposal for a Corporate Sustainability Reporting Directive (CSRD), which amended the existing reporting requirements of the NFRD. The proposal applies to all large companies and all companies listed on regulated markets (except listed micro-enterprises), it ordains the auditing of the reported information and introduces detailed reporting requirements. In addition, there's a shift towards a mandatory Community Sustainability Reporting Standard: The European Financial Reporting Advisory Group (EFRAG) has developed drafts of standards on 2022, aligned with EU policies and contributing to international standardization initiatives (EU Consultation, 2020).

Sustainability reporting

Sustainability reporting represents a contemporary methodological approach for disseminating information concerning a company's sustainability. (Schaltegger, S., Bennett, M., and Burritt, R. L. (January, 2006)) Acting as an information conduit, accounting furnishes stakeholders with insights into a company's financial status and performance to facilitate decision-making and resource management. Traditionally, accounting has primarily focused on delineating and quantifying economic activities within financial reports. However, recent years have witnessed a significant redefinition of accounting's role. Acknowledging the growing global recognition of environmental, social, and governance (ESG) factors, accounting has evolved into a pivotal instrument for capturing, assessing, and conveying an organization's impact on these non-financial dimensions. Sustainability reporting transcends purely economic assessments by incorporating considerations of social responsibility and environmental stewardship, thereby expanding the conventional functions of accounting. The integration of sustainability accounting and reporting is often perceived as essential; without data incorporation, reports hold little significance for stakeholders. (Schaltegger, S., Bennett, M., and Burritt, R. L. (January, 2006)) Additionally, a company's failure to provide sustainability reports may render its sustainability endeavors merely nominal, impeding genuine progress toward sustainable development

(Schaltegger, S., Bennett, M., and Burritt, R. L. (January, 2006))

Sustainability reporting entails companies disseminating information to stakeholders concerning their economic, environmental, and social impacts. (Filipiak, B. A. & Dylewski, M. (2021)) The scope of financial reporting extends beyond traditional financial statements and accounting products, encompassing broader aspects of societal and environmental impacts. Rather than solely striving for economic profitability, a company's survival hinges on effectively managing the long-term implications of its actions on society and the environment, underscoring its social responsibility. (Filipiak, B. A. & Dylewski, M. (2021)) By employing accounting principles and tools, organizations can systematically compile and report sustainability-related information, thereby contributing to their sustainable development and enabling more comprehensive investment recommendations.

The origins of sustainability reporting trace back to the 1960s, initially serving to provide non-financial information to external stakeholders, emphasizing the impact of business operations on the environment and society. (Hyršlova, J., Beckova, H. & Kubankova, M. (2015)) These reports primarily aimed to fulfill stakeholder demands, bolstering an organization's sense of social responsibility and enhancing its reputation. Early efforts in social reporting emerged in the Netherlands and France, laying the groundwork for the integration of environmental reporting in other countries, such as Germany, Austria, and Switzerland. (Hyršlova, J., Beckova, H. & Kubankova, M. (2015))

The 1980s witnessed the emergence of "negative screening," adopted by mutual funds in the UK and US, integrating social performance and ethical standards into investment decisions alongside economic considerations. (Hyršlova, J., Beckova, H. & Kubankova, M. (2015)) After the 1990s, there was a remarkable search for new indicators to assess business performance and determine the value of a company, including both financial and non-financial metrics. (Hyršlova, J., Beckova, H. & Kubankova, M. (2015)) The idea of financial indicators stems from the presentation of financial and accounting data in financial reports. (Cheba, K. & Bąk, I. (2021))

The International Financial Reporting Standards (IFRS) regulate the quality attributes of non-financial information within financial reports, emphasizing relevance and faithful representation (Cheba, K. & Bąk, I. (2021))

A pivotal moment in sustainability reporting unfolded in 1997 with the establishment of the Global Reporting Initiative (GRI), collaboratively formed by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Program (UNEP).

The GRI aimed to develop reporting criteria that integrate economic, environmental, and social aspects of organizational activities, aligning with Triple Bottom Line (TBL) accounting principles. (Hyrsova, J., Beckova, H. & Kubankova, M. (2015))

In recent years, heightened environmental awareness and social responsibility have prompted an increasing number of organizations to prioritize sustainability reporting. However, the question of whether sustainability reporting should be voluntary or mandatory has sparked debates. (Hyrsova, J., Beckova, H. & Kubankova, M. (2015)) Proponents of this view believe that growing global social and environmental problems demand greater corporate responsibility, and that mandatory sustainability reporting can promote greater corporate transparency and accountability; for example, governments in China, Malaysia, South Africa, and Denmark have already mandated sustainability reporting. (Ioannou, I. & Serafeim, G. (May 1, 2017)) As investors and stakeholders increasingly focus on a company's future prospects, mandatory reporting can also provide more information on a company's long-term sustainability, helping investors to make more informed decisions. (Ioannou, I. & Serafeim, G. (May 1, 2017)) Nonetheless, opponents contend that mandatory reporting could impose additional burdens on companies, particularly small and medium-sized enterprises (SMEs), potentially impeding normal operations and fostering excessive regulation and bureaucracy. (Ioannou, I. & Serafeim, G. (May 1, 2017)) The 2011 Harvard Business School publications explored assumptions and practices associated with mandatory sustainability reporting, acknowledging potential benefits while highlighting challenges and limitations. (Ioannou, I. & Serafeim, G. (May 1, 2017)) This is mainly because specific research findings are based on specific situations and research designs and therefore cannot be easily generalized to all situations; in addition, companies in different industries may need more time and resources to adapt and implement mandatory sustainability reporting requirements. (Ioannou, I. & Serafeim, G. (May 1, 2017)) This is because different companies may face different levels of difficulty in implementing these requirements due to differences in size and industry, as well as differences in resources and capabilities. Therefore, in order to ensure that mandatory sustainability reporting can have the greatest positive impact on all parties, the government and regulators need to closely examine the local situation and ensure that the regulations put in place can effectively promote the company's sustainability practices. Meanwhile, for small and medium-sized enterprises, the government should also provide appropriate support and guidance to ensure effective implementation.

1.6. THE INTERNAL AND EXTERNAL USE OF SUSTAINABILITY ACCOUNTING

Corporate Sustainability Accounting plays a dual role, benefiting both internal and external stakeholders. Internally, it supports decision-making processes such as product pricing, cost management, and capital investments, while externally, it provides transparency to the public and financial stakeholders, sharing crucial environmental and social data (Yusoff et al., 2013).

Sustainability accounting can be divided into two key components: sustainability management accounting and external financial accounting (International Federation of Accountants, 2005). Internally, sustainability management accounting focuses on operational efficiency, evaluating costs and benefits from initiatives like pollution control, waste recycling, and

energy-saving technologies. This allows companies to measure sustainability initiatives' financial impact and optimize for eco-efficiency. For instance, tracking annual cost savings from energy-efficient equipment not only improves profitability but also aligns with sustainability objectives.

Externally, external financial accounting addresses the need for accountability and transparency by disclosing environmental and social performance to investors, regulators, and the public. This is often done through reports aligned with corporate social responsibility (CSR) and environmental, social, and governance (ESG) standards. Companies are expected to provide clear, consistent reporting on how their operations impact the environment, aiding stakeholders in assessing long-term risks and opportunities (Yusoff et al., 2013).

The critical distinction between these two applications lies in their purpose: sustainability management accounting is inward-looking, helping managers make informed decisions to enhance sustainability within the organization, whereas external financial accounting is outward-facing, ensuring that sustainability metrics are reported transparently and meet the rising expectations of stakeholders for corporate responsibility (Bartolomeo et al., 2000; Yusoff et al., 2013). This dual focus positions sustainability accounting as essential to integrating financial performance with broader social and environmental goals.

CHAPTER 2. THE POSITIVE AND NEGATIVE ELEMENTS OF SUSTAINABILITY ACCOUNTING

Chapter 2 delves into both the advantages and challenges associated with sustainability accounting. It begins by exploring why some companies may resist adopting sustainability accounting practices, highlighting concerns such as cost, complexity, and lack of clear standards. The chapter then outlines the numerous benefits of implementing sustainability accounting, including enhanced transparency, risk management, and long-term profitability. Additionally, it discusses the driving forces behind adopting these practices and the pressing need to integrate sustainability reporting into corporate frameworks for better decision-making and stakeholder engagement.

2.1 REASONS FOR NOT APPLYING SUSTAINABILITY ACCOUNTING PRACTICES

Surma & Vondra (1990) conducted a survey involving 125 large US corporations and noted that despite a rising environmental consciousness, a mere 14% of the surveyed companies had established formal environmental committees at the administrative level. Furthermore, only 11% had developed environmental accounting policies, and less than one-third had incorporated these policies into their financial statements.

In a similar vein, Wilmhurst & Frost (1996) examined Australia's top 500 companies and found that while environmental issues were deemed significant by the majority of respondents and factored into decision-making processes, few companies had formalized procedures for addressing and integrating these issues. As a result, they struggled to effectively demonstrate their performance in the environmental realm.

Bebbington et al. (1994) conducted a survey among 1,000 leading companies in England and discovered that although accountants acknowledged the potential impact of environmental concerns on future business practices, they had yet to implement environmental accounting systems or actively engage with environmental issues.

Additionally, Parker (1997) conducted a survey focused on environmental and costing issues within 11 Australian companies operating in various industrial sectors. The findings revealed that sustainability managers lacked familiarity with costing methodologies relevant to their businesses. Most companies were in the early stages of recognizing sustainable costs and sustainability accounting, with environmental costs being integrated into the general accounting system rather than calculated separately.

Das et al. (2008) suggest that the absence of focus might contribute to the omission of environmental accounting from management curricula in India. Consequently, the deficiency in fundamental environmental accounting understanding could be a factor behind the reluctance of Indian businesses to adopt environmental policy practices.

2.2 BENEFITS OF IMPLEMENTING SUSTAINABILITY ACCOUNTING PRACTICES

Implementing sustainability accounting practices provides numerous benefits that enhance both corporate performance and societal impact. According to a study by Katsuhiko (2002), only 18% of the 257 business entities listed in the first sector of the Tokyo Stock Exchange published environmental reports, with 184 companies disclosing environmental accounting information. Among these, the primary perceived benefit was gaining insights into environmental costs (84%), which allows companies to understand their ecological impact and identify areas for cost reduction (Katsuhiko, 2002).

Enhanced Reputation and Stakeholder Trust

One significant benefit of sustainability accounting is the enhancement of a company's reputation. Companies that publicly commit to sustainability practices often experience increased consumer trust and loyalty. For example, Unilever has embedded sustainability into its core business strategy, leading to the growth of its sustainable brands, which grew 69% faster than the rest of the business in 2020 (Unilever, 2020). This demonstrates how sustainability accounting can bolster a company's image and attract socially conscious consumers.

Regulatory Compliance and Risk Mitigation

Another critical benefit is improved regulatory compliance and risk mitigation. With increasing environmental regulations, sustainability accounting helps organizations stay ahead of compliance requirements, thereby reducing the risk of fines and legal repercussions. For instance, BP has made significant strides in improving its sustainability reporting to comply with evolving regulations post the Deepwater Horizon oil spill (BP, 2021). The company has implemented comprehensive environmental accounting practices to assess its impacts more transparently.

Strategic Decision-Making

Sustainability accounting also enhances strategic decision-making by providing data-driven insights into resource allocation and investment opportunities. Tesla, for instance, utilizes sustainability accounting to evaluate the financial implications of its innovative technologies, such as electric vehicles and solar products (Tesla, 2021). By analyzing environmental costs and benefits, Tesla can prioritize projects that not only improve financial returns but also contribute to environmental sustainability.

Cost Savings and Operational Efficiency

The implementation of sustainability accounting practices often leads to cost savings and improved operational efficiency. By identifying wasteful processes and resource use, companies can make informed decisions to optimize their operations. For example, Interface, a global flooring company, has committed to sustainability and reported saving over \$450 million in operational costs through its Mission Zero initiative, which focuses on eliminating negative environmental impacts by 2020 (Interface, 2020).

Aligning with Global Goals

Finally, implementing sustainability accounting practices aligns companies with global sustainability goals, such as the United Nations Sustainable Development Goals (SDGs). By aligning their reporting and operational strategies with these global frameworks, companies can attract investment and partnerships. Nestlé, for instance, has embraced sustainability accounting to track its contributions to various SDGs, enhancing its attractiveness to impact investors (Nestlé, 2021).

Conclusion

In conclusion, the benefits of implementing sustainability accounting practices extend far beyond regulatory compliance. They encompass enhanced corporate reputation, improved stakeholder trust, strategic decision-making, cost savings, and alignment with global sustainability goals. As the corporate landscape evolves, the adoption of sustainability accounting will become increasingly critical for businesses seeking long-term success and resilience.

2.3 REASONS FOR APPLYING SUSTAINABILITY ACCOUNTING

Companies are increasingly motivated to prioritize sustainability accounting for several interrelated reasons, including shareholder expectations, financial prospects, ethical motivations, regulatory compliance, and competitive positioning (Townsend, 1998; Bansal & Roth, 2000). For instance, a KPMG survey in Canada (1994), referenced by Harrison (1999), revealed that 95% of businesses cited legislative requirements as the main driver for improving their environmental performance. In contrast, factors such as cost reduction, customer requests, and public scrutiny were acknowledged by fewer than half of the respondents.

In a study of 30 companies in England focused on green product development, Townsend (1998) identified five key factors influencing environmental performance:

- **Market Opportunities:** 23 mentions, indicating a strong interest in tapping into emerging eco-friendly markets.
- **Environmental Awareness:** 13 responses highlighted the role of CEO or key personnel awareness in promoting sustainability.
- **Waste Minimization:** 9 responses pointed to financial savings from reducing waste and recovering resources.
- **Regulatory Pressures:** 8 responses indicated legal obligations as a motivator.
- **Business Image Improvement:** 8 mentions showed the importance of enhancing corporate reputation through sustainability efforts.

Moreover, Bansal & Roth (2000) surveyed 88 environmental managers from UK and Japanese companies, uncovering three primary motivators for corporate environmental accountability:

- **Legality:** A focus on aligning business actions with regulatory frameworks and ethical standards.
- **Competitiveness:** Recognition that a proactive ecological stance can lead to sustainable profitability.

- **Eco-responsibility:** An inherent drive to fulfill social obligations and meet stakeholder expectations regarding environmental stewardship.

These findings suggest that sustainability accounting is not merely a compliance exercise but a strategic imperative that can enhance brand reputation, open new market opportunities, and contribute to long-term profitability. Companies such as Patagonia and Unilever exemplify this trend, as they integrate sustainability into their core business strategies, driving both environmental performance and financial success. As global markets continue to evolve, the adoption of sustainability accounting practices is likely to become increasingly critical for organizations aiming to maintain competitiveness in their respective industries.

2.4 The Need for Integration of Sustainability Reporting

The integration of sustainability reporting is essential in today's corporate environment, where businesses are increasingly held accountable for their environmental and social impacts. A survey by Wilmshurst & Frost (2001) involving 398 companies, with responses from 121, including 30% from Chief Financial Officers and 24% from Chief Executive Officers, highlighted the demand for systems that can merge economic data with qualitative environmental information. This integration allows for a more comprehensive view of a company's overall performance and impact.

The lack of integrated reporting can lead to significant gaps in understanding an organization's true costs and benefits, particularly concerning sustainability. Research indicates that companies with integrated sustainability reporting are more likely to identify operational inefficiencies and enhance their long-term financial performance (Eccles et al., 2014). For instance, Unilever has effectively integrated sustainability into its core business strategy, resulting in a 50% reduction in CO₂ emissions per ton of product, showcasing the tangible benefits of such integration (Unilever, 2020).

Tools like life cycle analysis (LCA), activity-based costing (ABC), and cost-benefit analysis (CBA) play a pivotal role in this integration. LCA enables companies to evaluate the environmental impact of products from cradle to grave, while ABC helps in accurately assigning costs to various activities, including sustainability initiatives. This comprehensive approach ensures that environmental considerations are factored into business decision-making processes, allowing organizations to align their strategies with broader sustainability goals.

Elkington (1997) emphasizes that for effective sustainability reporting, companies must first focus on developing appropriate performance measurement methodologies. Establishing robust management frameworks and control systems is crucial to generating credible and comprehensive environmental reports. Companies like Tesla exemplify this approach, as they utilize advanced IoT technologies to track and report sustainability metrics in real-time, thereby enhancing transparency and accountability in their operations.

In conclusion, the integration of sustainability reporting is not merely a regulatory requirement but a strategic imperative that can lead to improved operational efficiencies, enhanced stakeholder trust, and long-term business success.

CHAPTER 3. RESEARCH METHODOLOGY

This chapter outlines the methodological framework for investigating the global state of sustainability accounting practices. It discusses the research purpose, questions, procedures for data collection and analysis, and the limitations encountered during the study.

3.1 Research Purpose

The purpose of this research is to review the global landscape of sustainability accounting practices. As sustainability becomes increasingly integral to corporate governance, companies must adopt transparent accounting practices that reflect their environmental, social, and governance (ESG) performance. However, the adoption and integration of sustainability accounting standards vary widely by region and industry. This research seeks to provide a detailed analysis of these variations, focusing on common frameworks like the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB), and the regulatory frameworks influencing sustainability reporting, such as the EU's Corporate Sustainability Reporting Directive (CSRD) (European Commission, 2021).

Additionally, the study aims to identify the challenges organizations face in implementing sustainability accounting, the trends shaping future corporate reporting, and the impact of emerging regulations such as the International Sustainability Standards Board (ISSB) and its influence on global reporting harmonization (IFRS, 2021). By contributing to the existing body of knowledge, this research is expected to inform policymakers, businesses, and other stakeholders on the current state and future direction of sustainability accounting.

3.2 Research Questions

The study is guided by the following research questions (RQs), which form the foundation of the analysis:

RQ1: What is the current global landscape of sustainability accounting practices, and how do they vary by region and industry?

RQ2: What are the most commonly used sustainability accounting frameworks and standards, and how do they differ across regions and industries?

RQ3: What are the main challenges companies face in adopting and integrating sustainability accounting into their existing reporting systems?

RQ4: How is the evolution of regulatory frameworks, such as the EU's CSRD, influencing global sustainability accounting practices?

RQ5: What are the emerging trends in sustainability accounting, and how are they shaping the future of corporate reporting?

These questions will allow the study to investigate how sustainability accounting is practiced globally, focusing on the frameworks, challenges, and future developments that shape corporate reporting practices.

3.3 Research Procedure

Given the nature of this research, a qualitative, secondary research methodology was employed. The key steps in the research process are as follows:

Literature Review

A comprehensive literature review was conducted to gather insights from academic journals, industry reports, and sustainability accounting publications. Key sources included academic databases such as Google Scholar and industry publications from KPMG, Deloitte, and EY, which regularly publish reports on sustainability trends and challenges (KPMG, 2020; EY, 2022). Policy documents and frameworks, including the GRI guidelines, SASB standards, and the TCFD framework, were also reviewed to understand the varying approaches to sustainability reporting (GRI, 2021; SASB, 2020).

Data Collection

Secondary data was collected from various sources, including sustainability reports from major corporations across different regions and industries. Key regulatory documents such as the European Commission's CSRD proposal and the IFRS's ISSB guidelines were examined to understand the regulatory impact on global practices (European Commission, 2021; IFRS, 2021). Industry benchmarks and surveys, such as CDP's Global Climate Risk Report and Deloitte's Global Climate Change and Sustainability Survey, were also utilized to capture current industry practices (CDP, 2021; Deloitte, 2021).

Comparative Analysis of Frameworks

The research included a comparative analysis of the most widely used sustainability accounting frameworks, including GRI, SASB, and Task Force on Climate-related Financial Disclosures (TCFD), to identify differences and commonalities in reporting practices across regions (SASB, 2020; TCFD, 2021). The study analyzed how these frameworks are adopted in specific industries and their regional variability.

Identification of Challenges and Trends

The research identified the main challenges companies face when integrating sustainability accounting into existing systems, including issues of data collection, consistency, and standardization. Furthermore, emerging trends such as the digitization of ESG reporting and the growing focus on climate-related disclosures were examined (EY, 2022; CDP, 2021).

Synthesis of Findings

The collected data was synthesized to provide a holistic view of global sustainability accounting practices. Conclusions were drawn about the current state of sustainability accounting, the adoption rates of different frameworks, and the influence of regulatory pressures on the development of new standards.

3.4 Research Restrictions

Despite the depth of analysis, this research faces certain limitations that should be acknowledged:

Reliance on Secondary Data

This study is entirely based on secondary data sources, which limits the ability to provide direct empirical evidence. Although efforts were made to use credible and current sources, the reliance on previously published reports may restrict the research's ability to capture real-time developments in sustainability accounting (Creswell, 2014). Additionally, the quality and scope of available data may vary across regions and industries.

Geographic and Sectoral Limitations

Sustainability accounting practices are highly variable across different regions and industries. While this research attempts to provide a global overview, it predominantly focuses on well-documented regions such as the European Union and North America, where sustainability reporting is more established. As a result, sustainability accounting practices in developing regions may be underrepresented (KPMG, 2020). Similarly, specific industry challenges—such as those faced by sectors with complex supply chains—may not be fully captured.

Regulatory Changes

The ongoing evolution of regulatory frameworks presents another limitation. As governments and regulators continue to update sustainability reporting requirements, some findings may become outdated or superseded by new policies. For instance, the EU's CSRD and the SEC's climate disclosure rules are still in the process of being fully implemented, which means that their long-term impact on sustainability accounting remains uncertain (SEC, 2021; European Commission, 2021).

Exclusion of Primary Stakeholder Input

This research did not include direct interviews or surveys with companies, regulators, or other key stakeholders involved in sustainability accounting. As a result, the study may not fully capture the practical challenges and experiences faced by organizations in real-world settings (Yin, 2018). This lack of primary data is a notable limitation of the methodology.

Despite these restrictions, the methodology used in this research provides a thorough examination of the global state of sustainability accounting and offers valuable insights for both academia and industry practitioners.

CHAPTER 4. GLOBAL OVERVIEW OF SUSTAINABILITY ACCOUNTING PRACTICES

Chapter 4 provides a comprehensive analysis of sustainability accounting practices across different regions and industries. It begins with a regional analysis, examining Europe, North America, and Asia, focusing on how sustainability accounting is adopted and adapted to local regulatory environments and market demands. The chapter offers comparative insights to highlight key differences. In the second part, the focus shifts to comparing global reporting frameworks and standards, outlining variations in adoption and implementation across regions and industries, showcasing the complexity and diversity of global sustainability practices.

4.1 Regional Analysis

Sustainability reporting has significantly evolved over the past decade, with substantial growth across various regions. According to data from Statista (Figure 1), sustainability reporting rates have consistently increased from 2011 to 2022. In 2022, Asia Pacific leads the world in sustainability reporting, with 89% of firms disclosing sustainability information. This is followed by Europe at 82%, the Americas at 74%, and the Middle East & Africa at 56% (Statista, 2022).

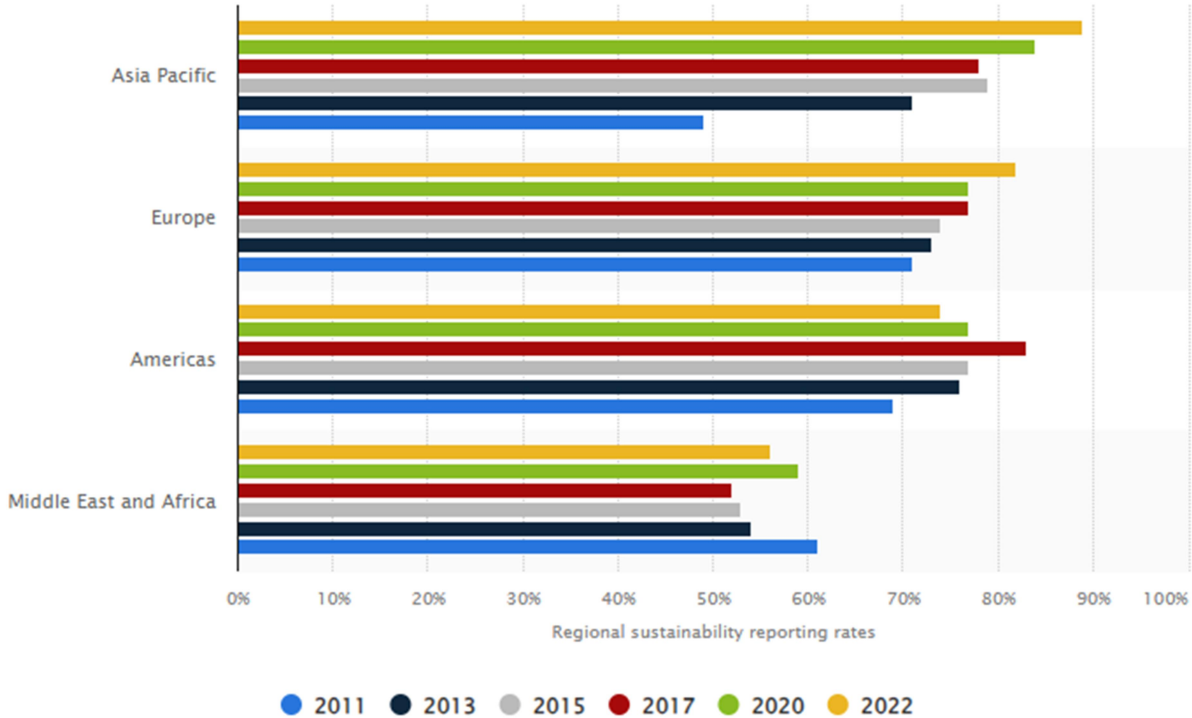


Figure 1: Regional sustainability reporting rates (2011–2022)

These statistics show a strong upward trend across regions, with the Asia Pacific region maintaining a lead due to increased regulatory pressure and voluntary reporting initiatives. For instance, countries such as Japan, South Korea, and Singapore have near-universal sustainability reporting compliance, driven by both market expectations and government mandates. Similarly, Europe has experienced a notable rise, from 77% in 2020 to 82% in

2022, largely influenced by the implementation of the European Union’s Corporate Sustainability Reporting Directive (CSRD), which mandates comprehensive reporting requirements for companies across the EU.

In contrast, the Americas saw a slight decline, from 77% in 2020 to 74% in 2022. This decline is primarily driven by lower reporting rates in Latin America, despite the growing pressure from investors in North America. Notably, North America remains strong, with reporting rates reaching 97% among larger corporations. Meanwhile, the Middle East and Africa have seen a minor decrease, from 59% in 2020 to 56% in 2022, largely due to varying regulatory frameworks and slower adoption of sustainability reporting in this region.

The regional variation in reporting rates highlights different regulatory environments, economic conditions, and industry structures. This disparity underscores the need for globally harmonized sustainability reporting frameworks that can accommodate regional differences while promoting consistent and comprehensive reporting.

4.1.1 Europe

In **Europe**, the adoption of sustainability accounting has been driven largely by comprehensive regulatory frameworks and strong political support for environmental and social governance. The **European Union’s Corporate Sustainability Reporting Directive (CSRD)**, introduced in 2021, is a critical policy initiative that mandates large companies and publicly listed small and medium-sized enterprises (SMEs) to disclose detailed environmental, social, and governance (ESG) data. The directive requires approximately 50,000 companies in the EU to follow sustainability reporting standards aligned with the **European Sustainability Reporting Standards (ESRS)** and the **Global Reporting Initiative (GRI)**, which is one of the most widely adopted sustainability accounting frameworks globally (European Commission, 2021).

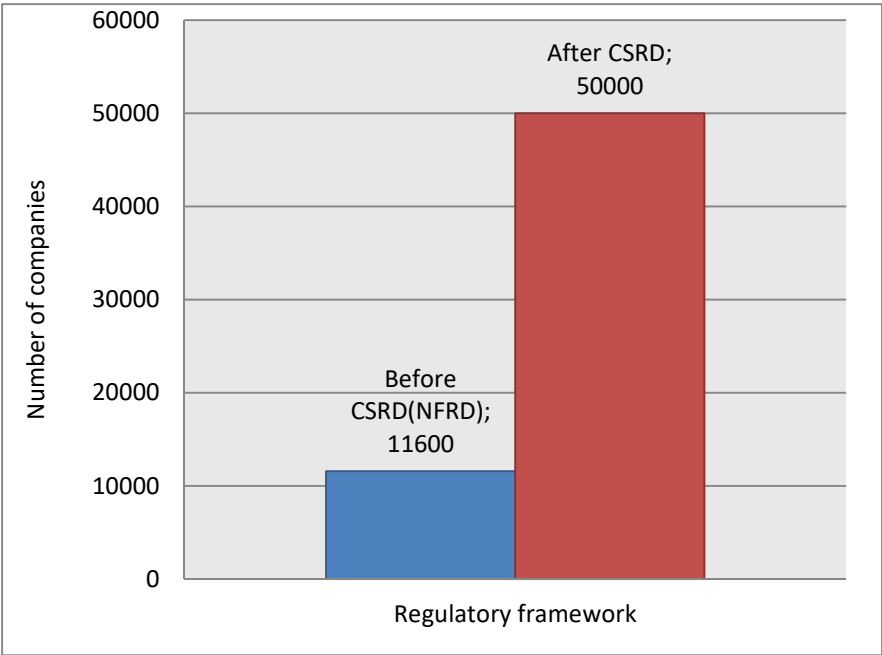


Figure 2: Number of companies reporting sustainability information in Europe before and after the CSRD

The graph (Figure 2) visually demonstrates the significant increase in the number of companies required to report sustainability information under the new CSRD regulations. This expansion reflects the European Union’s efforts to standardize and broaden sustainability reporting across industries and company sizes.

European companies also benefit from the **EU Taxonomy for Sustainable Activities**, a classification system introduced to support companies and investors in understanding whether economic activities contribute to environmental goals. This taxonomy has set a benchmark for the standardization of sustainability reporting and enhanced transparency for stakeholders. A 2023 report by KPMG noted that **78% of large companies in Europe** now include sustainability metrics in their annual reports, with the energy, utilities, and financial services sectors showing the highest levels of compliance (KPMG, 2023). This is in line with research indicating that European firms, particularly in **Germany, France, and Nordic countries**, (Figure 3) have consistently been at the forefront of sustainability initiatives due to regulatory mandates and increasing investor pressure (Deloitte, 2022).



Figure 3: Countries, territories and jurisdictions with sustainability reporting rates higher than 90 percent (2022)

4.1.2 North America

The situation in **North America**, especially in the **United States**, presents a more fragmented landscape. Unlike Europe, the U.S. lacks a unified federal mandate for sustainability reporting. However, market-driven forces have played a significant role in shaping sustainability accounting practices. The **Sustainability Accounting Standards Board (SASB)** and the **Task Force on Climate-related Financial Disclosures (TCFD)** are two of the most influential frameworks adopted by U.S. companies. SASB provides industry-specific standards that help companies report on financially material sustainability issues, while TCFD focuses on climate-related financial disclosures, which has been increasingly adopted by large corporations in sectors like energy, finance, and transportation (SASB, 2022; TCFD, 2022).

Despite the absence of mandatory federal regulations, market pressures and investor demand for greater transparency have led to widespread adoption of these frameworks. According to a report by PwC (2023), **95% of S&P 500 companies** publish ESG reports, with nearly **60% of them following the SASB or TCFD guidelines**. The **Securities and Exchange Commission (SEC)** has also recently proposed rules for climate-related disclosures,

reflecting the growing importance of sustainability accounting in the U.S. financial markets (SEC, 2022). Nevertheless, there remains a wide variance in reporting practices across industries, with the tech sector, in particular, being slower to adopt standardized sustainability accounting compared to energy or financial sectors (PwC, 2023).

In **Canada**, sustainability accounting has seen greater alignment with international standards, driven in part by strong environmental regulations and a resource-based economy sensitive to ESG risks. A 2021 study found that over **70% of Canadian companies** listed on the Toronto Stock Exchange use GRI standards for their sustainability reporting (GRI, 2021).

4.1.3 Asia

In **Asia**, the adoption of sustainability accounting practices varies significantly across countries, reflecting differences in economic development, regulatory frameworks, and corporate governance practices. In **Japan**, sustainability reporting has been integrated into corporate governance through initiatives such as the **Japan's Corporate Governance Code**, which encourages companies to incorporate long-term sustainability into their business strategies. Japan has also embraced international frameworks like **TCFD** and **GRI**, with **68% of large Japanese companies** following TCFD guidelines for climate-related disclosures (Japan Financial Services Agency, 2022).

In **China**, sustainability accounting practices are evolving rapidly, driven by both government initiatives and the need to align with international markets. The Chinese government's **Five-Year Plans** emphasize sustainability and environmental stewardship, prompting companies, particularly state-owned enterprises (SOEs), to adopt ESG reporting practices. A study by Ernst & Young (2023) found that **over 60% of China's top 300 publicly listed companies** are now publishing sustainability reports, with a growing number aligning with GRI and SASB standards (EY, 2023). However, reporting in China remains largely voluntary, and the quality and consistency of disclosures vary widely.

India has also made progress in sustainability reporting, with the Securities and Exchange Board of India (SEBI) introducing the **Business Responsibility and Sustainability Report (BRSR)** in 2021. This mandatory reporting framework for the top 1,000 listed companies marks a significant step toward integrating sustainability into financial reporting in India (SEBI, 2021). Despite these advancements, many developing countries in the region, such as Indonesia and Vietnam, lag behind in the adoption of comprehensive sustainability accounting due to weaker regulatory environments and lower levels of stakeholder demand.

4.1.4 Comparative Insights

When comparing these regions, **Europe** leads in terms of regulatory mandates and comprehensive adoption of sustainability accounting practices, supported by frameworks like the CSRD and GRI. **North America** shows strong market-driven adoption, with frameworks such as SASB and TCFD being influential, but lacks a cohesive regulatory approach. **Asia** presents a mixed picture: countries like **Japan** and **China** are making strides in integrating international sustainability standards, while many developing nations still face significant challenges due to less mature regulatory frameworks.

Region	Mandatory Reporting (%)	Voluntary Reporting (%)
Europe	80	20
North America	40	60
Asia-Pacific	30	70

Table 1. Comparison of Sustainability Reporting Requirements Across Regions

The table above highlights the differences in sustainability reporting requirements across major regions, with Europe leading in mandatory reporting due to regulatory frameworks like the CSRD, while North America and Asia-Pacific rely more on voluntary frameworks, though regulatory efforts are increasing.(Table 1)

In conclusion, while all regions are moving towards greater sustainability accountability, **Europe** remains the leader in regulatory-driven practices, **North America** excels in market-driven adoption, and **Asia** is marked by both progress and significant variability across countries.

4.2.Comparison of reporting frameworks and standards, and their difference across regions and industries.

The most commonly used sustainability accounting frameworks include the **Global Reporting Initiative (GRI)**, the **Sustainability Accounting Standards Board (SASB)**, the **Task Force on Climate-related Financial Disclosures (TCFD)**, and the **International Integrated Reporting Council (IIRC)**. These frameworks differ significantly in their approach, coverage, and application across regions and industries.

1. **Global Reporting Initiative (GRI):** The GRI is one of the most widely adopted frameworks, especially in Europe and Latin America. It provides a comprehensive set of standards that organizations can use to report on their environmental, social, and governance (ESG) impacts. In particular, the GRI standards are structured into three distinct levels as shown in the Figure 4. The first level includes **Universal Standards** (GRI 1, 2, and 3), which apply to all companies and cover reporting principles, general disclosures, and the management of material topics. In October 2021, the GRI revised these standards to improve governance disclosures, provide clearer guidelines for enhanced comparability, and place a stronger focus on human rights, compared to the 2016 version (Adams et al., 2022; GRI, 2022b). The second level consists of **Sector-Specific Standards**, which are being developed for high-impact sectors, including automotive and other industries with significant sustainability challenges (GRI, 2020b). The third level, **Topic Standards**, covers specific areas categorized into three series: the 200 series for economic standards, the 300 series for environmental standards, and the 400 series for social standards (Al-Haija & Kolsi, 2021; GRI, 2022a).The GRI emphasizes transparency and comparability, making it popular among multinational corporations and industries with complex global supply chains, such as manufacturing and retail (KPMG, 2020). Over **75% of the world's 250 largest companies** use GRI standards (KPMG, 2020).

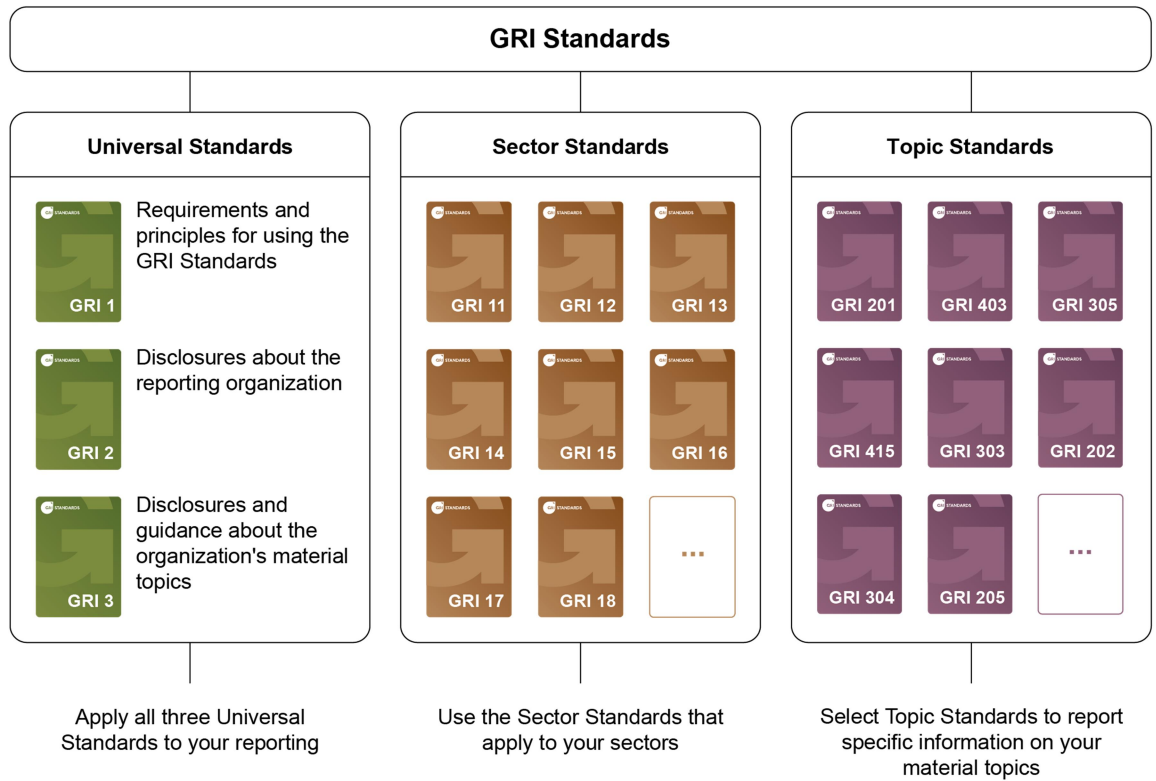


Figure 4. The GRI Standards structure. Source: GRI, 2022a

As shown on the following bar chart, while high overall, there is some regional variability in the uptake of GRI, with 75 percent uptake in the Americas, 68 percent in both the Asia Pacific region and Europe, and 62 percent in the Middle East & Africa region.(Figure 5)

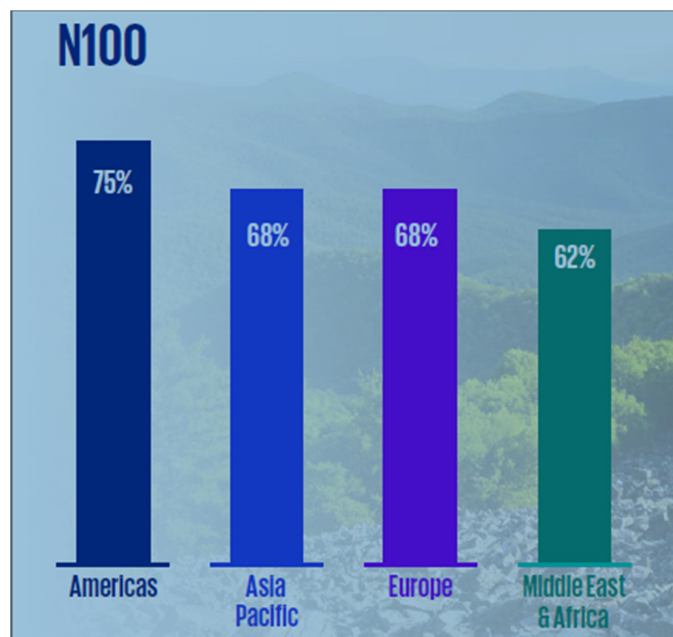


Figure 5. Regional GRI reporting rates (2022)

2. **Sustainability Accounting Standards Board (SASB):** SASB focuses on industry-specific sustainability factors that are financially material. It is particularly popular in the United States, where investors emphasize financially relevant sustainability information.

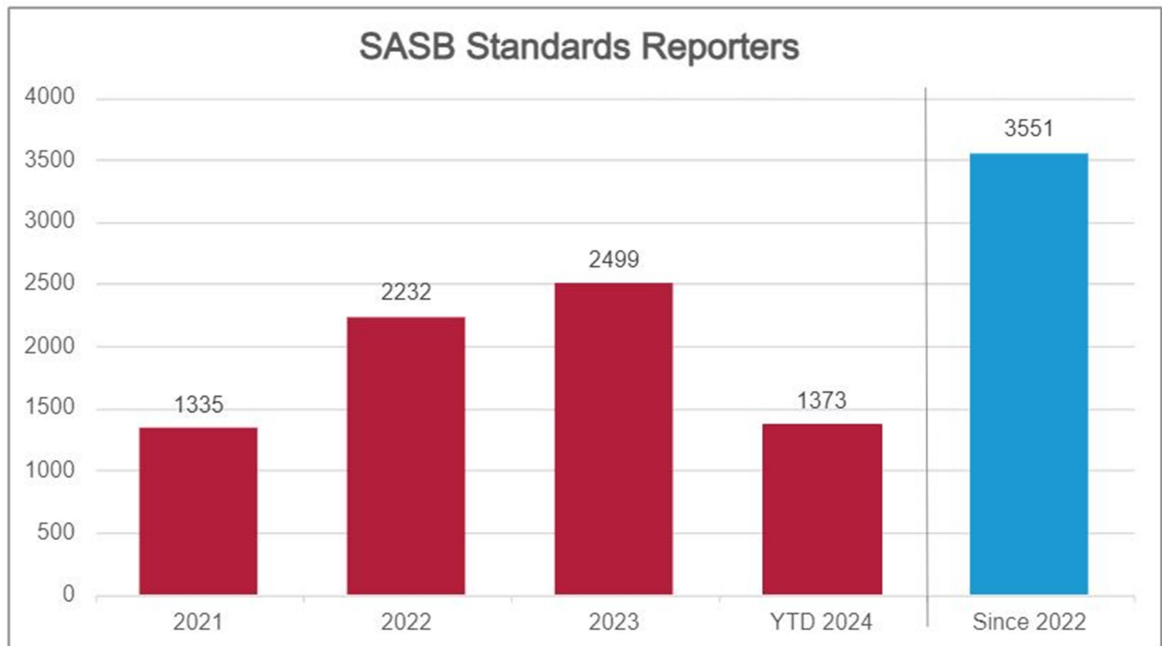


Figure 6. Number of unique reporting companies, by year.

Figure 6, shown above, illustrates the significant rise in the number of companies reporting with the **SASB standards** from 2021 to YTD 2024. In 2021, 1,335 unique companies were using SASB standards, which increased to 2,232 in 2022. The trend continues with a further rise to 2,499 in 2023. As of 2024, **1,373 companies** have already adopted the standards, contributing to a total of 3,551 companies reporting since 2022.

This steady increase underscores the growing global acceptance and application of SASB's materiality-focused reporting standards, as companies aim for more transparent sustainability disclosures. The expansion is also tied to increased investor demand for sustainability information and the general move towards harmonization in global sustainability reporting practices.

SASB provides standards for 77 industries, each addressing the key sustainability issues for that sector (SASB, 2020). For example, energy-intensive sectors like oil and gas may focus more on environmental risks, while technology companies may highlight data privacy and labor practices.

Currently, one-third of N100 companies and nearly half of the G250 report against SASB. Over half of companies in the Americas report against the SASB standards, primarily driven by companies in the US and Canada. There is increasing uptake of the standards outside of the Americas, with 35 percent adoption among Europe's N100. But they are less popular in other regions, with only 23 percent of the N100 in the Asia Pacific region and 18 percent of the N100 in the Middle East and Africa using SASB.(Figure 7)

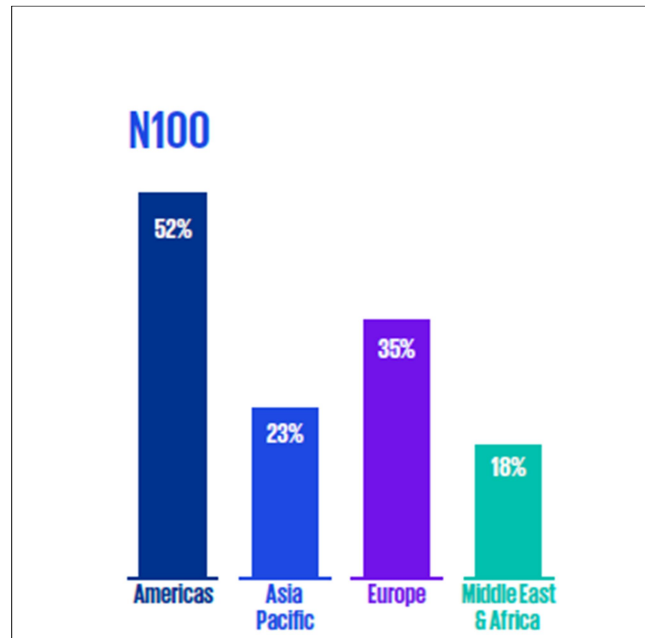


Figure 7: Regional SASB reporting rates (2022)

3. **Task Force on Climate-related Financial Disclosures (TCFD):** TCFD emphasizes climate-related risks and opportunities, offering a framework for reporting on how



Figure 8. Core elements of Recommended Climate-Related Financial Disclosures

climate change impacts financial performance. It consists of governance, strategy, risk management, and metrics and targets.(Figure 8) TCFD is increasingly popular in regions such as North America, Europe, and Asia, especially in industries like finance, insurance, and energy. According to the TCFD's 2021 status report, **over 2,600 organizations** globally have expressed support for the TCFD, representing a market capitalization of over **\$25 trillion** (TCFD, 2021).

4. **International Integrated Reporting Council (IIRC):** The IIRC promotes integrated reporting, which combines financial and non-financial information to present a holistic view of an organization's performance. This framework is particularly relevant in

regions like Europe, South Africa, and Japan, where regulators encourage or mandate integrated reporting for large corporations (de Villiers et al., 2017).

Regional Differences:

- **Europe:** Europe has been a leader in sustainability reporting due to strong regulatory support. The **European Union's Non-Financial Reporting Directive (NFRD)** and the upcoming **Corporate Sustainability Reporting Directive (CSRD)** mandate sustainability reporting for large companies. As a result, frameworks like GRI and integrated reporting (IIRC) are widely adopted (European Commission, 2020).
- **North America:** In the U.S., the emphasis is more on investor-driven reporting, which aligns with SASB and TCFD. Companies focus on disclosing sustainability risks that affect financial performance, particularly in the context of shareholder expectations (PwC, 2021).
- **Asia-Pacific:** Adoption of sustainability reporting is growing in Asia, particularly in Japan, South Korea, and Australia. While frameworks like GRI are commonly used, there is a growing interest in TCFD due to increased awareness of climate-related risks (KPMG, 2020).

Industry Differences

The diversity of sustainability reporting frameworks is evident in their varying applications across industries. Different sectors face unique challenges and stakeholder expectations, leading to distinct reporting practices tailored to their operational realities. Below is an overview of how major industries implement sustainability accounting, highlighting key differences in focus areas and reporting standards.

- **Manufacturing Industry**

In the manufacturing sector, companies often prioritize reporting on resource consumption, emissions, and waste management. For example, General Electric (GE) utilizes the GRI framework to disclose its environmental performance metrics, including greenhouse gas emissions and waste generation. This sector frequently leverages GRI's comprehensive approach to capture the breadth of environmental impacts associated with production processes.

- **Energy Sector**

The energy industry focuses on climate change risks, regulatory compliance, and transitioning to renewable energy sources. Companies like BP utilize SASB standards to provide targeted metrics on sustainability performance, including the percentage of energy generated from renewable sources and strategies to mitigate carbon emissions.

- **Financial Services**

In the financial services sector, sustainability reporting often emphasizes governance, risk management, and social responsibility. BlackRock, a global investment management firm, employs TCFD recommendations to disclose climate-related risks and how they integrate sustainability into investment strategies. This sector

increasingly uses SASB metrics to assess the sustainability performance of investment portfolios.

- **Retail Industry**

The retail sector often focuses on supply chain sustainability, ethical sourcing, and consumer impact. Companies like Walmart report on sustainability initiatives related to sourcing responsibly and reducing waste throughout their supply chains. Walmart uses GRI and TCFD standards to align its sustainability efforts with global best practices.

- **Healthcare**

The healthcare sector emphasizes the importance of patient safety, ethical considerations, and community health. Companies such as **Johnson & Johnson** report on their environmental footprint, social contributions, and governance practices. They often use GRI and SASB frameworks to detail their commitment to reducing waste and improving health outcomes.

The application of sustainability reporting frameworks varies significantly across industries, influenced by unique operational challenges, regulatory environments, and stakeholder expectations. Companies that adapt their reporting practices to align with the specific needs of their industry not only improve transparency but also enhance their competitive positioning in the market. By understanding these differences, organizations can better navigate the complex landscape of sustainability reporting, ensuring that their practices meet both regulatory requirements and stakeholder demands.

CHAPTER 5. CHALLENGES IN ADOPTING SUSTAINABILITY ACCOUNTING

Adopting and integrating sustainability accounting into existing corporate reporting systems can be a complex and resource-intensive process. The key challenges faced by companies include data collection, regulatory complexity, integration with financial reporting, costs, and a lack of expertise. Here's an in-depth look at these challenges:

5.1. Data Collection and Quality

Collecting accurate, reliable, and standardized environmental, social, and governance (ESG) data is one of the most significant challenges for companies adopting sustainability accounting. Unlike financial reporting, where data is well-structured and standardized, ESG data can be scattered across various departments, locations, and even external suppliers. Companies face difficulties in:

- **Data inconsistency:** ESG metrics vary widely across industries and regions, making it hard to ensure consistency.
- **Scope and complexity:** For large corporations, monitoring the sustainability performance of their entire value chain (including suppliers) is difficult. For example, tracking carbon emissions in global supply chains is challenging, especially for companies with extensive outsourcing (Eccles et al., 2012).

A **Deloitte survey (2021)** found that **60% of organizations** report challenges with the quality, availability, and consistency of sustainability data, leading to difficulties in producing reliable sustainability reports.

5.2. Integration with Financial Reporting

One of the primary challenges companies face in adopting sustainability accounting is effectively integrating sustainability data into their existing financial reporting frameworks. Despite initiatives like the International Integrated Reporting Council (IIRC) that aim to align financial and non-financial reporting, many organizations struggle to achieve this integration due to several persistent obstacles.

Inconsistent Metrics: A significant issue is the inconsistency in metrics used to evaluate non-financial performance. Sustainability metrics, such as carbon emissions or social impact, often do not correlate directly with financial outcomes, complicating the establishment of a clear link between sustainability initiatives and financial performance. Research has shown that companies frequently find it difficult to convert these qualitative and quantitative sustainability measures into financial terms, which hampers their ability to effectively communicate the value of sustainability efforts to investors and stakeholders (de Villiers et al., 2017; Adams & Abhayawansa, 2021).

The lack of standardized metrics further complicates this issue. Although frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) provide some level of guidance, companies still face challenges in reconciling different reporting standards. This variation makes it difficult to create a cohesive narrative

that ties sustainability performance to financial results, resulting in potential skepticism from stakeholders regarding the credibility of sustainability claims (Eccles & Krzus, 2019).

Different Time Horizons: Another challenge arises from the differing time horizons associated with sustainability and financial reporting. Sustainability initiatives typically prioritize long-term environmental and social goals, while financial reporting tends to focus on short-term profitability metrics. This mismatch creates friction, as organizations may struggle to align sustainability initiatives—often requiring years to show tangible benefits—with the immediate performance metrics that financial reports emphasize (Busco, 2021).

For instance, capital investments in sustainable technologies may lead to initial losses or reduced profit margins but are likely to yield long-term benefits, such as enhanced operational efficiency or reduced regulatory risks. Communicating this long-term value proposition effectively to investors, who often seek short-term returns, remains a significant challenge (KPMG, 2020).

Siloed Data: As a result of these challenges, sustainability data often remain siloed from core financial decision-making processes, limiting their strategic impact. Instead of being integrated into the main financial reporting framework, sustainability data are frequently treated as supplementary information, appearing in separate reports that lack the visibility and weight necessary to influence major corporate decisions. This separation can diminish the overall effectiveness of sustainability accounting, as it fails to embed sustainability considerations into the company’s broader financial strategy (Stubbs & Higgins, 2018).

Regulatory Pressures and Emerging Standards: With the increasing emphasis on sustainability reporting from regulatory bodies, companies are under growing pressure to harmonize their sustainability and financial disclosures. Initiatives like the European Union’s Corporate Sustainability Reporting Directive (CSRD) and the U.S. Securities and Exchange Commission (SEC) proposed rules on climate-related disclosures aim to ensure that sustainability metrics are presented in a manner consistent with financial data (CSRD, 2021; SEC, 2022). These developments push companies to find innovative ways to integrate sustainability data into their financial reporting processes effectively.

Emerging global standards, such as those being developed by the International Sustainability Standards Board (ISSB), also seek to address these integration challenges. By establishing a unified set of standards that incorporates sustainability metrics into financial reporting, the ISSB aims to provide companies with a clear framework for harmonizing their disclosures and enhancing comparability across industries and regions (IFRS Foundation, 2021).

While integrating sustainability data into financial reporting remains a complex challenge, addressing these issues is crucial for achieving comprehensive corporate accountability and transparency. Companies must work to resolve inconsistent metrics, differing time horizons, and siloed data to align sustainability initiatives with financial strategies effectively. Regulatory pressures and the development of emerging standards are essential drivers of this integration, but a concerted effort across industries and regions will be necessary to embed sustainability accounting fully within mainstream financial reporting practices.

5.3. Regulatory Complexity and Fragmentation

Companies operating in multiple countries face the challenge of navigating a fragmented regulatory landscape for sustainability reporting. Each region may have different requirements:

- **EU regulations:** The **Corporate Sustainability Reporting Directive (CSRD)**, which will soon replace the Non-Financial Reporting Directive (NFRD), mandates detailed sustainability disclosures for companies operating in the EU, while standards like **GRI** are often used in Europe (European Commission, 2021).
- **U.S. standards:** In the U.S., frameworks such as **SASB** and **TCFD** are more popular, emphasizing financially material disclosures to meet investor expectations.
- **Global fragmentation:** As a result of these different regional approaches, multinational companies need to adapt their sustainability accounting to comply with multiple standards, creating compliance burdens and inefficiencies (PwC, 2021).

This lack of harmonization between regulatory frameworks is a barrier for global firms seeking consistency and comparability in sustainability reporting.

5.4. Costs of Implementation

The financial and resource burden of adopting sustainability accounting can be prohibitive, especially for small and medium-sized enterprises (SMEs). The costs associated with implementing sustainability reporting frameworks include:

- **Technology investments:** Companies may need to invest in new data management systems to track and measure ESG performance.
- **Consulting and training:** Many companies lack the in-house expertise to manage sustainability reporting and often hire external consultants to help them implement standards like GRI, SASB, or TCFD. Training employees on these frameworks also adds to costs.

A study by the **World Business Council for Sustainable Development (WBCSD)** found that **68% of companies** cited high costs as a significant barrier to adopting comprehensive sustainability reporting systems (WBCSD, 2020).

5.5. Lack of Expertise and Resources

Many companies, particularly smaller ones, lack the necessary expertise and resources to effectively implement sustainability accounting. The specialized knowledge required to collect, analyze, and report ESG data is not always available internally:

- **Limited sustainability expertise:** For instance, understanding frameworks such as **TCFD**, which requires detailed disclosures on climate risks and opportunities, often necessitates hiring experts in environmental sciences or sustainability.
- **Cultural and organizational resistance:** Integrating sustainability reporting into the fabric of the organization often requires a cultural shift that aligns environmental and social objectives with corporate goals. This shift can be met with resistance from stakeholders accustomed to focusing solely on financial performance (Bebbington & Unerman, 2018)

5.6. Lack of Standardization in Sustainability Metrics

The lack of universally accepted metrics for sustainability performance further complicates adoption. Unlike financial reporting, which is governed by consistent standards like **GAAP** or **IFRS**, sustainability metrics are more variable. For instance:

- **Carbon accounting:** While there are standards for calculating carbon emissions (such as the **Greenhouse Gas Protocol**), different companies may choose different scopes (Scope 1, 2, or 3 emissions), making comparisons difficult (PwC, 2021).
- **Social metrics:** Reporting on social issues, like labor practices or diversity, lacks a common set of standards across industries, leading to inconsistent and incomparable data.

Conclusion

The adoption of sustainability accounting into existing reporting systems is essential for corporate transparency and addressing stakeholder concerns. However, companies face significant challenges such as data collection and quality, regulatory complexity, integration with financial reporting, costs of implementation, and lack of expertise. Addressing these challenges will require increased standardization of sustainability metrics, technological innovation, and stronger regulatory harmonization across global markets.

CHAPTER 6. INFLUENCE OF REGULATORY FRAMEWORKS

This chapter examines how evolving regulatory frameworks, particularly in the realm of sustainability accounting, are shaping corporate reporting practices globally. It focuses on how mandatory reporting requirements, such as the European Union's Corporate Sustainability Reporting Directive (CSRD), are influencing businesses across various regions and industries. The chapter explores the impact of these frameworks on both EU and non-EU companies, the increasing alignment of sustainability standards, and the broader implications for corporate accountability, transparency, and investor confidence in ESG metrics.

The evolution of regulatory frameworks, particularly the **EU's Corporate Sustainability Reporting Directive (CSRD)**, is having a profound impact on global sustainability accounting practices. These regulations are driving increased transparency, standardization, and integration of sustainability reporting across industries and regions. This regulatory shift is influencing how companies manage and disclose their environmental, social, and governance (ESG) performance, leading to several key effects on global sustainability accounting:

6.1. Mandatory Sustainability Reporting and Expanding Scope

The move toward mandatory sustainability reporting has gained significant traction over recent years, driven by increasing regulatory demands across various regions. One of the most prominent regulatory initiatives in this area is the European Union's Corporate Sustainability Reporting Directive (CSRD), which expands the scope of sustainability reporting beyond large companies to include small and medium enterprises (SMEs). The CSRD aims to harmonize sustainability reporting standards across the EU, ensuring that companies provide transparent and comparable information on environmental, social, and governance (ESG) issues. This growing focus on mandatory reporting aligns with broader global trends, where similar initiatives are being developed in other regions like North America and Asia, though the pace and scope of adoption vary.

A key development in this area is the gradual mainstreaming of sustainability disclosure, as more companies and industries acknowledge the importance of reporting on ESG issues. As regulatory frameworks evolve, companies are under increasing pressure to provide sustainability-related information not only for compliance but also to meet the expectations of investors, stakeholders, and consumers who prioritize transparency in corporate practices.

The data visually illustrates this progression, showing how sustainability reporting has moved from being a voluntary, niche activity to becoming an integral part of corporate disclosures. (Figure 9) This pathway highlights the increasing role of regulations, investor demand, and societal expectations in pushing sustainability reporting to the forefront of corporate responsibility. The image underscores the expanding scope of sustainability disclosure requirements and the shift towards mainstream adoption driven by these factors.

In North America, although there is no singular federal mandate similar to the CSRD, there has been a notable increase in regulatory proposals by the U.S. Securities and Exchange Commission (SEC), focusing on climate-related disclosures. In Asia, countries like Japan and Singapore are also expanding their sustainability disclosure requirements, often aligning with global standards such as the Task Force on Climate-related Financial Disclosures (TCFD).

reporting standards even if their home countries lack comparable regulations (PwC, 2021; Deloitte, 2022).

This regulatory framework serves as a catalyst, pushing companies globally to adopt more robust sustainability accounting practices. The need to comply with the CSRD creates a ripple effect, whereby non-EU companies must evaluate and often overhaul their sustainability reporting frameworks to meet the new standards. The financial implications of non-compliance are significant; companies that fail to meet the requirements face not only financial penalties but also potential reputational damage, which can lead to decreased investor confidence and customer trust (KPMG, 2022).

Moreover, the CSRD emphasizes the importance of third-party auditing and assurance of sustainability reports. This requirement is particularly noteworthy as it exerts additional pressure on non-EU companies to ensure the accuracy and reliability of their Environmental, Social, and Governance (ESG) data. The practice of independent verification of sustainability information is not universally mandated outside the EU, making the CSRD a potential benchmark for global standards in sustainability reporting (EY, 2021). As companies outside the EU adapt to these new requirements, they may find themselves enhancing their internal controls and data management practices to ensure compliance, thus fostering a culture of transparency and accountability within their organizations.

Furthermore, the CSRD sets a precedent for global regulatory developments in sustainability reporting. As countries and regions observe the implications of the directive on multinational corporations, they may be encouraged to implement similar regulations. For instance, countries in Asia and North America are increasingly discussing the adoption of mandatory sustainability disclosures, influenced in part by the rigorous standards established by the CSRD (McKinsey & Company, 2021). This trend suggests that the CSRD could serve as a model for other jurisdictions seeking to enhance their sustainability reporting frameworks, leading to a more harmonized global approach to sustainability accounting.

In summary, the CSRD's influence on non-EU companies is profound, compelling them to adapt their sustainability practices to meet stringent European standards. As these companies enhance their reporting and auditing processes, the global landscape for sustainability accounting is poised for significant transformation, reinforcing the necessity for transparency and accountability in corporate governance.

6.3. Standardization and Alignment with Global Frameworks

The CSRD also aims to align sustainability reporting standards with international frameworks, such as the **Global Reporting Initiative (GRI)**, **Sustainability Accounting Standards Board (SASB)**, and the recommendations of the **Task Force on Climate-related Financial Disclosures (TCFD)**. The creation of the **European Sustainability Reporting Standards (ESRS)**, developed by the **European Financial Reporting Advisory Group (EFRAG)**, aims to harmonize the fragmented landscape of sustainability reporting. These standards will align with global frameworks, thus pushing companies globally to adopt consistent and comparable reporting metrics (EFRAG, 2022).

This alignment is important because it fosters consistency across borders, enabling companies to use a unified reporting structure for both EU and non-EU operations. It also reduces the risk of "**greenwashing**," as companies are required to report on detailed, verifiable metrics across all ESG factors.

6.4. Driving the Adoption of Digital and Real-Time Reporting Tools

Regulatory frameworks like the CSRD are pushing companies to adopt advanced technologies for data collection, management, and reporting. With stricter rules on the **timeliness** and **accuracy** of sustainability data, companies are increasingly leveraging **digitalization**, **big data analytics**, and **artificial intelligence (AI)** tools to streamline reporting processes and improve the quality of ESG disclosures (EY, 2022).

For instance, real-time monitoring systems for carbon emissions or water usage are becoming more common, enabling companies to report more frequently and accurately on their sustainability performance. These tools also help companies track performance across global supply chains, making sustainability accounting more transparent and reliable.

6.5. Catalyzing Global Regulatory Harmonization

The introduction of comprehensive frameworks like the CSRD is also catalyzing regulatory harmonization efforts around the world. In response to the EU's leadership, other countries and regions are developing their own sustainability reporting regulations. For example:

- **United States:** The **Securities and Exchange Commission (SEC)** has proposed new rules on climate-related disclosures, aligning with the recommendations of the TCFD and pushing U.S. companies towards more detailed sustainability reporting (SEC, 2021).
- **Japan:** Japan has been strengthening its corporate governance code to include more sustainability-related disclosures, particularly around climate risks and opportunities (KPMG, 2020).
- **International standards:** The establishment of the **International Sustainability Standards Board (ISSB)** by the IFRS Foundation is another significant global effort to standardize ESG reporting. The **ISSB** is working to develop a global baseline for sustainability disclosures that will complement regional frameworks like the CSRD (IFRS, 2021).

This regulatory convergence encourages multinational companies to develop sustainability accounting systems that comply with both regional regulations (such as the CSRD) and global standards.

6.6. Enhancing Corporate Accountability and Stakeholder Trust

The CSRD and similar frameworks are not just about increasing transparency but also enhancing corporate accountability. By making sustainability reporting mandatory and requiring third-party audits, these regulations ensure that companies are held accountable for their sustainability claims. This boosts trust among stakeholders, including investors, customers, and regulators, and strengthens the business case for sustainability accounting. According to **Deloitte (2021)**, **73% of investors** see robust sustainability reporting as a key indicator of a company's long-term viability.

6.7. Increased Investor Focus on ESG Metrics

With regulations like the CSRD pushing for more comprehensive sustainability disclosures, there is a growing focus on ESG metrics in investment decisions. Investors increasingly rely on detailed sustainability reports to assess risks and opportunities linked to ESG factors. According to **KPMG (2020)**, over **80% of global investors** now consider sustainability information when making investment decisions, with many aligning their portfolios to companies demonstrating strong ESG performance.

Conclusion

The evolution of regulatory frameworks like the **EU's CSRD** is significantly reshaping global sustainability accounting practices. By expanding the scope and coverage of sustainability reporting, pushing for alignment with global standards, and increasing accountability through mandatory auditing, the CSRD is driving companies worldwide to adopt more comprehensive and reliable ESG reporting practices. It is also setting the stage for global regulatory harmonization, pushing multinational companies to develop integrated sustainability accounting systems that meet both regional and international requirements. The result is greater transparency, accountability, and consistency in sustainability reporting, benefiting stakeholders across the corporate, financial, and regulatory landscapes.

CHAPTER 7. EMERGING TRENDS IN SUSTAINABILITY ACCOUNTING

Chapter 7 explores the latest developments shaping the future of sustainability accounting. It focuses on the integration of financial and non-financial reporting, reflecting the growing need for holistic corporate disclosures. The chapter also examines the increased standardization and harmonization of sustainability reporting, driven by regulatory pressures and global frameworks. Key trends include heightened attention to climate and environmental risks, the adoption of digital tools for ESG reporting, enhanced stakeholder engagement through materiality assessments, and the strategic alignment of sustainability accounting with corporate objectives. These trends are reshaping corporate accountability and transparency.

Sustainability accounting is evolving rapidly, influenced by global demand for transparency, regulatory pressure, and the increasing importance of environmental, social, and governance (ESG) factors in corporate decision-making. The following emerging trends are shaping the future of corporate reporting:

7.1. Integration of Financial and Non-Financial Reporting

One of the most significant trends in sustainability accounting is the integration of financial and non-financial reporting. This shift is driven by the growing recognition that sustainability risks (e.g., climate change, social inequality) directly impact a company's long-term financial performance. The **International Integrated Reporting Council (IIRC)** has been at the forefront of promoting integrated reporting, which connects a company's financial results with its ESG performance in a single report. This approach enables stakeholders to assess a company's overall value creation, considering both financial and sustainability metrics (IIRC, 2021).

Impact on Corporate Reporting: Integrated reporting encourages companies to take a holistic view of their performance, fostering better decision-making, improved transparency, and increased accountability. According to **KPMG's 2020 Global Survey of Sustainability Reporting**, over **80%** of companies now disclose sustainability information alongside financial metrics, indicating that this trend is gaining widespread adoption (KPMG, 2020).

7.2. Increased Standardization and Harmonization of Sustainability Reporting

The lack of consistent sustainability reporting standards has long been a challenge for companies. However, there is a growing trend toward the harmonization of global sustainability reporting frameworks. In particular, the creation of the **International Sustainability Standards Board (ISSB)** by the **IFRS Foundation** marks a significant step towards establishing a global baseline for ESG disclosures. The ISSB aims to harmonize existing frameworks such as the **Global Reporting Initiative (GRI)**, **Sustainability Accounting Standards Board (SASB)**, and **Task Force on Climate-related Financial Disclosures (TCFD)**, reducing fragmentation in sustainability reporting (IFRS, 2021).

Impact on Corporate Reporting: Standardization enables greater comparability and consistency in sustainability reports, making it easier for investors and other stakeholders to assess ESG performance across companies and sectors. This will lead to more reliable and decision-useful information, helping to build trust between companies and their stakeholders.

7.3. Mandatory Sustainability Reporting and Regulatory Pressure

Governments and regulatory bodies are increasingly implementing mandatory sustainability reporting requirements, pushing companies to adopt comprehensive ESG reporting practices. For example, the **European Union's Corporate Sustainability Reporting Directive (CSRD)** requires companies to disclose detailed sustainability information, including climate risks, governance, and social impacts. Similar regulatory initiatives are being developed in other regions, such as the **SEC's proposed climate disclosure rules** in the U.S. (European Commission, 2021; SEC, 2021).

Impact on Corporate Reporting: Mandatory reporting regulations are accelerating the adoption of sustainability accounting, particularly among companies that previously viewed ESG reporting as voluntary. This trend is leading to more standardized, comprehensive, and transparent corporate disclosures. According to a survey by **Deloitte (2021)**, **89% of companies** reported that regulatory requirements have been a major driver of improvements in their sustainability reporting.

7.4. Focus on Climate and Environmental Risk Reporting

As the impacts of climate change become more evident, there is an increased focus on climate-related risk reporting. The **Task Force on Climate-related Financial Disclosures (TCFD)** has become a widely adopted framework, guiding companies in assessing and disclosing the financial impacts of climate risks and opportunities. Many companies are also aligning their disclosures with the goals of the **Paris Agreement**, committing to reducing their carbon footprints and achieving net-zero emissions (TCFD, 2021).

Impact on Corporate Reporting: Climate risk reporting is becoming a central component of sustainability accounting. Investors, regulators, and other stakeholders increasingly demand detailed disclosures on how climate change will affect a company's operations, assets, and future profitability. According to **CDP (2021)**, **72% of the world's largest companies** now report on climate-related risks, reflecting the growing importance of this trend.

7.5. Adoption of Digital Tools and Technologies for ESG Reporting

The growing complexity and volume of Environmental, Social, and Governance (ESG) data have led companies to increasingly adopt digital tools and technologies to streamline their sustainability reporting processes. The need for efficient and accurate reporting mechanisms has never been more critical, especially as stakeholders demand greater transparency and accountability. Emerging technologies, including artificial intelligence (AI), blockchain, and big data analytics, are now being utilized to collect, verify, and analyze ESG data with unprecedented efficiency.

Role of Emerging Technologies: AI is transforming how organizations process vast amounts of ESG data by automating data collection and analysis, thereby enhancing the speed and accuracy of reporting. For instance, machine learning algorithms can analyze historical data to identify trends, forecast potential risks, and provide actionable insights that inform corporate decision-making (KPMG, 2022). Similarly, blockchain technology is being explored for its potential to enhance the transparency and traceability of sustainability claims. By creating immutable records of transactions and data points, blockchain can provide a reliable audit trail

for ESG data, reducing the risk of greenwashing and ensuring the integrity of sustainability claims (Deloitte, 2021).

Big data analytics further complements these technologies by enabling companies to analyze large datasets to uncover patterns and correlations in ESG performance. This capability allows organizations to gain a more holistic view of their sustainability impacts and make data-driven decisions that align with their ESG goals (PwC, 2022). By leveraging these technologies, companies can enhance their reporting capabilities, ensuring that they meet both regulatory requirements and stakeholder expectations.

Impact on Corporate Reporting: The adoption of digital tools is fundamentally transforming the landscape of corporate sustainability reporting. With real-time ESG reporting capabilities, companies can respond more swiftly to evolving regulatory demands and investor inquiries. The EY 2022 Global Climate Change and Sustainability Survey indicates that 67% of companies are investing in technology to improve their ESG reporting processes. This statistic underscores a significant trend towards reliance on digital innovation within the realm of sustainability accounting (EY, 2022).

Furthermore, as companies embrace digital tools, they can enhance collaboration across departments, facilitating a more integrated approach to sustainability management. These tools enable cross-functional teams to share data and insights seamlessly, allowing for a unified response to ESG challenges. For example, finance teams can work alongside sustainability officers to align ESG metrics with financial performance indicators, fostering a more cohesive understanding of the organization's overall impact (KPMG, 2022).

In conclusion, the adoption of digital tools and technologies is reshaping how companies manage and report their ESG performance. By harnessing the power of AI, blockchain, and big data analytics, organizations can achieve greater efficiency, accuracy, and transparency in their sustainability reporting efforts. This trend not only enhances corporate accountability but also positions companies to better meet the expectations of an increasingly conscious investor base.

7.6. Stakeholder Engagement and Materiality Assessment

Stakeholder engagement has become a critical element of sustainability accounting. Companies are increasingly involving stakeholders—such as investors, employees, customers, and local communities—in identifying material ESG issues. Materiality assessments, which determine the most relevant sustainability topics for a company, are becoming more sophisticated, with companies using quantitative data and stakeholder input to prioritize ESG factors (GRI, 2021).

Impact on Corporate Reporting: By incorporating stakeholder feedback, companies can ensure that their sustainability reports focus on the most important and relevant issues. This enhances the credibility and relevance of ESG disclosures, as materiality assessments align corporate reporting with stakeholder expectations. According to **GRI (2021)**, **75% of companies** now conduct formal materiality assessments, reflecting the growing importance of this practice.

7.7. Linking Sustainability Accounting to Corporate Strategy

Another emerging trend is the integration of sustainability accounting into corporate strategy and long-term planning. Companies are increasingly recognizing that ESG performance is not just about compliance or reputation management but is integral to business success. Sustainability goals, such as reducing carbon emissions or improving diversity, are being embedded into corporate strategies, with clear metrics and targets for performance (Eccles et al., 2019).

Impact on Corporate Reporting: As sustainability accounting becomes more strategically important, companies are shifting from static, compliance-driven reports to dynamic, forward-looking disclosures that demonstrate how ESG initiatives contribute to long-term value creation. This shift is leading to the development of sustainability-linked financial products, such as green bonds and sustainability-linked loans, further embedding ESG considerations into corporate finance.

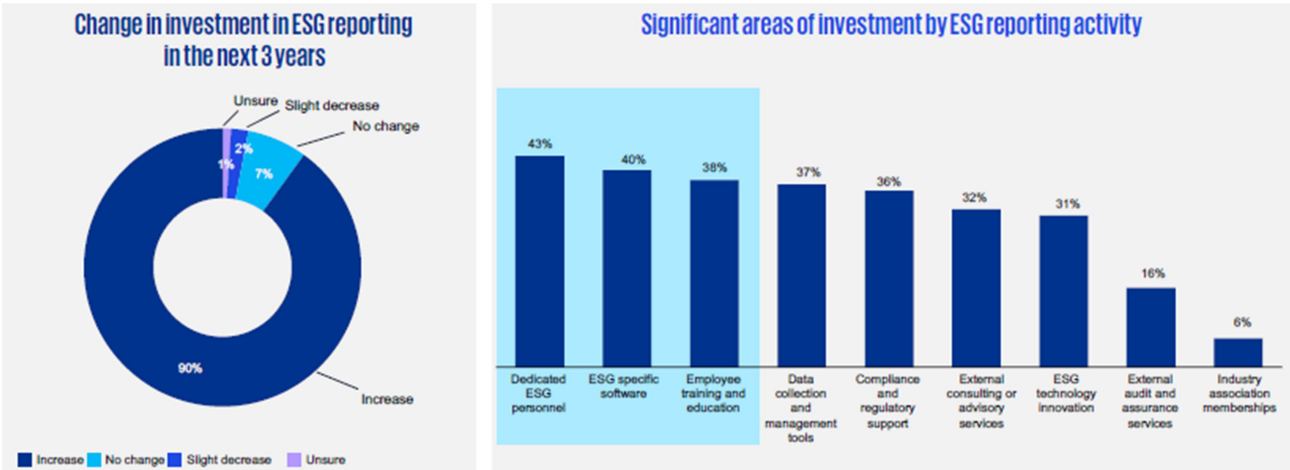


Figure 10. Rapid Investment in Sustainability Capabilities is a Top Priority

7.8. Investment and Growth in ESG Reporting

The Figure 10 highlights key areas where organizations are significantly increasing their investments in ESG (Environmental, Social, and Governance) reporting over the next three years. With impending regulatory requirements, the chart shows how 43% of companies are focusing on dedicated ESG personnel, while 40% are investing in ESG-specific software. Additionally, areas such as employee training (38%) and compliance management tools (37%) have also become important aspects of ESG reporting, reflecting the growing emphasis on sustainability within corporate frameworks. (KPMG, 2022)

This upward trend in investment suggests that organizations, especially in sectors like finance and manufacturing, are gearing up for increased transparency and accountability in ESG disclosures. Notably, companies are also allocating resources for external audit and assurance services (16%) and leveraging external consultancy for advisory services (31%), highlighting the increasing importance of credible, third-party verification of sustainability claims. This shift demonstrates a broader commitment across industries to not only meet but exceed

regulatory demands, aiming for long-term operational and financial resilience through sustainable practices.

This data illustrates how sustainability reporting has evolved from a niche practice to a critical component of corporate strategy, with investments flowing into various aspects to ensure compliance and future growth.

Conclusion

The emerging trends in sustainability accounting are reshaping corporate reporting, making it more integrated, standardized, and strategic. The push for mandatory disclosures, technological innovation, stakeholder engagement, and climate risk reporting is driving companies to adopt more comprehensive and transparent ESG reporting practices. As sustainability becomes a key driver of long-term value creation, these trends will continue to shape the future of corporate reporting, aligning financial performance with ESG considerations.

CHAPTER 8. DISCUSSION AND ANALYSIS

This chapter presents a comprehensive analysis of the global state of sustainability accounting practices. Drawing on the findings from earlier chapters, it discusses regional differences, industry-specific challenges, and the influence of regulatory frameworks. Additionally, it evaluates emerging trends and their potential long-term impact on corporate reporting and governance.

8.1 Key Findings on Global Practices and Standards

The research has shown that sustainability accounting has gained widespread adoption across multiple regions and industries, driven by increasing stakeholder demand for transparency and accountability in environmental, social, and governance (ESG) issues. The study reveals that frameworks such as the **Global Reporting Initiative (GRI)** and the **Sustainability Accounting Standards Board (SASB)** are among the most widely used, providing a structured approach to sustainability reporting (KPMG, 2020). However, the adoption of these frameworks is uneven across regions and industries.

In Europe, the **EU's Corporate Sustainability Reporting Directive (CSRD)** is setting the standard for mandatory sustainability disclosures, pushing companies to integrate ESG factors more comprehensively into their financial reporting (European Commission, 2021). In contrast, the U.S. market shows more voluntary adoption of frameworks like SASB, though the **U.S. Securities and Exchange Commission (SEC)** is moving toward more stringent climate-related disclosures (SEC, 2021). In the Asia-Pacific region, adoption is varied, with some countries, like Japan and Australia, showing strong leadership in sustainability reporting, while others lag behind due to less regulatory pressure.

The research also highlights the growing influence of global initiatives like the **International Sustainability Standards Board (ISSB)**, which aims to harmonize sustainability accounting frameworks globally. The ISSB could play a key role in aligning standards such as GRI and SASB, providing a unified approach to sustainability reporting (IFRS, 2021).

8.2 Analysis of Regional Differences

Regional differences in sustainability accounting practices are influenced by various factors, including regulatory pressure, cultural attitudes toward corporate responsibility, and the economic landscape. Europe has taken the lead in mandating comprehensive sustainability reporting through the **CSRD**, which requires companies to disclose a range of non-financial information on climate change, human rights, and social issues (European Commission, 2021). This regulatory push has driven high levels of adoption across multiple industries, particularly in the energy, manufacturing, and financial sectors.

In North America, particularly in the U.S., the sustainability accounting landscape is shaped more by voluntary frameworks such as **SASB** and **TCFD**, although regulatory changes are on the horizon with the SEC's proposed climate disclosure rules. The U.S. approach is more market-driven, with companies voluntarily adopting ESG disclosures to meet investor demands (Deloitte, 2021).

In the Asia-Pacific region, countries like Japan and South Korea have shown proactive efforts in adopting sustainability accounting, while others like China and India are still developing

comprehensive reporting mechanisms. The varying levels of regulatory enforcement and economic priorities explain these regional disparities. Developing economies face the added challenge of balancing sustainability efforts with economic growth, leading to slower adoption rates (CDP, 2021).

8.3 Key Challenges Identified in Sustainability Accounting

The research identifies several key challenges companies face when integrating sustainability accounting into their operations:

- 1. Data Collection and Reporting Complexity**
One of the most significant challenges is the difficulty in collecting, verifying, and reporting ESG data. Companies often struggle with inconsistent data sources and metrics, making it hard to provide accurate, comparable information (KPMG, 2020). In particular, small and medium-sized enterprises (SMEs) lack the resources to track and report ESG metrics effectively.
- 2. Lack of Standardization Across Frameworks**
Although frameworks like GRI, SASB, and TCFD have become widely adopted, the lack of harmonization among them creates challenges for multinational corporations. Companies must navigate different requirements depending on the region or regulatory environment in which they operate. This lack of standardization not only increases compliance costs but also creates confusion for investors and stakeholders seeking consistent, comparable information (EY, 2022).
- 3. Integration with Financial Reporting Systems**
Another key challenge is integrating sustainability metrics into existing financial reporting systems. Many companies still treat sustainability reporting as a separate process from financial disclosures, making it difficult to present a holistic view of performance. This separation can also lead to inconsistencies in the quality of sustainability disclosures (CDP, 2021).
- 4. Regulatory and Compliance Costs**
Regulatory frameworks like the EU’s CSRD impose additional costs on companies, especially those that have not yet established robust sustainability reporting systems. Compliance with new reporting standards often requires companies to invest in new technologies, hire specialized staff, and overhaul existing reporting processes (European Commission, 2021).

8.4 The Role of Regulatory Bodies in Future Developments

The evolution of regulatory frameworks is playing a crucial role in shaping the future of sustainability accounting. The **EU’s CSRD** is one of the most influential initiatives, with its mandate expected to affect more than 50,000 companies, requiring them to disclose extensive non-financial information (European Commission, 2021). This regulatory pressure is expected to push other regions to adopt similar frameworks, contributing to the global standardization of sustainability accounting.

In addition, the **SEC’s climate disclosure rules** in the U.S. could have a significant impact on global practices. Once implemented, these rules will require companies to disclose climate-related risks and opportunities, aligning U.S. practices more closely with those in Europe (SEC, 2021). This shift could serve as a catalyst for other regions to enhance their regulatory frameworks, further harmonizing global sustainability reporting standards.

The establishment of the **ISSB** represents another pivotal development. By creating a unified global standard for sustainability reporting, the ISSB could address many of the challenges related to the lack of standardization and inconsistent reporting practices (IFRS, 2021). However, its success will depend on widespread adoption by countries and regions that currently rely on different reporting frameworks.

8.5 Emerging Trends and Their Long-Term Impact

Several emerging trends are expected to shape the future of sustainability accounting:

- 1. Digitalization and Automation of ESG Reporting**
The integration of digital tools and technologies into ESG reporting is becoming increasingly important. Companies are adopting digital platforms that allow for real-time tracking and reporting of sustainability metrics, improving data accuracy and efficiency. Automation of ESG data collection and reporting could significantly reduce compliance costs and minimize reporting errors (EY, 2022).
- 2. Increased Focus on Climate-related Disclosures**
The growing emphasis on climate-related risks and opportunities is shaping the future of corporate reporting. Frameworks like TCFD, which focus on climate disclosures, are gaining prominence as investors demand more transparency on how companies are addressing climate change (CDP, 2021). As climate risks become more financially material, climate-related reporting is likely to become a central component of sustainability accounting.
- 3. Standardization of ESG Data and Metrics**
The move toward standardizing ESG data and metrics is another important trend. Regulatory bodies, industry groups, and standard-setting organizations are increasingly collaborating to develop consistent frameworks for reporting sustainability information. The creation of the ISSB is a step in this direction, as it seeks to harmonize existing standards and simplify sustainability reporting (IFRS, 2021).
- 4. Investor and Stakeholder Pressure for Greater Transparency**
Investors and stakeholders are demanding greater transparency in sustainability reporting, particularly as ESG factors become more material to financial performance. Companies are increasingly being evaluated not just on their financial performance but also on their ability to manage ESG risks and opportunities. This trend is likely to drive continued improvements in sustainability accounting practices, as businesses seek to meet investor expectations and build long-term value (KPMG, 2020).

CHAPTER 9. CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

The global state of sustainability accounting has seen significant development in recent years, with a growing emphasis on integrating environmental, social, and governance (ESG) factors into corporate reporting. This shift reflects a broader societal demand for increased transparency and corporate responsibility, driven by regulatory requirements, investor expectations, and stakeholder engagement.

Our analysis of different regions and industries reveals that while Europe, North America, and Asia-Pacific have made substantial progress in sustainability reporting, the degree of adoption, standardization, and quality of reporting varies. Europe leads in regulatory initiatives, with directives like the Corporate Sustainability Reporting Directive (CSRD) pushing companies toward comprehensive sustainability disclosures. Meanwhile, North America shows high adoption of sustainability standards but lacks mandatory frameworks as stringent as the EU's. Asia-Pacific exhibits high reporting rates but with less regulatory pressure and more voluntary engagement.

Key challenges remain in adopting and integrating sustainability accounting. Companies face difficulties related to data collection, quality, and the alignment of sustainability reporting with financial reporting. Furthermore, regulatory complexity, costs, and a lack of standardization in sustainability metrics complicate the adoption process. Despite these challenges, emerging trends such as the integration of digital tools, increased investor focus on ESG metrics, and the growing harmonization of standards signal a promising future for sustainability accounting.

9.2 Recommendations

Based on the research conducted, several recommendations emerge for the improvement and broader adoption of sustainability accounting practices across industries and regions:

1. **Strengthening Global Standardization:** To address the challenge of fragmented reporting frameworks, global regulatory bodies and standards organizations, such as the International Financial Reporting Standards (IFRS) Foundation and the Global Reporting Initiative (GRI), should work towards greater harmonization of sustainability reporting standards. This would enhance comparability and reliability of reports across regions and industries.
2. **Promoting Mandatory Sustainability Reporting:** Governments and regulatory bodies should consider adopting more mandatory sustainability reporting requirements, particularly in regions where reporting is still voluntary. This would ensure a level playing field for companies and encourage wider adoption of best practices in sustainability accounting.
3. **Investing in Digital Tools and Data Management:** Companies should invest in digital tools and real-time data management solutions to enhance the quality and timeliness of sustainability data. The integration of technology can streamline the data collection process, reduce costs, and improve the accuracy of sustainability metrics.
4. **Enhancing Corporate Training and Expertise:** A major challenge identified is the lack of expertise in sustainability accounting within many organizations. To overcome this, companies should invest in training programs to build internal capacity and

expertise in ESG reporting and accounting. Collaboration with academic institutions and sustainability professionals can bridge the knowledge gap and drive better integration of sustainability practices.

5. **Fostering Greater Collaboration Across Supply Chains:** Companies should also collaborate more closely with their supply chain partners to improve sustainability practices at every level. By aligning sustainability goals across the supply chain, companies can ensure that their reporting is more comprehensive and that they are collectively working toward reducing their environmental and social impacts.
6. **Focusing on Materiality and Stakeholder Engagement:** To make sustainability reporting more relevant, companies should focus on materiality assessments and actively engage with their stakeholders. This helps to identify the most significant sustainability issues and ensures that the reports are tailored to the needs of both internal and external audiences, from investors to customers.
7. **Driving Innovation Through Regulatory Frameworks:** Policymakers should consider using regulatory frameworks to drive innovation in sustainability accounting. For instance, providing incentives for companies that adopt advanced digital tools for ESG data reporting could accelerate the adoption of cutting-edge solutions that improve both transparency and reporting accuracy.
8. **Linking Sustainability to Corporate Strategy:** Lastly, sustainability accounting should be more closely integrated into a company's overall corporate strategy. By aligning ESG metrics with long-term business objectives, companies can create value not only for shareholders but also for the broader community, contributing to the achievement of global goals such as the United Nations Sustainable Development Goals (SDGs).

The conclusions and recommendations above reflect the global trends, challenges, and future opportunities in sustainability accounting. Incorporating these recommendations can help advance sustainability practices across regions and industries, ultimately driving more transparent, accountable, and sustainable corporate behavior.

List of abbreviations:

CSR – Corporate Social Responsibility

CSRD – The EU Proposal for Corporate Sustainability Reporting Directive

ESG – Environmental, Social, and Governance

EU – European Union

GRI – Global Reporting Initiative

IFRSF – International Financial Reporting Standards Foundation

NFRD – Non-financial Reporting Directive

SASB – Sustainability Accounting Standards Board

SDGs – Sustainable Development Goals

CSRD – The EU Proposal for Corporate Sustainability Reporting Directive

TCFD – Task Force on Climate-related Financial Disclosures

IIRC - International Integrated Reporting Council

TBL – Triple Bottom Line

NGOs – Non-Governmental Organisations

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