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**Supervisor**

Ch. Prof. Francesco Ballarin

**Graduand**

Chiara D'Antona  
Matriculation number  
889171

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## Introduction

In recent years, because of a growing awareness towards the global challenge posed by climate change issues, sustainability has increasingly become a central concern worldwide. Sustainability accounting has emerged as a critical field in the realm of corporate reporting and accountability, as it plays a pivotal role in tracking and communicating the environmental, social, and economic impacts of organizations, ultimately contributing to the broader goal of sustainable development. The scope of this paper is to examine the implementation and importance of sustainability accounting, within the broader practice of sustainability reporting, for achieving global sustainable development.

The paper is structured across four chapters. In the first chapter, the theoretical foundations of sustainability accounting are examined. The chapter begins by defining sustainability accounting and tracing its brief historical evolution. Then, the factors that have led to the emergence of environmental accounting are explored, including external pressures from stakeholders and internal shifts in cost dynamics. Additionally, the concept of double materiality is introduced, and the complexities associated with materiality assessments in sustainability reporting are discussed.

In the second chapter, the focus shifts towards the standardization of sustainability accounting practices. The theoretical underpinnings of standardization efforts, including institutional theory, legitimacy theory, and stakeholder theory, are examined closely. Furthermore, the main sustainability reporting initiatives and their distinct approaches to materiality assessment are examined. This includes an in-depth exploration of initiatives concentrating on impact materiality, such as the Global Reporting Initiative (GRI) and the European Union's framework, as well as those centred on financial materiality, such as the Sustainability Accounting Standards Board (SASB) standards and the Task Force on Climate-Related Financial Disclosures (TCFD). The challenges associated with the present landscape of sustainability reporting initiatives are also underscored.

The third chapter offers a comprehensive overview of various sustainability accounting concepts and techniques. Concepts like Full Cost Concept (FCC), Total Cost Assessment

(TCA), Carbon Accounting, and Life-Cycle Assessment (LCA) are thoroughly explored. In addition, the complexities of Full-Cost Accounting are elaborated upon, with a focus on internal and external costs and the application of Activity-Based Cost Allocation in this specific context.

The fourth chapter is dedicated to the examination of sustainability accounting within the real estate sector. The pivotal role played by the real estate industry in the pursuit of sustainability goals is thoroughly explored. Moreover, relevant initiatives within the real estate sector, including the European Union standard and industry-specific voluntary initiatives, are examined in depth. Subsequently, the SASB approach to the real estate sector is examined in depth to pinpoint material issues within the sector. These encompass aspects such as sustainability services, transparent information management, energy and water management, and adaptation to climate change. The chapter concludes with a presentation of a case study of an asset management company operating in the real estate industry, offering a practical illustration of sustainability accounting in action within the examined industry.



# Chapter I Sustainability accounting: theoretical framework

## 1.1. Definition of sustainability accounting and brief history

While the individual concepts of “sustainability” and “accounting” have, by now, been covered by extensive scientific literature and provided with clear definitions, the aggregated concept of “sustainability accounting” is yet to be clearly delineated. However, while a universally accepted definition is still lacking, the discipline’s essential elements and classification are gradually coming together, and there seems to be consensus on the three main factors of sustainability accounting, which are the environmental, social and economic dimensions, or the so-called “triple bottom line” (TBL) (Szoka & Gacser, 2021, p. 3). Sustainability accounting can be therefore broadly defined as a form of accounting that goes beyond traditional financial accounting, by integrating social, environmental, and economic facets of an organisation's activities. Accordingly, we can differentiate three types of sustainability accounting (Schaltegger & Burritt, 2010):

a) Environmental accounting, which involves measuring and reporting the environmental impacts of an organisation, such as resource consumption, greenhouse gas emissions, waste generation, and pollution. It helps organisations identify areas for improvement in terms of resource efficiency, pollution prevention, and the adoption of environmental practices.

b) Social accounting, which focuses on assessing and reporting the social impacts of business operations. It considers factors such as employee well-being, labour practices, human rights, community engagement, and contributions to social development. Social accounting provides organisations with insights into their social responsibilities and helps them address societal concerns.

c) Economic accounting, which in the context of sustainability involves integrating financial information with non-financial data to assess the long-term economic viability and value creation potential of an organisation. It considers factors such as investment in sustainable practices, risk management, and the alignment of business strategies with sustainability goals.

The concept of sustainability accounting, within the broader topic of sustainability reporting, has appeared in scientific literature at the end of the 20th century. In 1994, Gray proposed three methods in which companies could approach sustainability accounting: the “Inventory Approach”, the “Sustainable Costs Approach”, and the “Resource Flow-through” or “Input Output Approach” (Gray, 1994). His work, “Corporate Reporting for Sustainable Development: Accounting for Sustainability in 2000AD”, became extremely influential, being later presented at the 2002 World Summit on Sustainable Development, which took place in Johannesburg, South Africa, and, to this day, is the most referenced work on the subject (Szoka & Gacser, 2021). In 1994, J. Elkington coined the term “Triple Bottom Line”, which, to this day, still is a buzzword in the discussion surrounding sustainability. According to Elkington, “the Triple Bottom Line agenda focuses corporations not just on the economic value that they add, but also on the environmental and social value that they add – or destroy” (Elkington, 1994).

A very important milestone for sustainability accounting was reached in the year 1997, in Boston, when the Coalition for Environmentally Responsible Economies (CERES), together with the involvement of the United Nations Environment Program (UNEP), established the Global Reporting Initiative (GRI) (Szoka & Gacser, 2021), a long-term, multi-stakeholder, and international process whose aim was to create the first accountability mechanism to ensure companies adhere to responsible environmental conduct principles. This objective was later broadened to adhere to the concept of TBL, thereby including social, economic and governance issues (Global Reporting Initiative [GRI], n.d.). This resulted in the first version of the GRI Guidelines (G1), published in 2000, which provided the first global framework for sustainability reporting (GRI, n.d.). The GRI Guidelines are an important and widespread tool for the progress towards the achievement of sustainability goals, and it will be treated in more depth in a later chapter of this paper.

With the increasing recognition of sustainability as a critical aspect of business success, the need for organisations to account for their environmental, social, and economic impacts grew over time (International Federation of Accountants [IFAC], 2015). At the present date, around the world a wide range of comprehensive voluntary and mandatory frameworks of standards are in use. Amongst the numerous initiatives, which include the GRI framework, the European Union contributed substantially to establish a regulatory standard for

sustainability: today, the EU's most important action towards the standardization of sustainability accounting is the Directive on Non-Financial Reporting (NFRD) (Directive 2014/95/EU). The Directive requires companies to include non-financial statements annually, including measures that encompass all three components of the TBL. The Directive applies to public-interest companies, approximately 6,000 in total (including listed companies, banks, and insurance companies). The Directive recommends the use of international standards such as UN Global Compact, OECD Guidelines, ISO 2600, and GRI standards.

As a tool to facilitate the implementation of the NFRD Directive and help companies publish environmental and social information, in June 2017 the European Commission published the "Guidelines on non-financial reporting", and in 2019, as a key component of its effort to solidify the underpinnings of sustainable investment, the European Commission pledged to reevaluate the NFRD (European Commission [EU], 2020a). As a result, on April 21<sup>st</sup>, 2021, the Commission put forth a proposal for a Corporate Sustainability Reporting Directive (CSRD), which entailed modifications to the prevailing reporting mandates outlined in the NFRD (Directorate-General for Financial Stability, Financial Services and Capital Markets Union [DG FISMA], 2023). In this context, the European Financial Reporting Advisory Group (EFRAG) was designated as the technical advisor to the European Commission and in April 2022 it produced 13 exposure drafts outlining the European Sustainability Reporting Standards (ESRSs) (European Financial Reporting Advisory Group [EFRAG], 2022). The assortment encompasses two primary standards: "ESRS 1", which deals with fundamental principles, and "ESRS 2", which focuses on disclosure requirements, strategy, governance, and materiality assessment. Furthermore, it covers 11 additional standards that span across the three key areas of sustainability: environment, society, and governance (EFRAG, 2022).

Effective since January 5<sup>th</sup> 2023, the proposal expanded the scope of NFRD to all listed companies and introduced mandatory EU sustainability reporting standards for environmental, social, and governance aspects (Directive 2022/2464/EU). As reported by the Wall Street Journal (2023), it is expected that, initially, approximately 50,000 companies will be directly impacted by the CSRD's widened scope; a number that will increase when the CSRD will be applicable for listed small and medium enterprises (SMEs) starting in 2026.

## **1.2 Environmental accounting: reasons for emergence**

In recent years, the world has seen an increasing involvement of financial and non-financial accounting in the environmental discourse and today a large number of companies in developed countries collect, use, and distribute information related to the natural environment (Schaltegger & Burritt, 2010). The factors behind the increasing concern for management over environmental matters and for the development of environmental management information systems can be split into external and internal factors<sup>1</sup>.

### *1.2.1 External factors: stakeholder pressure*

Environmental incidents such as the Exxon Valdez oil spill in Alaska in 1989, or natural habitat loss such as the deforestation of the Amazon and other tropical rainforests (Khor, 2010) have dramatically brought to light the impacts of companies on the environment. As a result, companies' operations, like the recycling of materials and the waste of resources, have been brought into public scrutiny (Ayres, 2004). The nature and extent of these environmental impacts has not gone unquestioned in academic literature either: as summarised by Stern (2006) scientific opinions largely agree on the fact that "there is now clear scientific evidence that emissions from economic activity, particularly the burning of fossil fuels for energy, are causing changes to the Earth's climate". Cumulatively, these industrial impacts cause worldwide problems with increasingly recognised drastic global consequences, relating to water, food, health, land, and the environment (Stern, 2006).

The argument commonly put forward by environmental accounting researchers, is that the authority of organisations may be seen as legitimated by society through minimally accepted moral standards (legally enshrined) and through collective societal moral responsibility (Gray, Owen, & Maunders, 1987, 1988, Wicks, 1992, as cited in Jones, 2010). Today, as the awareness of environmental degradation increases, society is more and more concerned about sustainability and demands accountability from businesses too, through a wider disclosure of information leading to improved company accountability. All stakeholders want to collect information about a company's impact on the natural environment, and

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<sup>1</sup> In addition, reduction of trade barriers and increasing globalisation of the economy have led to additional competition between companies. The pressure to produce and supply goods and services in the most efficient manner also encourages to satisfy stakeholders demands as efficiently as possible. This provides an additional incentive for companies to improve data management about their eco-efficiency and accountability for environmental impacts (Schaltegger & Burritt, 2010).

sustainability accounting, as a supplementary system to traditional accounting and a tool for sustainability reporting, is increasingly being demanded by the majority of internal and external stakeholders.

It could be argued that increasing the transparency of a company's financial, ecological and social impacts is not always convenient for businesses, which could feel threatened to lose their power over competition or feel pressured to increase economic costs to align to environmental goals to keep consumers or shareholders. However, modern economic theory (Porter, 1980) argues that businesses can increase their market power and gain comparative advantage by being more transparent about their operations through the implementation of a better relationship with their stakeholders. Sustainability accounting and reporting can in fact facilitate dialogue, collaboration, and informed decision-making between businesses and stakeholders, leading to stronger relationships and shared value creation. By transparently disclosing their environmental and social performance and by keeping themselves accountable, organisations can also increase trust and credibility from all their stakeholders, the most important - investors, shareholders, customers, employees, and communities – are outlined in the rest of this chapter.

1. **Investor and shareholder relations:** although in terms of long-term investment returns, there is no doubt that shareholders pay more attention to the current economic benefits of enterprises (Nie, 2016, as cited in Xin et al., 2020), in recent years the public's awareness of corporate social responsibility has rapidly increased, and more stakeholders now require companies to disclose non-financial information about the company. Guo (2019, as cited by Xin et al., 2020) has found that when managers face pressure from shareholders to pursue non-financial reporting, they are more likely to choose to respond compliantly to this pressure. Shareholders can therefore significantly influence management decisions and play a controlling and guiding role in the field of corporate governance; as a result, companies with a high demand of shareholders are more likely to disclose environmental accounting reporting (Xin et al., 2020). The past decade has also witnessed a significant rise of interest in sustainability among mainstream investors, who want to integrate sustainability considerations into their portfolio, not only divesting from sustainability laggards, but actively investing

in sustainability leaders. Sustainable accounting plays a crucial role in attracting and retaining sustainable investment, and by providing comprehensive and reliable sustainability information, organisations can build investor confidence, showcase their commitment to sustainability, and, as a result, access capital on favourable terms (Esty & Karpilow, 2019). Investors are particularly concerned with issues such as effective investment of environmental conservation cost, whether the results of that investment are sufficiently in line with initial plans and are comparable with trends at other companies, and whether latent environmental risk, which can have a serious effect on future corporate value, is being sufficiently considered (Esty & Karpilow, 2019).

2. **Customer relations:** customers are becoming more conscious of the environmental and social impacts of the products and services they consume. Sustainable accounting allows organisations to communicate their sustainability efforts and achievements to customers. This transparency helps to build trust, enhance brand reputation, and attract customers who prioritise sustainable choices. A survey conducted in 2022 in the UK by Deloitte, shows that currently there is an issue of trust: nearly one in two consumers either do not know what commitments businesses have made that they can trust or simply do not trust businesses on climate change and sustainability issues. The survey showed that what customers valued most would be having a transparent, accountable, and socially and environmentally responsible supply chain (Deloitte, 2022). Therefore, it can be argued that having a strong public perception, commitment and record on climate change and sustainability through sustainable accounting helps businesses gain and improve their consumer's trust and attract potential new customers (Xin et al., 2020).
3. **Employee engagement:** demonstrating an organisation's commitment to environmental and social responsibility through sustainable accounting supports employee engagement and retention. Employees are concerned with corporate social responsibility and increasing corporate value, but also, and arguably most importantly, about the stable growth of the organisations to which they belong, ensuring their own employment and wage earning, and maintaining environmental safety at their workplace (Xin et al., 2020). Additionally, by sharing sustainability

information, organisations can foster a sense of purpose and pride among employees, attracting and retaining top talent who align with the organisation's values (Xin et al, 2020). Finally, employees directly participate in the development and implementation of corporate strategies, including those related to environmental accounting reporting, as well as reflecting, representing, and supporting activities related to environmental accounting, and therefore can actively pressure organisations to set up sustainable accounting methods (Xin et al., 2020).

4. **Community engagement:** sustainable accounting enables organisations to engage with local communities by sharing information on their contributions to local development, job creation, and social well-being, which can build positive relationships, mitigate potential conflicts, and contribute to the sustainable development of the communities in which they operate. They may be expected to analyse environmental accounting data from the perspective of issues such as the management of hazardous substances, the existence of proactive environmental activities and their results, details about latent environmental impacts and preventative measures, and other social responsibility issues (Xin et al., 2020).

#### *1.2.2 Internal factors: changing cost relations*

Although stakeholder attitudes provide a necessary condition for the emergence of sustainable accounting, most often they are not a sufficient requirement for organisations to set up sustainable accounting methods and standards. Indeed, for most organisations, the main reason for introducing the practice of sustainability accounting is the logical consequence of changed relative costs and benefits (Schaltegger S. & Burritt R., 2010).

Until the 1990s, environmental compliance costs and environmental impacts caused by company activities were either not significant or not easy nor cost-effective for most manufacturing firms to monitor. At the same time, the costs of measurement and recording were relatively high (Schaltegger & Burritt, 2010). In the past decade, however, this relationship has been reversed through development and enforcement of the “Polluter-Pays Principle” (PPP)<sup>2</sup>, widely accepted in OECD countries; as a result, today, environmental

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<sup>2</sup> The European Court of Auditors (2021) defines PPP as the principle by which: “polluters bear the costs of their pollution including the cost of measures taken to prevent, control and remedy pollution

compliance costs are large and are still increasing for many firms, whereas information systems for tracking those costs have become relatively inexpensive, as government regulatory agencies in many countries and the evolution of the accounting profession have encouraged the tracking of such costs (Schaltegger & Burritt, 2010). In other words, it can be stated that the opportunity cost of neglecting environmental issues has been substantially rising, and, although there is encouragement for organisations to be mindful of the TBL, the economic and financial bottom line still permeates business thinking and is at present the main driver for business actions (Ditz et al., 1995: 6, as cited in Schaltegger & Burritt, 2010). Schaltegger and Burritt (2010) have outlined three ways in which sustainability accounting can financially help businesses improve their performances and their operations:

1. **By improving resource efficiency:** sustainability accounting provides organisations with valuable insights into their resource consumption, waste generation, greenhouse gas emissions, and other sustainability metrics. By analysing these data, businesses can identify inefficiencies, optimise processes, reduce costs, and improve resource management practices.
2. **By better managing risk:** sustainability accounting facilitates risk management by identifying and assessing environmental and social risks. It allows organisations to proactively address potential risks related, for instance, to climate change, regulatory changes, supply chain disruptions, and reputational issues. By considering these risks, organisations can develop resilience strategies and ensure long-term business continuity.
3. **By efficiently monitoring operations:** sustainability accounting helps in monitoring the implementation of sustainability initiatives, fostering internal accountability, and driving continuous improvement. Furthermore, by tracking KPIs and performance indicators, businesses can evaluate the effectiveness of their sustainability initiatives and make data-driven decisions for improvement.

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and the costs it imposes on society. By applying the principle, polluters are incentivised to avoid environmental damage and are held responsible for the pollution that they cause. It is also the polluter, and not the taxpayer, who covers the cost of remediation”.



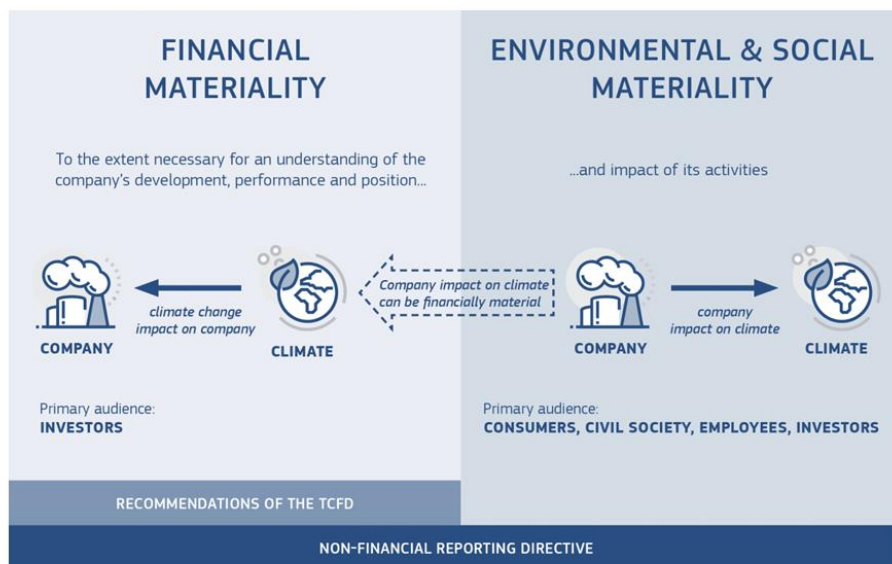
To summarise, in the context of sustainability businesses must consider two perspectives: the sustainability-related impacts on the company, but also the impacts of the company on climate and any other dimension of sustainability. While considering their own interests, companies are therefore encouraged to examine how their actions affect the very resources and people they rely upon to function, thereby helping each business gain a more complete picture of the organisation, its activities, and its role in a wider context. This concept is known as “double materiality” and will be treated in the next chapter.

### **1.3 Double materiality**

Double materiality is a fundamental principle in sustainability accounting that recognizes the interdependence between an organisation's impacts on the external environment and its susceptibility to environmental and social risks. It therefore entails the consideration of both internal impacts (financial effects of environmental and social issues on the organisation) and external impacts (organisation's effects on the environment and society) in reporting and decision-making processes (GRI, 2021). By adopting a double materiality approach, organisations can address both the risks they face due to external factors and the risks they pose to the environment and society.

The concept of double materiality was first formally introduced by the European Commission in its “Guidelines on Non-financial Reporting: Supplement on Reporting Climate-related Information” published in June 2019. The European Union’s CSRD requires companies that must report under it to undertake a “double materiality assessment” in accordance with ESRS regulations, to identify which sustainability matters are most material to the organisation and its stakeholders. Furthermore, the ESRS regulations highlight that a sustainability issue becomes “material” for reporting by an organisation when it fulfils the outlined criteria for impact materiality, financial materiality, or both. When a sustainability concern is deemed material, companies are obligated to reveal information according to the disclosure criteria set forth in the ESRS standards, relating to that specific matter (European Commission, 2019b). The double materiality approach as indicated in the CSRD encourages a company to judge materiality from two perspectives, the financial dimension, and the environmental and social dimension (as indicated in Figure 1), and to analyse how the two concepts intertwine (European Commission, 2019b). Further information on the definitions of materiality used by standard setters and major actors can be found in Appendix 1.

**Figure 1**  
*Schematization of the NFRD and double materiality*



\* Financial materiality is used here in the broad sense of affecting the value of the company, not just in the sense of affecting financial measures recognised in the financial statements.

Source: European Commission. Guidelines on reporting climate related information (2019).

Specifically, the financial dimension focuses on the materiality of sustainability issues to an organisation's financial performance and long-term viability. It involves assessing the financial risks and opportunities arising from environmental and social factors. For example, climate change impacts, such as extreme weather events or regulatory changes, can affect an organisation's operations, supply chains, and market demand. By considering these factors, organisations can make informed decisions that safeguard their financial interests (European Commission, 2019b).

The environmental and social dimension, on the other hand, considers the materiality of an organisation's environmental and social impacts to external stakeholders and the wider society. It involves understanding and reporting on the organisation's contributions to environmental degradation, social inequalities, and sustainable development. By addressing these impacts, organisations can enhance their reputation, build stakeholder trust, and contribute positively to societal well-being (European Commission, 2019b).

By integrating an approach that values both financial and non-financial consequences, organisations can enhance their understanding of the interconnectedness between their own performance and the broader environmental and social context. Furthermore, “the enhanced

stakeholder engagement required by the double-materiality analysis contributes to diverse and reciprocal accountability relationships between the organisations, their stakeholders, and the wider society and enables discussions and evaluations on sustainable development” (Cooper & Morgan, 2013; Brown & Dillard, 2015; Puroila & Mäkelä, 2019, as cited in GRI, 2021).

However, research has identified several issues in applying double materiality. A white paper published by the GRI in 2021 on double materiality summarises some of its downsides as: “poor disclosure of the process of determining material sustainability issues; variation in the approach used by organisations to apply the GRI concept of materiality; stakeholder engagement is used to increase transparency and accountability but also to manage risks by reducing materiality attached to reporting information; organisations often lack skills to apply materiality to sustainability issues; assessment of materiality favours short-term financial interests; and, the materiality assessment process often falls outside the scope of sustainability assurance engagements” (GRI, 2021). Further challenges that arise with materiality assessments are analysed in the next chapter.

#### **1.4 Challenges with materiality assessments**

Materiality and materiality assessment processes play a crucial role in aiding companies to identify, manage, and report significant risks and opportunities effectively. Since materiality requires determining what information is subjectively relevant for each company, challenges persist in consistently applying a reliable approach according to current guidance, expectations, and practices. This issue is pertinent as materiality's various applications profoundly impact corporate disclosures, strategies, goals, and accounting methods (World Business Council for Sustainable Development [WBCSD], 2021).

Within sustainability reporting discussions, materiality is a subject of extensive debate. A 2021 WBCSD report titled "The Reality of Materiality" identifies approximately 95 documents, including white papers, guidance, and thought leadership articles, addressing materiality approaches and assessment. The literature generally conveys a prevailing sentiment that current materiality reporting practices may not optimally serve the needs of sustainability users. To enhance effectiveness, there's a need for mainstreaming and consolidating materiality approaches, ideally in the near future. Major voluntary

sustainability reporting frameworks acknowledge the demand for swift alignment (WBCSD, 2021).

The report outlines six significant challenges that businesses can encounter concerning the present concept of ESG materiality and materiality assessments (WBCSD, 2021).

### **1. Multiple perspective on materiality**

Research underscores the lack of clarity regarding materiality perspectives in guidance documents issued by certain standard setters, regulators, and stock exchanges. Notably, communications addressing materiality perspectives frequently lack precise definitions, or references to widely accepted ones. In cases where definitions are provided, they can diverge due to varying interpretations of value creation, time, intended users, and scope. The degree of convergence between these perspectives is context dependent.

This variability holds significance because a company's understanding and application of a materiality perspective directly influence the issues classified as material. Moreover, the chosen materiality perspective influences the materiality assessment process, impacting its design, outcomes, scope, boundaries, and consequently, the reported content and disclosure channels. Users of disclosed information also emphasise the importance of knowing the applied materiality perspective, akin to knowing the disclosed material topics.

In light of these considerations, companies are advised to evaluate their approach to materiality and clearly communicate the chosen materiality perspective during the materiality assessment process.

### **2. Conflicting guidance on materiality concepts and topics**

Consensus exists within the literature about the necessity for enhanced consistency and standardised approaches in determining ESG materiality. Research emphasises three key realms where increased uniformity could foster greater alignment in practices.

Firstly, while numerous guidance documents intend to aid companies in conducting materiality assessments, many underscore that materiality is contextually unique to each company. This leaves room for interpretation concerning the execution of an effective ESG materiality assessment.

Secondly, existing guidance from standard setters lacks comprehensive instructions on evaluating the relative significance of topics and performing comparisons. For instance, the challenge arises when comparing broad ESG themes, like climate change, to specific aspects, such as serious injury rates.

Thirdly, certain reporting mandates demand the disclosure of particular ESG topics and indicators, irrespective of their materiality as determined by the reporting entity. For example, legal requirements necessitate reporting on human rights adherence across operations as outlined by the EU's NFRD and the UK's Modern Slavery Act. Additionally, external entities like the WEF and UNCTAD prescribe core subjects for reporting across all companies. Balancing these diverse factors becomes imperative during the materiality assessment process.

Addressing these multifaceted considerations is crucial to clarify the purpose of materiality assessments. This, in turn, ensures that disclosed information is precise, pertinent, and serves as actionable guidance for the intended audience.

### **3. Multiple stakeholders, multiple opinions**

Companies are facing growing pressure to address the concerns of numerous stakeholders, which presents a prominent challenge in the materiality process: determining what topics are actually material. The endeavour to consider all stakeholders' viewpoints runs the risk of falling into a scenario where "everything is material to someone".

In financial reporting, the audience and parameters are typically well-defined, catering to individuals with a certain level of financial understanding. Conversely, ESG disclosures target a broader audience, complicating the task of defining the audience's scope and knowledge level. While designating a specific disclosure

audience helps companies identify informational needs, it doesn't fully resolve the challenge of diverse viewpoints on materiality. Differences in perspectives regarding materiality can exist both among and within stakeholder groups.

In the context of assurance assignments, providers need to address materiality from various vantage points—report level, qualitative information level, and quantitative level. In the absence of a defined ESG report audience, challenges arise in determining the accuracy of information, establishing thresholds, and ensuring the reliability of material assessments during assurance tasks.

#### **4. Materiality is dynamic**

A collaborative 2019 paper jointly drafted by the Carbon Disclosure Project (CDP), the Climate Disclosure Standards Board (CDSB), GRI, the Sustainability Accounting Standards Board (SASB), and the International Integrated Reporting Council (IIRC), introduced a conceptual standpoint on nested and dynamic materiality. This dynamic concept recognizes that sustainability topics can transition from being of general interest to influencing enterprise value creation, ultimately finding a place in financial statements (Carbon Disclosure Project [CDP] et al., 2019). Other literature emphasises the evolving nature of the materiality lens, raising questions about the appropriate time horizon for remaining responsive within this dynamic landscape (WBCSD, 2021).

Research has identified a disconnect between the time horizons applied to risk assessments for mainstream financial reporting and those applied to the materiality process. This discrepancy weakens the efficacy of materiality assessments if internally relevant information isn't integrated into decision-making. For companies, this underscores the importance of considering ESG issues not currently deemed material for effective risk evaluation, opportunity assessment, return on investment analysis, and forecasting.

A robust materiality assessment process should prominently outline the time horizons used and the frequency of materiality topic reviews. To anticipate and address emerging materiality concerns, companies could establish methodologies for

assessing future materiality, leveraging past data and techniques like expert elicitation and scenario analysis. Such approaches could help identify topics that might gain materiality in the future.

## **5. Materiality and fiduciary duty**

Within the realm of investors and asset managers, the prevailing perception is that fiduciaries are not obliged to consider the sustainability impact of their investments beyond financial performance. Nonetheless, the literature echoes a strong call for clarity regarding the role of fiduciaries. This encompasses whether they should be mandated to integrate financially material ESG factors into investment decisions and accommodate clients' sustainability preferences—regardless of these preferences being financially material in the conventional sense.

Discussion is ongoing as to whether fiduciaries not factoring material ESG subjects into their investment practices might breach their obligations. For companies, fiduciaries' heightened focus on material ESG topics could lead to intensified scrutiny of the materiality assessment process. This might entail requests to incorporate context-based, multi-capital evaluations, cumulative impacts, and scalability into forthcoming materiality approaches.

According to WBCS (2021), given that a company's Board of Directors holds a fiduciary duty to ensure long-term success, it becomes imperative for them to comprehend the business's material issues and their ramifications, along with dependencies on stakeholders. Elevating material ESG issues to the board's attention ensures a comprehensive understanding of pivotal risks and opportunities that influence value creation. This understanding empowers the board to effectively fulfil its fiduciary duties. Ultimately, the board bears the responsibility of scrutinising the materiality assessment, ensuring the presence of robust and pertinent information. The board's role is pivotal in resolving stakeholder tensions, as it falls upon them to assure the resolution of these tensions.

## **6. It's not financial information**

The practice of reporting on financially material topics is firmly rooted in accounting principles and regulations, underpinned by well-established data. In contrast, evaluating the materiality of ESG topics lacks a similarly developed infrastructure and supporting information. For companies to determine the materiality of ESG issues, they must conduct a materiality assessment, often involving input from pertinent stakeholders. This dynamic can lead to the omission of emerging ESG material concerns from current reporting practices, as companies might lack the necessary data collection, control, and management systems.

Consequently, companies must evaluate whether additional efforts are necessary to integrate management and data systems tailored to the identified material ESG subjects. This ensures robust reporting on these matters, even if the required infrastructure and underlying data are not currently in place.



## Chapter II Standardisation in sustainability accounting

According to the International Federation of Accountants (IFAC) and the Association of International Certified Professional Accountants (AICPA) (2023), “the need for a harmonised, global system for reporting useful information about sustainable practices is now clearer than ever before”. As specified by the IFAC 2023 report on global practice in sustainability disclosure and assurance, 86 percent of the assessed businesses utilised various standards and frameworks to prepare and disclose sustainability data (IFAC & AICPA, 2023). Furthermore, the report shows that the use of SASB Standards and the TCFD Framework has increased significantly between 2019 and 2021 and not with the same extent across all jurisdictions (companies in the Americas and Europe have steadily adopted them, while companies in the Middle East, and parts of Asia have lagged) (IFAC & AICPA, 2023). The report additionally discloses that the International Auditing and Assurance Standards Board (IAASB) issued the International Standard on Assurance Engagements (ISAE) 3000 (Revised) which remains the most widely used assurance standard to review non-financial information included in sustainability reporting.

Furthermore, the report found that 70 percent of the time, companies that obtained sustainability assurance from a professional accountant engaged their statutory auditor to also review their ESG disclosures. However, in seven jurisdictions, non-accountancy service providers performed most assurance engagements, although narrower in scope—focused on greenhouse gas or other environmental metrics. Assurance enhances trust and confidence in ESG information, and the systems and controls used to collect and report data. It also supports informed capital allocation decisions. IFAC and AICPA believes this fragmented practice neither supports consistent, comparable, and reliable information, nor provides a foundation for globally consistent, high-quality sustainability assurance (IFAC & AICPA, 2023).

### **2.1 Theoretical framework**

The theoretical framework for the standardisation of sustainability accounting frameworks is a multidisciplinary approach that draws from fields such as accounting, sustainability studies, organisational theory, and institutional theory. This framework seeks to understand the motivations, processes, and implications of establishing standardised frameworks for

reporting and measuring sustainability-related information within organisations. The key theoretical perspectives within this framework include:

- institutional theory,
- legitimacy theory, and
- stakeholder theory.

### *2.1.1 Institutional theory and isomorphism*

At its core, institutional theory delves into the mechanisms by which organisations respond to external pressures and align themselves with prevailing institutional standardised practices, which serve as the foundation for shaping appropriate behaviours and operational strategies within the context of sustainability. By adhering to standardised reporting frameworks, organisations project their commitment to sustainability, conforming to established norms that society deems suitable for responsible and accountable business conduct. In the matter of voluntary corporate disclosures, the central notion of the theory is that external pressures can explain why organisations lean towards uniform actions and communication within the organisational domain (DiMaggio and Powell, 1983, as cited in Tavares & Dias, 2018). As organisations are not isolated entities and exist within a larger ecosystem that exerts pressures and expectations upon them, regulatory mandates, stakeholder demands, and competitive forces all contribute to the institutional pressures that influence an organisation's decision to adopt standardised reporting practices. These pressures can arise from various stakeholders, ranging from investors seeking transparency, to customers demanding ethical and sustainable products and services (Tavares & Dias, 2018).

Furthermore, the institutional theory's literature underscores how organizational structures and processes become isomorphic<sup>3</sup> within specific organizational norms (Tavares & Dias, 2018), and tries to justify the process of isomorphic change in organizations, contending that forces promote convergence in business practices (Braunscheidel et al., 2011, as cited in Tavares & Dias, 2018). As further analysed by Leaptrott (2005, as cited in Tavares & Dias, 2018), certain sectors or institutional domains feature influential environmental agents that can impose structural practices on subordinate units. These units, under isomorphic

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<sup>3</sup> DiMaggio and Powell (1983, as cited in Tavares & Dias, 2018) define isomorphism as “organizations adopting similar structures and systems, aligning their practices”.

pressures, adopt "institutionalised" norms and practices to gain legitimacy. Institutional isomorphism enhances organizational success and resilience by enabling the recognition of distinct mechanisms through which organizations adapt to their institutional environment, ultimately resulting in institutional change characterized by isomorphism. DiMaggio and Powell (1983, as cited in Tavares & Dias, 2018) also note that within an organizational field, uncertainty tends to amplify isomorphic tendencies.

According to institutional theory, accounting practices are the result of the institutional nature and of the economic pressures from their institutional environment, operating in an open system. Touron (2005, as cited in Tavares & Dias, 2018) further affirms that institutional theory offers partial insights into elucidating organisational behaviour concerning international accounting standards. Within this context, normative isomorphism plays a pivotal role, while mimicry serves as a justification for the adoption of accounting standards.

### *2.1.2 Legitimacy theory*

Legitimacy theory postulates that organisations ardently seek to both attain and uphold legitimacy in the discerning eyes of stakeholders and the broader society. This legitimacy, within this context, is based on the extent to which an organisation's conduct and practices harmonise with prevalent societal norms, values, and anticipations. An organisation deemed fully legitimate evades inquiry and sidesteps alternatives (Meyer & Scott, 1983). In other words, legitimacy theory delves into the study of universal stakeholder acceptance of an organisation. In the landscape of sustainability reporting and accounting, organisations confront escalating pressures from stakeholders—investors, patrons, regulatory bodies, and civil society factions—urging them to manifest their unwavering commitment to sustainable practices (Tavares & Dias, 2018).

Legitimacy theory specifically underscores the salience of stakeholder perceptions in moulding organisational comportment. Organisations acknowledge that their legitimacy hinges on how stakeholders perceive their actions, hence, the integration of standardised reporting methodologies serves as an instrument for organisations to positively regulate and influence these perceptions. By adhering to established reporting frameworks, organisations furnish an organised, transparent portrayal of their sustainability initiatives. This, in turn,

nurtures stakeholder faith and assurance, augmenting the organisation's legitimacy and bolstering its societal status (Tavares & Dias, 2018).

Organisations frequently align their reporting practices strategically with societal expectations, aiming to garner or sustain legitimacy even when internal practices may not be perfectly attuned to reported efforts. This phenomenon, often dubbed the “legitimacy gap”, underscores the strategic underpinnings of standardised reporting. While organisations might genuinely partake in sustainability endeavours, the adoption of standardised reporting concurrently bridges potential disparities between societal expectations and actual practices, thereby embellishing perceived legitimacy. Researchers generally agree that corporate disclosure is on the rise and is expected to continue increasing in the future (Collin et al., 2009).

### *2.1.3 Stakeholder theory*

The stakeholder theory and legitimacy theory share a close alignment, often working in harmony as complementary concepts (Deegan, 2002). Indeed, rather than being competing theories, they mutually enhance the comprehension of practices related to corporate social and environmental disclosure, despite their differing viewpoints.

Central to the notion of corporate social disclosures is the imperative for organisations to legitimise their actions, prompting management to respond to community expectations (Wilmshurst and Frost, 2000). Situated within a broader social framework, organisations risk jeopardising their legitimacy if their values conflict with societal norms. Safeguarding their legitimacy involves a strategic consideration of all stakeholders to prevent the erosion of support. In this endeavour, the use of environmental and social reports becomes pivotal as a means of communication. The stakeholder theory proposes that organisations must adeptly navigate the multifaceted interests and concerns of varied stakeholder groups (Collin et al., 2009). This spectrum of groups encompasses not only employees, customers, and suppliers but also extends to communities, regulators, and non-governmental organisations. These stakeholders are fundamentally invested in the organisation's activities and outcomes, wielding the power to significantly influence strategies, decisions, and reporting practices (Collin et al., 2009).

In the realm of sustainability reporting, stakeholder theory underscores the critical importance of organisations engaging in meaningful dialogues with their stakeholders to comprehend expectations and align reporting endeavours accordingly. Within the more restricted domain of sustainability accounting, stakeholder theory provides a robust framework for delving into the motivations driving the adoption of standardised reporting practices. By prioritising the interests of stakeholders, organisations can utilise standardised reporting as a mechanism to convey their sustainability endeavours and performance in a manner that resonates with the concerns of diverse stakeholder groups. This transparency in reporting allows organisations to proactively address stakeholder concerns encompassing environmental impact, social responsibility, and ethical conduct, thereby fostering an atmosphere of trust and collaborative effort (Collin et al., 2009).

Moreover, stakeholder theory emphasises a symbiotic reciprocity between organisations and their stakeholders. Beyond merely reacting to stakeholder demands, organisations actively seek to shape stakeholder perceptions and attitudes. The strategic deployment of standardised reporting permits organisations to proactively manage stakeholder perceptions by showcasing their unwavering dedication to sustainable practices and responsible business conduct. This mutual alignment cultivates a sense of shared purpose and collective advantage, forging a collaborative front where organisations and stakeholders unite around sustainable objectives and outcomes (Collin et al., 2009).

Finally, an important aspect highlighted by stakeholder theory centres on the notion of stakeholder engagement. Organisations that proactively integrate stakeholders into their decision-making processes stand better poised to grasp diverse viewpoints and identify common goals. This form of engagement transcends conventional information dissemination; it involves a dynamic, two-way exchange of ideas, concerns, and expectations. In the context of sustainability reporting, this mode of engagement gains paramount importance, resonating with the multifarious concerns of diverse stakeholder groups, and thereby allowing organisations to provide information that is relevant, precise, and meaningful (Collin et al., 2009).

## **2.2 Leading initiatives and their approach to materiality**

Current initiatives can be categorized into two distinct groups based on the stakeholders they target, following the structure proposed by De Cristofaro and Gulluscio (2023). The first group is comprised of initiatives directed at a wide range of stakeholders, including investors, and places a strong emphasis on assessing external impacts, encompassing aspects related to the economy, environment, and society. Examples of initiatives falling into this group are the GRI framework, which focuses exclusively on impact materiality, and initiatives undertaken by the European Commission, which adopts a dual materiality approach.

The second group includes initiatives whose primary targets are investors and places a greater focus on financial materiality in their assessments (De Cristofaro & Gulluscio, 2023). The most prominent and widely accepted initiatives falling within this category include the SASB Standards and the TCFD Framework.

A summary of the main initiatives and their approach to double materiality can be found in Appendix 2.

### *2.2.1 Initiatives focused on impact materiality or double materiality*

The main initiatives falling under this classification encompass the GRI framework, which places its emphasis on the materiality of impacts, and initiatives and directives undertaken by the European Commission, which adopts a dual approach to materiality.

#### *2.2.1.1 The Global Reporting Initiative (GRI)*

Founded in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and later joined by the United Nations Environment Programme (UNEP), GRI has achieved significant milestones over time. From the launch of its initial G1 guidelines in 2000 to the establishment of comprehensive sustainability reporting standards in 2016, GRI has not only evolved into the most widely accepted sustainability reporting framework, according to KPMG 2022 survey, but has also paved the way for sector-specific standards (notably, it has initiated the development of sector-specific sustainability reporting standards for around 40 different sectors, including those for the oil and gas industry and the mining and coal industry) (KPMG, 2022).

Given GRI's widespread popularity, numerous scholars have scrutinised this framework from diverse perspectives. For instance, Junior et.al (2017) have treated GRI as a proxy for comparing companies within the same industry, revealing substantial variations in reporting practices even after implementing the same framework. Further research carried out by Dumay et al. (2010) indicated that, while it had gained remarkable traction among private organisations, GRI remained less prominent within the public and third sectors. Current data shared by GRI (2023), shows however an increased adoption of GRI by governmental organisations in relation to environmental policies.

The fundamental goal of the GRI framework is to empower external parties to assess the environmental impact arising from a company's operations and its supply chain (GRI, 2023). GRI's most recent reporting frameworks, the revised “Universal Standards”, were unveiled in October 2021, taking effect for reporting purposes in January 2023. These “Universal Standards” are designed to be applicable to all organisations and address core sustainability issues pertaining to a company's influence on the economy, society, and the environment. Additionally, GRI offers “Sector Standards” tailored to specific industries, particularly those with substantial environmental footprints, such as the oil and gas, coal, agriculture, aquaculture, and fishing sectors. Moreover, GRI's “Topic Standards” compile disclosures pertinent to specific thematic areas, including waste, occupational health and safety, biodiversity, energy, diversity, and equal opportunity.

GRI's standards, which are centred around impact materiality, easily align and frequently integrate smoothly with other standards that adopt different approaches to materiality. A notable instance of this harmonious interaction is evident in the European Union's Corporate Sustainability Reporting Directive (CSRD), which became effective on January 5, 2023. GRI played an active and influential role in shaping the European Sustainability Reporting Standards (ESRS), which were presented to the European Commission by the Sustainability Reporting Board (SRB) operating within the European Financial Reporting Advisory Group (EFRAG). This collaborative endeavour ensures coherence between GRI's global standards, emphasizing impact materiality, and ESRS, which places a dual focus on materiality.

### *2.2.1.2 The European Union's framework*

The European Union's trajectory toward embracing the concept of double materiality embarked with the enactment of the Non-Financial Disclosure Directive (NFDD) (2014/95/EU). The Directive, an amendment to the Accounting Directive 2013/34/EU, introduced provisions for non-financial and diversity information in the reporting of certain substantial corporations and groups. In a departure from the traditional assessment criteria of company performance, results, and business context, a new dimension emerged: the integration of external repercussions arising from business activities. The NFDD mandates the incorporation of non-financial statements in annual reports or separate filings, effective from 2018 onwards. These encompass a spectrum of aspects including environmental preservation, social engagement, employee well-being, human rights adherence, anti-corruption measures, bribery prevention, and board diversity. Notably, the Directive applies to public-interest entities boasting over 500 personnel within the EU, constituting an estimated 6,000 companies and groups spanning listed firms, banks, insurance entities, and other public-interest establishments. To ensure comprehensive standards, the Directive recommends adherence to established international norms such as the UN Global Compact, OECD Guidelines, ISO 2600, or GRI. The directive also encompasses amendments to the existing Accounting Directive 2013/34/EU.

In June 2017, the European Commission introduced extensive guidelines with the specific aim of facilitating consistent and comparable non-financial reporting (Network for Greening the Financial System [NGFS], 2019). Building on this foundation, the Commission further fortified these guidelines in June 2019, releasing supplementary guidelines that integrated recommendations from the Task Force on Climate-related Financial Disclosures (TCFD). Concurrently, Article 8 of the Taxonomy Regulation was introduced, mandating financial and non-financial organisations, falling under the scope of the Non-Financial Reporting Directive (NFRD), to integrate information in their non-financial statements and elucidating the degree of their involvement with environmentally sustainable economic activities.

In December 2019 the European Commission released the Communication on the European Green Deal. This marked a commitment to reviewing the non-financial reporting directive by 2020, a commitment deeply intertwined with the overarching strategy of fortifying the foundations of sustainable investment. In harmony with this commitment, the Commission



initiated a public consultation on the revision of the NFRD on February 20<sup>th</sup>, 2020. A significant evolution came to light with the 2019 update to the guidelines: this iteration, singularly focused on climate change, introduced the concept of double materiality. Notably, this concept found resonance not only within the domain of non-financial reporting but also in the realm of sustainable finance regulation, particularly concerning sustainability disclosures within the financial services sector, as specified by Regulation EU/2019/2088. According to the 2019 guidelines, the ambit of materiality enshrined by the NFDD, although it mainly focuses on the environmental-social materiality, encompasses also financial materiality. It's worth noting that financial materiality extends beyond mere financial metrics acknowledged in financial statements, encompassing facets that influence the overall value of the company. In contrast, the "impact" facet encapsulates social and environmental materiality, a dimension that is increasingly captivating investor interest. Remarkably, the 2019 guidelines introduced an illustrative visualisation that, although centred on climate change, lucidly elucidates the two distinct dimensions of impact perspectives in materiality assessment. Furthermore, it elucidates that socially and environmentally impactful factors could potentially evolve into aspects of financial materiality.

The year 2020 witnessed the joint efforts of EFRAG and the European Lab, which led to the establishment of the Project Task Force. The aim was to lay the groundwork for formulating the EU's non-financial reporting standards. The resultant summary report effectively outlined the twin prisms of double materiality as "impact" and "financial." The report also detailed the crucial components entailed in identifying pivotal sustainability concerns. Significantly, the report underscored the distinct nature of financial materiality in the context of sustainability reporting, in contrast to financial reporting. Furthermore, the report introduced the concept of dynamic materiality. Essentially, this acknowledged that numerous impacts on society and the environment could be considered "pre-financial," signifying that these impacts might eventually transform into material aspects for financial reporting purposes over time.

The 2021 Proposal for a Corporate Sustainability Reporting Directive (CSRD), subject to two revisions in 2022, mandates major and listed companies—except micro-enterprises—to divulge a dual spectrum of impacts. These encompass the impact experienced by companies concerning performance and advancement (termed the "outside-in" perspective), along with

the impact exerted by companies on society and the environment (termed the "inside-out" perspective). Notably, this marks a pivotal shift from non-financial to sustainability information, demanding disclosure grounded in one or both materiality perspectives.

In April 2022, a significant achievement was reached as the EFRAG unveiled a comprehensive collection of 13 exposure drafts for the European Sustainability Reporting Standards (ESRSs). This extensive assortment includes two main standards, ESRS 1 ("Principles for General Reporting") and ESRS 2 ("General Disclosure Requirements, Strategy, Governance, and Materiality Assessment"). Furthermore, it incorporates 11 standards that are categorized within three thematic areas of sustainability: environment, society, and governance (De Cristofaro & Gulluscio, 2023).

On January 5<sup>th</sup>, 2023, the Corporate Sustainability Reporting Directive (CSRD) was enacted. The directive's charter involved a comprehensive modernization and bolstering of regulations governing the disclosure of social and environmental information by companies. This translated into a more expansive ambit, with not just large companies but also listed SMEs being mandated to report on sustainability facets. The fundamental objective is to provide investors and stakeholders the necessary insights to evaluate the influence of companies on both society and the environment, while also allowing investors to gauge the financial ramifications of sustainability issues, particularly those rooted in climate change. A secondary advantage involves reduced reporting costs for companies over the long run, achieved through standardised data provision. Implementation will commence with the 2024 financial year, with reports scheduled for publication in 2025<sup>4</sup>.

Looking ahead, companies encompassed by the CSRD range must adhere to the European Sustainability Reporting Standards (ESRS). These standards, developed by EFRAG, function as an independent body representing a diverse spectrum of stakeholders. The

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<sup>4</sup> The implementation of the CSRD will be phased in gradually, contingent upon the size of the companies. Starting from January 1, 2024, it will apply to large public-interest companies (those with over 500 employees) that are already under the purview of the Non-Financial Reporting Directive (NFRD), and their reports will be due in 2025. From January 1, 2025, it will encompass large companies not currently subject to the NFRD (those with more than 250 employees and/or €40 million in turnover and/or €20 million in total assets), and their reports will be due in 2026. Starting on January 1, 2026, it will apply to listed SMEs and other entities, with reports due in 2027. SMEs have the option to opt out until 2028 (Normative, 2023).

standards reflect the specific tenets of EU policies while simultaneously contributing to international standardisation endeavours. An additional layer of participation was introduced through a public feedback phase inaugurated on June 6<sup>th</sup>, 2023. During this four-week interval, draft sustainability reporting standards were open to scrutiny and commentary. This input, informed by technical advice from EFRAG and conveyed in November 2022, aims to enhance the robustness and relevance of the emerging standards.

In conclusion, the European Union, adopting a multi-stakeholder perspective, has embarked on a distinctive path through the concept of double materiality. This approach positions the EU not as a competitor, but rather as a complementary entity to other frameworks. Notably, the EU's integration goes beyond the idea of GRI and SASB Standards' complementary nature. The notion of leveraging both sets of standards as a robust foundation for a comprehensive solution within the context of double materiality has led scholars to consider compliance with both standards as an empirical proxy for double materiality (Pizzi et al, 2022) .This concept underscores the notion that the combined adoption of these two frameworks not only meets the criteria of individual materiality assessments but also encapsulates the intricate interplay between financial and non-financial facets, rendering a holistic representation of impact. Scholars and practitioners alike recognize this unique synthesis as an opportunity to transcend conventional boundaries and craft a nuanced narrative that encapsulates both business value creation and societal and environmental contributions.

### *2.2.2 Initiatives focused on financial materiality*

This section examines two major voluntary initiatives: the SASB Standards and the TCFD Framework. Despite originating from different sources, these two sets of standards are best seen as complementary. The TCFD framework outlines essential elements and wide-ranging disclosure suggestions, and, as stated in its 2017 report, it explicitly avoids crafting "detailed, industry-specific standards or metrics for disclosing [climate-related] risks." More detailed voluntary standards, such as the SASB standards, fulfil this need. While not initially intended to supplement the TCFD framework, SASB has now issued guidance on their combined utilisation (SASB, 2019).

### *2.2.2.1 The Sustainability Accounting Standards Board (SASB) standards*

The SASB standards are the predominant guidelines for sustainability accounting. As of 2020, more than 450 companies had embraced these industry-specific standards, with 234 among the S&P Global 1200 adopting them (SASB, 2020). SASB's Conceptual Framework (2017) portrays sustainability accounting as an augmentation of financial reporting, offering a more comprehensive perspective on a company's performance in critical areas that influence its long-term value creation.

SASB's strategy encompasses the formulation of operational metrics pertinent to industry-specific sustainability concerns that can impact existing or future financial value. This approach encompasses the definition of sustainability topics, with quantifiable metrics provided for 77 distinct sectors. SASB's topic selection adheres to several prerequisites: its potential to influence corporate value, investor interest, industry-wide relevance, feasibility of action by companies, and alignment with stakeholder consensus.

The chosen metrics must meet specific criteria that include fairness, utility, applicability, comparability, comprehensiveness, verifiability, alignment, neutrality, and inclusiveness. It's important to note that SASB's standards go beyond just climate-related data, covering five key sustainability dimensions: environment, social capital, human capital, business model and innovation, and leadership and governance. These standards require various industries to disclose data related to emissions and energy usage, which are crucial for assessing transition risks. Furthermore, certain metrics address physical risks, such as water management indicators that provide information on withdrawals and consumption, particularly in regions facing high stress, or grid resilience metrics for electric utilities, which encompass data on disruptions, their causes, and efforts to mitigate future challenges (Zdolšek & Beloglavec, 2023).

### *2.2.2.2 The Task Force on Climate-Related Financial Disclosures (TCFD)*

Established in 2015 by the Financial Stability Board, a global entity comprising members from twenty-four major economies and overseen by institutions like the European Central Bank and the International Monetary Fund, the TCFD serves a pivotal role in sustainability accounting and reporting. The TCFD's Overview Report (2021) clearly elucidates the

initiative’s objective: developing recommendations for more informative climate-related disclosures to facilitate well-informed investment, credit, and insurance underwriting decisions. Moreover, these disclosures aim to enhance understanding of carbon-linked asset concentrations in the financial sector and the system's vulnerability to climate-related risks.

In 2017, the TCFD unveiled its ultimate report, which outlines a voluntary framework for disclosing potential financial consequences of climate risks. This framework offers detailed instances of climate risks and their financial ramifications, stressing that these disclosures should be integral to annual financial filings, not separate sustainability reports. An essential characteristic of the recommendations is their universality; they are designed to be widely applicable, spanning sectors and jurisdictions. The framework's core structure revolves around four elements (EFRAG, 2021):

1. governance: “the organisation’s governance around climate related risks and opportunities”;
2. strategy: “the actual and potential impacts of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning”;
3. risk management: “the processes used by the organisation to identify, assess, and manage climate-related risks”;
4. metrics and targets: “the metrics and targets used to assess and manage relevant climate-related risks and opportunities”.

The TCFD framework has gained robust support from investors, regulators, and corporations. According to the TCFD's 2020 Status Report, its recommendations have garnered backing from 1,340 companies worldwide, including 219 from the United States. Within the European Union (EU), a 2020 survey on modifying the Non-Financial Reporting Directive revealed that 71 percent of respondents endorsed incorporating the TCFD framework into any proposed changes.

*2.2.2.3 Challenges with current initiatives*

In recent years, the emergence of voluntary frameworks and standards, exemplified by SASB and TCFD, has not effectively addressed underlying challenges. In 2017, SASB's State of Disclosure report highlighted that companies generally opt for a minimally

compliant approach to sustainability disclosure, failing to provide adequate information for efficient decision-making and pricing. Recent reports echo this sentiment: for instance, a 2020 study by Bolstad et al. noted an increase in disclosure volume but highlighted that firms often share too general information lacking practical value.

Furthermore, TCFD's 2020 Status Report revealed that only 17 percent of companies discussed their process for incorporating climate change into risk management, and merely 7 percent covered strategy resilience – both crucial disclosures. The most common reported recommendation was identifying disclosed risks and opportunities, yet only 41 percent of companies fulfilled this. Despite numerous corporations endorsing the TCFD framework, a mere 8 percent adhere to the recommendation of providing climate risk information in their annual reports (TCFD, 2020). In sum, the expansion of voluntary frameworks has not fully resolved the challenges, as evidenced by insufficiently detailed disclosures and non-compliance even within committed corporations.

## Chapter III Sustainability accounting frameworks

### 3.1 Overview of sustainability accounting concepts and techniques

Sustainability accounting involves measuring, tracking, and reporting the allocation of resources, costs, and risks associated with both environmental and social factors within industrial groups. Key concepts and methodologies within sustainability accounting include the Full Cost Concept (FCC), Total Cost Assessment (TCA), Carbon Accounting, and Life-Cycle Assessment (LCA).

#### 3.1.1. Full Cost Concept (FCC)

The FCC is a comprehensive framework that goes beyond traditional accounting practices to encompass the identification, assessment, and allocation of both conventional and environmental costs within an enterprise. It serves as an extension of socio-environmental accounting, aiming to measure the overall performance within the framework of Full Cost Accounting (FCA). Given its widespread use and importance, the FCA framework will be further analysed in the following chapter. What sets FCC apart is its inclusion of external social costs as perceived by society at large. In doing so, FCC provides a more holistic perspective on the true costs associated with an organisation's operations, including those that impact society and the environment. This broader understanding allows businesses to make informed decisions that consider their full impact and responsibilities in the realms of sustainability and social responsibility (Giang & Luong, 2022).

#### 3.1.2 Total Cost Assessment (TCA)

TCA is a financial analysis methodology that takes a comprehensive approach, encompassing a wide range of private costs and savings over an extended period (Beaver, 2000). It serves as a powerful tool for evaluating various projects within an enterprise, offering a nuanced perspective that considers not only potential cost savings, but also internal costs associated with these initiatives. TCA builds upon the foundation of conventional costs by going beyond the obvious and incorporating direct and indirect contingent costs. By embracing TCA, organisations gain a more thorough understanding of the financial implications associated with their projects and activities. This enables them to make informed decisions, not only factoring in immediate cost savings but also considering the long-term impacts, risks, and potential benefits.

In essence, TCA, just as FCC, empowers enterprises to engage in more prudent financial planning and project evaluation, contributing to more effective resource allocation and sustainable practices.

### *3.1.3. Carbon Accounting*

Carbon accounting, also referred to as “greenhouse gas accounting”, is a systematic approach used to specifically quantify the greenhouse gas emissions produced by an organisation. This practice is essential for assessing an entity's carbon footprint, whether it's a business, government body, or an individual (Normative, 2023).

Carbon accounting employs two primary methodologies: spend-based and activity-based, with a hybrid approach combining elements of both. The spend-based method calculates an organisation's greenhouse gas emissions by taking the monetary value of goods or services purchased and multiplying it by an emission factor. This factor represents the emissions generated per unit of financial expenditure, resulting in an estimate of emissions. In contrast, the activity-based method relies on data to determine the quantity of specific products or materials acquired by an organisation. Like the spend-based approach, the activity-based method also incorporates emission factors to assess the emissions associated with various activities. These emission factors are typically derived from scientific research. The hybrid methodology, recommended by the widely used Greenhouse Gas Protocol, combines the strengths of both approaches. It primarily utilises activity-based data while supplementing it with spend-based calculations to provide a comprehensive emissions assessment.

### *3.1.4. Life-Cycle Assessment (LCA)*

LCA) is a tool for identifying and comparing the whole life cycle environmental impacts of the creation, marketing, transport and distribution, operation and disposal of specific goods and services. That is, the environmental impacts of all phases of the product's life are assessed, from the time materials are extracted through manufacture, transportation, storage, use, recovery, reuse, and disposal. The approach considers direct and, ideally, related processes and hidden, non-market flows of raw materials and intermediate inputs, and waste and other material and energy outputs associated with the entire existence or ‘product chain’ or ‘system’. Typically, LCA involves comparing a small number of interchangeable products assumed to offer similar consumption services (H. Healy et al., 2013).



Numerous sustainability concepts have been declined from the LCA tool. For instance, Life-Cycle Costing (LCC) assesses environmental costs and is relevant for environmental accounting and budgeting. Streamlined LCA presents a more efficient approach, reducing costs and time in LCA execution. Life-Cycle Inventory (LCI) focuses on the inventory phase within LCA. Finally, Life-Cycle Management (LCM) integrates life cycle principles into business and management frameworks, moving beyond a one-time LCA assessment (The Global Development Research Center).

### **3.2 Full-Cost Accounting (FCA)**

The European Environmental Agency defines Full-Cost Accounting (FCA) as “a tool to identify, quantify and allocate the direct and indirect environmental costs of ongoing company operations. Full cost accounting helps to identify and to qualify the following four types of costs for a product, process, or project:

1. direct costs,
2. hidden costs,
3. contingent liability costs, and
4. tangible costs.

The 1990s witnessed a surge in research on FCA tools and practices. Bebbington, Gray, Hibbitt, and Kirk (2001) undertook a comprehensive analysis of relevant literature, culminating in four key points:

1. FCA has the potential to augment our understanding of organisational operations, prompting businesses to reconsider their premises and operational approaches;
2. some measures geared towards sustainable development may inadvertently deviate from their intended goals;
3. the inclusion of external costs in income calculations can have a significant impact on an organisation's bottom line, potentially turning profits into losses; and
4. FCA serves as a vital tool for organisations to comprehensively assess the costs incurred and those that may arise in fulfilling their societal responsibilities.

### *3.2.1. Internal and external Costs*

In their 2022 paper, Giang & Luong define and classify internal and external costs of FCA. According to this categorization, internal costs encompass four main subcategories:

1. **Conventional costs**, which encompass the standard expenses incurred in the acquisition of capital equipment, raw materials, and supplies.
2. **Hidden costs**, which result from attributing environmental costs to general overheads or from projecting future events with environmental impacts.
3. **Contingent costs**, which relate to uncertain future environmental expenses contingent on unpredictable events, such as the costs of future oil spill remediation.
4. **Image and relationship costs**, which are often intangible costs and are influenced by subjective perceptions of management, customers, employees, communities, and regulators. These costs may include expenses related to environmental reports and community activities, which are voluntary expenditures on environmental initiatives. However, they also yield tangible benefits arising from improved relationships and enhanced business image.

On the other hand, external costs can be split into two categories:

1. **Environmental degradation.** These costs encompass the depletion of natural resources, noise pollution, aesthetic impacts, residuals from air and water emissions, and long-term waste disposal. Remarkably, companies are not legally held responsible for these costs.
2. **Adverse effects on human beings.** These external costs encompass irreparable damage to health, alterations in the quality of life for local populations, and other adverse impacts on human welfare (for example, instances of cancer stemming from air emissions). These are often inadequately compensated for within the legal system.

Conventional management accounting systems tend to allocate environmental and social costs to general overhead accounts, inadvertently discouraging managers from actively seeking ways to reduce these costs (Giang & Luong, 2022). FCA, on the other hand, provides a solution by enabling managers to identify opportunities for cost savings. To achieve this, sustainability-related costs should be directly allocated based on relevant cost drivers, especially for activities that bear environmental costs. A notable approach used for cost-allocation within FCA is the Activity-Based Costing (ABC) approach.

### *3.2.2. Activity-Based Cost Allocation in FCA*

With the rise of the complexity of companies' operations, the weakness of traditional volume-based costing models became more evident. Managers have sought other ways of obtaining more accurate information about costs, being ABC one of the most prominent alternatives. ABC was first developed by practitioners and then introduced in several Harvard Business School teaching cases in the mid-1980s, mainly promoted by Robin Cooper and Robert Kaplan (Jing & Songqing, 2011).

ABC is defined as “an approach to the costing and monitoring of activities that involves tracing resource consumption and costing final outputs. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilises cost drivers to attach activity costs to outputs” (Chartered Institute of Management Accountant [CIMA], 2005). As further explained by Shihab & Prasad (2022), ABC is responsible for recognizing and quantifying all resource consumption activities within an enterprise, through a comprehensive assessment that encompasses the precise calculation of resource costs incurred during operations and the subsequent identification of cost drivers. All operational expenses are allocated to specific cost objects, typically products or services, constituting the core of cost calculation.

The guiding principle of ABC (Jing & Songqing, 2011) is grounded in the understanding that activities consume costs and consume resources. ABC takes a holistic approach by treating both direct and indirect costs, including periodic expenses, as equivalent components of product or service consumption costs. This expanded scope results in a more accurate assessment of product or service costs. ABC defines operations as activities or events conducted by enterprises to facilitate the consumption of resources related to their products or services. The conventional allocation of environmental costs using traditional costing methods often distorts cost information, leading to misguided decisions by companies. In contrast, the distinctive concept and allocation process of ABC provide more precise cost data, reflecting actual product costs objectively. By establishing diverse cost bases and allocating manufacturing costs, including environmental costs, based on various cost drivers, ABC offers a detailed breakdown of manufacturing costs aligned with specific product objectives. In the context of sustainability, the application of ABC for environmental cost allocation establishes a stronger connection between environmental costs and the

operations responsible for these expenses. This, in turn, empowers enterprises to make informed decisions aimed at reducing their environmental impact.

Shihab & Prasad (2022) outlined ABC's 7 Steps.

- Step 1: Identify the products that are the chosen cost objects. During this step, the main activities (which cause overhead expenses) are identified. Examples of these activities include Web site design and maintenance, order processing, product marketing, telephone support, product handling, and product shipping. The number of main activities identified (and used as a medium to trace overhead) is determined by the level of accuracy and reliability desired.
- Step 2: Identify the direct costs of the products.
- Step 3: Select the activities and cost-allocation bases to use for allocating indirect costs to the products.
- Step 4: Identify the indirect costs associated with each cost allocation base ("activity").
- Step 5: Compute the rate per unit of each cost-allocation base used to allocate indirect costs to the products.
- Step 6: Compute the indirect costs allocated to the products.
- Step 7: Compute the total costs of the products by adding all direct and indirect costs assigned to the products.

## Chapter IV Sustainability financial accounting in real estate

### **4.1 The role of the real estate sector towards sustainability goals**

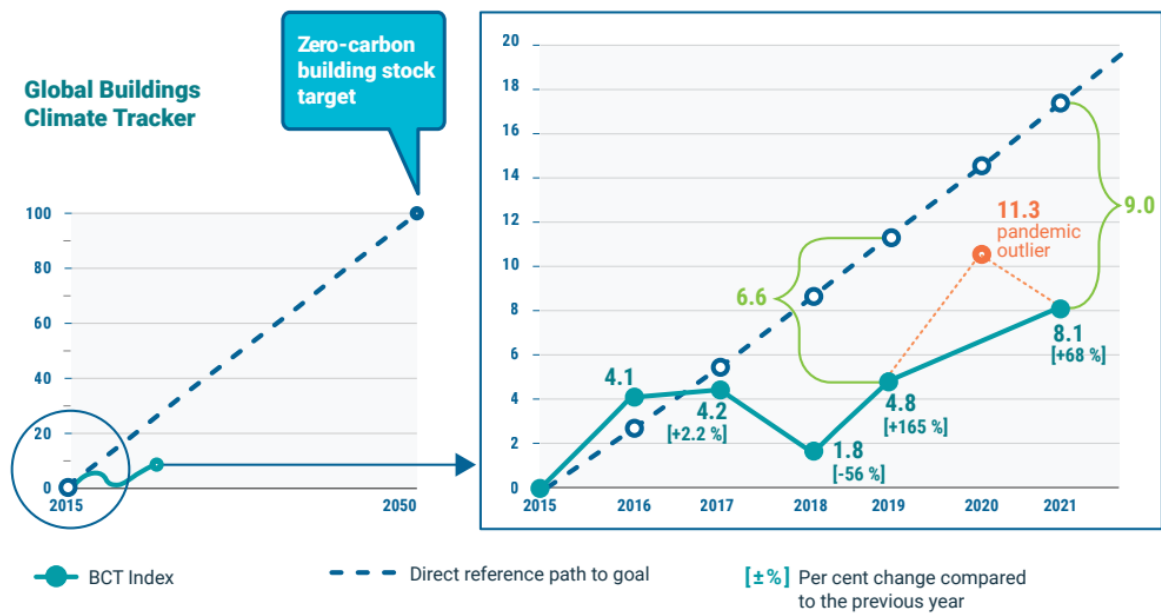
Following the COVID-19 pandemic, the real estate sector underwent a major change in 2020. This included a major drop in demand across major economies, workplace shutdowns, labour and material shortages, and energy affordability challenges, which ultimately resulted in the largest drop in CO<sub>2</sub> emissions in the last decade, as documented by the United Nations Environment Programme (UNEP) Global Status Report for Buildings and Construction published in 2021.

In 2021, however, construction activities returned to levels seen before the pandemic in most major economies, and many emerging economies further increased their reliance on fossil fuel gases in constructing buildings. As a consequence, the energy demand of buildings rose by approximately 4 percent compared to 2020, reaching 135 exajoules. This increase is the most significant in the past decade, according to the International Energy Agency's 2022 report, and it has led to a record high in carbon dioxide (CO<sub>2</sub>) emissions from buildings' operations, totalling about 10 gigatons (a 5 percent increase from 2020 and a 2 percent rise compared to the previous peak in 2019). When considering estimated CO<sub>2</sub> emissions from the production of building materials, such as concrete, steel, aluminium, glass, and bricks, the building sector accounted for roughly 37 percent of global CO<sub>2</sub> emissions in 2021 (United Nations Environment Programme [UNEP], 2021).

The resurgence in emissions highlights that there have been limited fundamental changes within the industry to reduce energy consumption or lower emissions, and that the year 2020 appears to have been an exceptional case in building emissions trends due to the pandemic outbreak. The 2022 update of the Global Buildings Climate Tracker reinforces this observation and indicates a widening disparity between the actual environmental performance of the sector and the required path towards decarbonization, as seen in Figure 2, despite numerous countries committing to enhance energy efficiency and providing detailed plans for reducing emissions from buildings in their nationally determined contributions (NDCs).

**Figure 2**

*Observed Global Buildings Climate Tracker compared to Path carbon-neutral building stock by 2050.*



*Source: United Nations Environment Programme, 2022*

Furthermore, in 2022, significant risks to the decarbonization trajectory arose due to the Russian invasion of Ukraine and the ensuing energy crisis in Europe. Further risks were posed by global energy price volatility, along with the cost-of-living crisis that many economies are still facing, and the implications of interest rate rises on investment in building decarbonization from governments, households, and businesses (UNEP, 2022).

It is generally agreed that the role of the real estate sector is fundamental in addressing the global challenge that climate change poses. The sixth assessment report from the Intergovernmental Panel on Climate Change (IPCC) for the mitigation working group published in 2022 sent a clear message that the buildings and construction industry offer significant global mitigation potential for reaching the Paris Agreement. Opportunities include improving existing buildings efficiency and use, high-performance new buildings, efficient lighting appliances and equipment in buildings, integrating renewables in buildings, and decarbonizing production of building materials. The consensus of the IPCC report is that buildings' operational emissions will need to drop by more than 95 percent compared to current levels, and that these reductions are cost-effective and beneficial to building occupants and energy security.

Furthermore, the growing and intersecting economic, energy, security, and climate crises both challenge and highlight the progress needed to decarbonize and to improve the resilience of the global buildings sector. In 2021 and onwards, many governments continued to act with a clear interest to address climate change and building sustainability in the real estate sector. The European Union's REPowerEU initiative, for example, has sought to improve the energy performance of buildings by boosting the take-up of efficiency retrofits, renewables and heat pumps, and the use of fiscal measures for energy efficiency products for buildings (European Commission, 2022).

According to the UNEP Global Status Report for Buildings and Construction, 2021, buildings and construction policies saw some progress in 2021, with 23 countries revising and updating their NDCs with a greater level of commitment to building efficiency and adaptation, and a greater level of detail. In addition, 80 percent of countries in 2021 referred to buildings as part of their NDC action plans, compared to around 69 percent in 2020. This is a positive sign as more governments recognize and make commitments to the role buildings play in their decarbonization actions. Building codes are particularly vital to addressing buildings' sector emissions and providing clear guidelines on their features. As of September 2022, 40 percent of countries had mandatory or voluntary regulations or codes for building energy performance – this marks an increase of only one country from the 2021 Buildings Global Status Report, due to Georgia formally applying the EU directive 2010/31/EU.

Ambition to act on buildings' emissions has therefore increased, but many experts agree that it must be matched by action in policy, regulation, and continued investment. For instance, UNEP (2022) highlights how 20 percent of the world's population still lives in countries whose NDC has none or limited references to buildings and argues that the ambition of NDCs must be matched by increased adoption of building energy code. Deloitte (2021) similarly argues that greater political and organisational leadership is needed to further prioritise and implement actions that support the decarbonization and sustainability transition of the built environment and transformation of construction materials production.

## **4.2 Relevant initiatives in the real estate industry**

Policy makers have only recently stepped up their efforts to curb climate change, environmental issues, and its negative impacts (Deepki, 2022). Among the initiatives relevant in the real estate sector, the European Union, among other players, have put a set of standards to help regulate ESG matters, including regulations around disclosure and transparency for companies, taxonomy for the asset management sector, and due diligence requirements. In addition to obligatory regulations, voluntary initiatives have developed to complement the obligatory ones.

### *4.2.1 The European Union standard*

As previously discussed in Chapter II, in recent years the European Union has greatly prioritized sustainable development, resulting in the establishment of impactful regulations, most notably the CSRD. Due partly to concerns about greenwashing, the European Commission further introduced the EU Taxonomy and the Sustainable Finance Disclosure Regulation (SFDR), which came into force in January 2022 and March 2021, respectively (European Commission, 2022; Deepki, 2023). After their introduction, the real estate industry, not only in Europe, but worldwide, has been faced with the challenge to tackle regulatory issues around the classification of funds in terms of ESG characteristics and objectives, and around new disclosure requirements (Deepki, 2023).

Regarding the Taxonomy, reporting alignment has become a major priority, depending on individual eligibility: developers need to consider externalities, such as circularity quotas, and to update business IT tools in order to document alignment, while asset managers are now faced with compiling climate risk assessments. Specifically, the regulation provides a framework that real estate asset managers can use to report on how their business activities contribute to six key sustainability principles (Deepki, 2023):

1. “climate change mitigation”,
2. “adaptation to climate change”,
3. “circular economy”,
4. “pollution prevention and control”,
5. “impact on the sustainable use and protection of water and marine resources”, and
6. “protection and restoration of biodiversity and ecosystems”.



On the other hand, the SFDR requires companies to disclose climate risks and other sustainability-related information incorporated into their financial products and general policies. This regulation encompasses specific real estate asset managers, as well as other entities involved in producing or offering real estate investment products (Deloitte, 2021).

Furthermore, from 2024, the CSRD will require companies to report on non-financial themes based on their materiality. Organisations should analyse their themes and set targets, define respective KPIs, and create an overview of the necessary ESG data. Deloitte (2021) advises real estate companies aiming at a more effective and stringent approach to decarbonization to consider the Science-Based Targets initiative (SBTi), which offers a valuable framework and is already applied by nearly 3000 companies globally (156 companies in the real estate industry).

#### *4.2.2 Industry-specific voluntary initiatives*

Amidst various regulatory changes, voluntary initiatives also continue to hold significance due to their established presence. According to Deepki (2022), opting to incorporate these initiatives into one's strategy represents a commendable approach that complements obligatory measures in the real estate sector, and that offers the potential to streamline conversations between asset managers and their clients. This is facilitated by a shared understanding of which ESG aspects are considered, assuming that the labelling criteria are transparent and well-defined (Deepki, 2022). The Global ESG Benchmark for Real Assets (GRESB) and The Carbon Risk Real Estate Monitor (CRREM) are among the most widely adopted initiatives in the present landscape, and some of the earliest to be developed.

GRESB is a “mission-driven and industry-led organization” (GRESB, 2023), which is globally recognized and widely used for assessing and benchmarking ESG performance of real estate and infrastructure assets. It provides a standardised framework and reporting system that allows real estate companies, asset managers, and investors to measure and compare their TBL performance by evaluating a wide range of factors (for instance, energy and water consumption, carbon emissions, sustainability policies and practices, social responsibility, and governance structure). GRESB assessments help organisations identify areas for improvement, demonstrate their commitment to sustainable practices, and meet the

growing demand from investors and stakeholders for transparent and responsible investment in real assets (Deepki, 2023; GRESB, 2023).

The Carbon Risk Real Estate Monitor (CRREM) is an open-source project funded by the European Commission, which serves as a tool for measuring transition risks, by offering decarbonization pathways tailored to various property types and geographic locations. The project aims at “supporting the industry to tackle these risks and foster investments in energy efficiency as many assets will become ‘stranded’ properties that will not meet future energy efficiency standards and whose energy upgrade will not be financially viable” (CRREM, 2023), and delivers an innovative framework that aids property owners, investors, and stakeholders in evaluating the carbon emissions associated with their real estate portfolios. The initiative also helps real estate companies comprehend the potential financial risks linked to climate change and carbon emissions, and the financial risks resulting from climate inaction, focusing on assessing stranding risk and reporting the financial consequences and losses stemming from inadequate energy performance (CREEM, 2023; Deepki, 2023).

In addition to voluntary initiatives and projects, several rating systems have emerged in recent years, influenced by these initial programs. Some of these systems have been tailored to align with national objectives and needs, while others strive to transcend existing building policies and norms. According to Deepki (2023), when it comes to labels, certifications, and ESG regulations in the real estate sector, France, the Netherlands, and the United Kingdom are at the forefront in Europe, with Italy also putting forward noteworthy initiatives, like the widely recognized ITACA protocol.

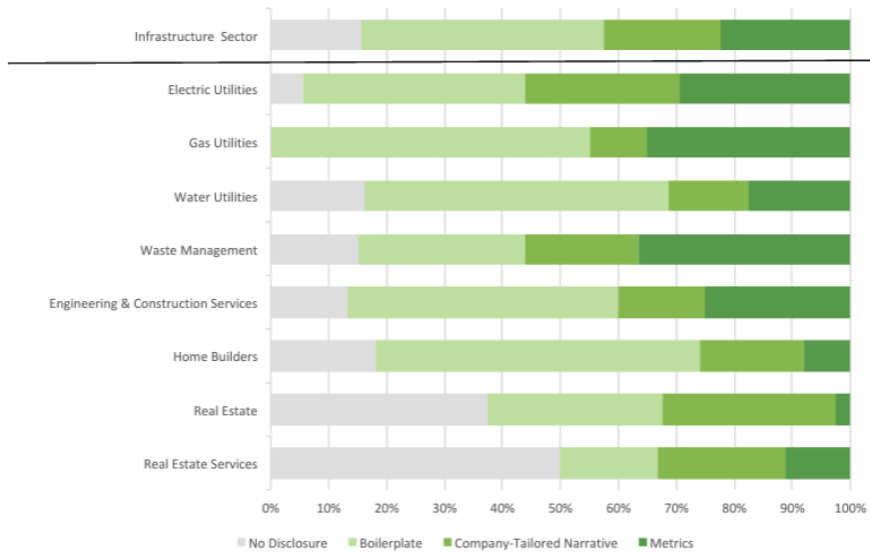
The ITACA protocol, a project developed in 2014 by the Italian Institute for Innovation and Transparency in Procurement and Environmental Compatibility, stands out as one of the most extensively applied tools at the national level for evaluating the energy and environmental sustainability of buildings. The ITACA model enables the evaluation of buildings' performance concerning aspects such as energy consumption and efficiency, and effects on both the environment and human health, emphasizing the construction of more innovative structures and the use of eco-friendly materials produced with minimal energy consumption. The protocol is applicable to residential, commercial, and industrial buildings, as well as offices and schools (ITACA, 2023; Deepki, 2023).

### 4.3 Material issues in the real estate sector: the SASB approach

Starting from 2016, SASB has published industry-specific standards for a total of 79 industries across 11 distinct sectors. According to a SASB State of Disclosure Report from 2017, 73 percent of the companies analysed covered at least three-quarters of the sustainability topics outlined in their industry standards (compared to 69 percent in the previous year), and 42 percent (as opposed to 39 percent in the previous year) provided disclosures on all SASB topics. While numbers indicate an overall positive trend, the report also highlights that more than 50 percent of sustainability disclosures were composed of generic "boilerplate" language<sup>5</sup>, making such disclosures less informative for investors, and that within the infrastructure sector, the Real Estate and the Real Estate Services sectors provided the lowest levels of disclosure, as displayed in Figure 3.

**Figure 3**

*Sustainability disclosure in SEC filings for the fiscal year 2015.*



*Source: Sustainability Accounting Standards Board (2017): The State of Disclosure 2017.*

The objective of the SASB framework is to identify topics that could potentially impact a company's financial health or operational performance which are not already included in the SEC Form 10-K, while also acknowledging that each company holds ultimate responsibility for determining the information to be disclosed. SASB argues that the disclosure of such

<sup>5</sup> SASB (2016) defines "boilerplate language" as "generic statements that are not specifically tailored to the individual company and the risks it faces".

additional information is fundamental in contributing to accurate assessment and comparability of disclosures. This information, referred to as "activity metrics", encompasses broad business data, like total employee count, volume of products or services, facility numbers, or customer count. Additionally, industry-specific data like plant capacity utilization, transaction volume, or proven and probable reserves (e.g., for oil and gas exploration and production firms) may also be included depending on the industry analysed (SASB, 2018).

Within the broader infrastructure sector, SASB identifies two industries which are relevant to the scope of this paper: "Real Estate Services" sector and "Real Estate Owners, Developers, and Investment Trusts" sector. In the following paragraphs are outlined the issues that are deemed as material by SASB within these industries.

#### *4.3.1. Real Estate Services*

The Real Estate Services industry is defined by SASB as an industry "composed of companies that provide a range of services to real estate owners, tenants, investors, and developers. Primary services include property management, brokerage, appraisal, and information services for real estate owners. Property management services may include leasing, tenant relations, building maintenance, and building security. Many companies also provide brokerage services, facilitating sales and leasing transactions. Appraisals and other advisory or information services are other specialised services that are commonly provided to clients. Companies in the industry play important roles in the real estate value chain, which is a substantial part of the global economy" (SASB, 2022, as cited in IFRS, 2022).

For the Real Estate Services Industry, SASB (2018, as cited in IFRS, 2022) has identified the following disclosure topics:

1. "Sustainability Services", and
2. "Transparent Information and Management of Conflict of Interests".

##### *4.3.1.1. Sustainability Services*

Within the Real Estate Services sector, it is essential to recognize that buildings owned or used by clients often have a considerable impact on sustainability. These buildings, along

with the activities that they host, play a pivotal role in driving energy consumption, direct and indirect greenhouse gas emissions, water usage, waste production, and indoor environmental quality – factors that can significantly influence the well-being of occupants. According to SASB (2018), companies operating in this industry possess a unique opportunity to enhance the sustainability aspects of buildings and their operations by offering sustainability-focused services. These services encompass various activities such as managing utility data, procuring energy efficiently, benchmarking energy and water usage, implementing resource efficiency measures, facilitating sustainability certifications, and providing sustainability consulting and training.

Moreover, SASB (2018) illustrates how companies in this sector can further contribute to building sustainability by structuring leases that incentivize both property owners and tenants to elevate their sustainability performance, all while delivering financial benefits to both parties. The provision of such services not only has the potential to drive revenue growth and boost client retention but also yields advantages for property owners and tenants in the form of increased asset values, greater tenant demand, reduced operational costs, and enhanced tenant experiences.

Specific accounting metrics used for assessing sustainability services in the SASB standards (2018, as cited in IFRS, 2022) include:

- “revenue from energy and sustainability services<sup>6</sup>”,
- “floor area and number of buildings under management provided with energy and sustainability services”, and
- “floor area and number of buildings under management that obtained an energy rating<sup>7</sup>”.

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<sup>6</sup> Energy and sustainability services are defined as services provided to clients directly related to resource efficiency (including energy, water, and waste), utility data management, energy procurement, obtaining and retaining sustainability and resource-related certifications, environmental reporting, and corporate sustainability consulting and training (SASB, 2018, as cited in IFRS, 2022).

<sup>7</sup> An energy rating is defined according to the GRESB Real Estate Assessment Reference Guide as “a scheme that measures the energy performance of buildings”, and includes, amongst others, Energy Star for operations in the United States and Canada, and E.U. Energy Performance Certificates (EPC) for operations in the European Union (SASB, 2018, as cited in IFRS, 2022).

#### *4.3.1.2. Transparent Information & Management of Conflict of Interest*

According to SASB (2018), the operational success of real estate services firms relies significantly on cultivating and maintaining trust and loyalty from their clients. To establish enduring, mutually beneficial relationships, these companies must consistently deliver services that adhere to the highest professional and ethical standards within the industry. SASB highlights that maintaining professional integrity is particularly critical, highlights SASB, given that the scope of services offered and the number of professionals within a single organisation can intensify the challenge of handling conflicts of interest effectively.

Certain services within this sector, such as brokerage and appraisal, carry a heightened risk of encountering conflicts of interest and potential negligence issues. To mitigate and prevent these risks, companies can institute various governance measures. These measures encompass employee training initiatives, rigorous oversight, and the development of policies, procedures, and enforcement systems that prioritise transparency and the provision of appropriate disclosures. Successfully managing these risks not only fosters greater client trust but also enhances the company's brand value within the market, ultimately contributing to sustained revenue growth over the long term. Conversely, inadequate risk management can result in regulatory fines and penalties, eroded client trust, and a decline in business opportunities (SASB, 2018).

Specific accounting metrics used for assessing transparent information and management of conflict of interest in the SASB standards (2018, as cited in IFRS, 2022) include:

- “brokerage revenue from dual agency transactions”,
- “revenue from transactions associated with appraisal services”, and
- “amount of legal and regulatory fines and settlements associated with professional integrity or duty of care”.

The disclosure topics and relative accounting metrics related to the Real Estate Services industry are summarised in Figure 4.

**Figure 4**

*Disclosure topics and relative accounting metrics related to the Real Estate Services industry.*

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Sustainability Services	Revenue from energy and sustainability services <sup>13</sup>	Quantitative	U.S. Dollars (\$)	IF0403-01
	(1) Floor area and (2) number of buildings under management provided with energy and sustainability services	Quantitative	Square feet (ft <sup>2</sup> ), Number	IF0403-02
	(1) Floor area and (2) number of buildings under management that obtained an energy rating	Quantitative	Square feet (ft <sup>2</sup> ), Number	IF0403-03
Transparent Information & Management of Conflict of Interest	Brokerage revenue from dual agency transactions <sup>14</sup>	Quantitative	U.S. Dollars (\$)	IF0403-04
	Revenue from transactions associated with appraisal services <sup>15</sup>	Quantitative	U.S. Dollars (\$)	IF0403-05
	Amount of legal and regulatory fines and settlements associated with professional integrity or duty of care <sup>16</sup>	Quantitative	U.S. Dollars (\$)	IF0403-06

*Source: SASB (2018).*

#### *4.3.2. Real estate owners, developers and investment trusts*

The Real Estate Owners, Developers & Investment Trusts sector, as identified by SASB (2018) within the broader infrastructure industry, encompasses companies engaged in the ownership, development, and management of income-generating real estate assets. Within this sector, SASB explains that businesses are frequently organised as Real Estate Investment Trusts (REITs), and they operate across various segments of the real estate industry, such as residential, retail, office, healthcare, industrial, and hotel properties. REITs typically specialise in direct ownership of real estate assets, offering investors an avenue to gain exposure to real estate without the need for direct asset ownership and management. While REITs often focus on specific segments of the real estate market, many diversify their investments across multiple property types. To be eligible for REIT status, firms need to retain a substantial portion of their holdings in real estate, derive the majority of their revenue from these holdings, and allocate a minimum level of their yearly taxable earnings to investors as dividends, among other criteria.

For the real estate owners, developers and investment trusts industry, the SASB standards (2018, as cited in IFRS, 2022) has identify the following disclosure topics:

1. “energy management”,
2. “water management”,

3. “management of tenant sustainability impacts”, and
4. “climate change adaptations”.

#### *4.3.2.1. Energy Management*

Real estate assets are significant consumers of energy, with their energy usage primarily tied to functions like space heating, ventilation, air conditioning, water heating, lighting, and the operation of equipment and appliances. The specific type of energy employed, the extent of consumption, and the strategies adopted for energy management largely depend on the type of real estate asset and various contextual factors. Typically, grid electricity represents the dominant energy source, although on-site fuel combustion also plays a crucial role. The responsibility for energy costs may lie with either the real estate companies themselves or the occupants of the properties. In either case, as highlighted by SASB (2018), effective energy management emerges as a pivotal concern within the industry.

SASB (2018) further illustrates that for real estate owners who bear the direct responsibility for energy expenses, these costs often constitute a substantial portion of operational expenditures, underscoring the critical nature of energy management. Factors such as energy price volatility, the prevailing trend of rising electricity costs, energy-related regulations, considerable variations in energy performance among existing buildings, and the potential for cost-effective capital investments to enhance efficiency all emphasise the significance of energy management. For occupants who share or fully assume energy costs, these expenditures can significantly impact real estate companies through distinct channels. The energy performance of a building significantly influences tenant demand since it empowers them to control operating costs, minimise environmental impacts, and uphold a reputation for responsible resource usage. Moreover, real estate owners may still face energy-related regulatory obligations even when energy costs are shouldered by occupants (SASB, 2018).

Overall, companies within the industry that adeptly manage the energy performance of their assets stand to gain advantages such as reduced operating costs, diminished regulatory risks, heightened tenant demand, increased rental rates, and improved occupancy rates—all of which contribute to revenue growth and the appreciation of asset values. Enhancing the energy efficiency of assets is contingent upon factors like property type, location, target tenant market, local building codes, opportunities for deploying distributed renewable



energy, the ability to monitor consumption, and the performance of the existing building stock, among other considerations (SASB, 2018).

Specific accounting metrics related to energy management identified by the SASB standards (2018, as cited in IFRS, 2022) include:

- “energy consumption data coverage as a percentage of floor area, by property subsector”,
- “total energy consumed by portfolio area with data coverage, percentage grid electricity, and percentage renewable, each by property subsector”,
- “like-for-like<sup>8</sup> change in energy consumption of portfolio area with data coverage, by property subsector”,
- “percentage of eligible portfolio that has obtained an energy rating and is certified to ENERGY STAR®, by property subsector<sup>9</sup>”, and
- “description of how building energy management considerations are integrated into property investment analysis and operational strategy”.

*4.3.2.2. Water Management*

As outlined by SASB (2018), buildings are substantial consumers of water for various purposes, including water fixtures, building equipment, appliances, and irrigation systems. The operational expenses stemming from water usage can be substantial, contingent upon property characteristics, tenant activities, geographic location, and other variables. In the real estate industry, companies may assume responsibility for a building's water costs or the common area water expenses, although it's common practice to allocate some or all of these costs to occupants. In such arrangements, effective water management remains crucial, impacting tenant demand and regulatory compliance (SASB, 2018).

Tenants often evaluate the water efficiency of real estate assets to manage operational costs, reduce environmental impacts, and cultivate a reputation for responsible resource usage. Moreover, real estate owners may find themselves subject to water-related regulations, even when water costs are the tenants' responsibility. Overall, companies within the industry that

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<sup>8</sup> Of the current fiscal year in comparison to the previous fiscal year (SASB, 2018).

<sup>9</sup> The registrant may additionally disclose the percentage by energy rating scheme (i.e., by country), if the asset is not located in the United States (SASB, 2018).

adeptly manage water efficiency, even in cases where they are not directly responsible for water expenses, can enjoy benefits such as reduced operating costs, decreased regulatory exposure, heightened tenant demand, increased rental rates, and improved occupancy rates—all of which contribute to revenue growth and the appreciation of asset values (SASB, 2018).

Past patterns of escalating water expenses, in conjunction with the anticipation of ongoing hikes driven by factors such as excessive usage, restricted resources resulting from population expansion and shifts, pollution, and climate fluctuations, emphasize the increasing importance of effective water management. The ability to improve water efficiency within properties depends on various factors, including property category, local water accessibility, the desired tenant demographic, compliance with local construction regulations, the capability to track consumption, and the current efficiency status of the building inventory, among other factors to be taken into account (SASB, 2018).

Accounting metrics related to water management in SASB standards (2018, as cited in IFRS, 2022) include:

- “water withdrawal data coverage as a percentage of total floor area and percentage in regions with *high* or *extremely high* “Baseline Water Stress”, each by property subsector”,
- “total water withdrawn by portfolio area with data coverage and percentage in regions with *high* or *extremely high* “Baseline Water Stress”, each by property subsector”,
- “like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector”, and
- “discussion of water management risks and description of strategies and practices to mitigate those risks”.

#### *4.3.2.3. Management of Tenant Sustainability Impacts*

As detailed by SASB (2018), real estate assets have a significant impact on sustainability, encompassing resource consumption (particularly energy and water), waste generation, and indoor environmental quality, which can affect occupant health. In the real estate industry, it's crucial to recognize that while companies own these assets, it's often the tenant operations

within them that are the primary drivers of sustainability impacts within the built environment.

Tenants possess the ability to design and configure leased spaces according to their operational needs. Consequently, their activities can result in substantial energy and water consumption, waste generation, and influences on the well-being of individuals residing, working, shopping, or visiting these properties. While these sustainability impacts are typically generated by tenant operations, real estate owners play a pivotal role in shaping and influencing these impacts (SASB, 2018).

The way in which businesses in the industry structure their agreements, contracts, and interactions with tenants plays a crucial role in effectively managing the sustainability impacts of tenant activities, ultimately influencing the sustainability of their assets, as explained by SASB (2018). The management of tenant sustainability impacts may involve addressing the challenge of conflicting interests by aligning the financial incentives and sustainability goals of both parties, implementing systematic measurement and communication of resource consumption data, setting shared performance objectives, and enforcing minimum sustainability standards or design criteria, among other strategies.

Effectively addressing tenant sustainability impacts, particularly in relation to energy, water, and indoor environmental quality, can result in increased asset value, greater tenant demand and satisfaction, reduced direct operating costs, and a decrease in risks associated with building codes and regulations (SASB, 2018).

Specific accounting metrics related to management of tenant sustainability impacts in SASB standards (2018, as cited in IFRS, 2022) include:

- “percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector”,
- “percentage of tenants that are separately metered or submetered for grid electricity consumption and water withdrawals, by property subsector”, and
- “description of approach to measuring, incentivizing, and improving sustainability impacts of tenants”.

#### *4.3.2.4. Climate Change Adaptation*

According to SASB guidelines (2018), climate change exerts an impact on companies within the industry through the occurrence of frequent or high-impact extreme weather events and shifts in climate patterns. The effectiveness of a company's business model, as it incorporates continuous evaluations of climate change risks and adapts to these risks, is expected to have a growing influence on the company's long-term value. Specifically, investment strategies involving assets situated in flood-prone and coastal areas exposed to adverse weather conditions may require enhanced attention to risk mitigation and adjustments in response to climate change in the long run. These strategies are of particular significance in light of persistent challenges related to flood insurance rates, the stability of government-backed flood insurance programs, and lender requirements, among other creditor concerns.

Apart from relying on insurance, other measures for mitigating risk encompass enhancing the resilience of physical assets and incorporating lease terms that shift risk to tenants. However, it's essential to acknowledge that these measures may introduce their own set of costs and risks for real estate companies. To ensure sustained growth and safeguard shareholder value over the long term, companies must implement comprehensive climate change adaptation strategies that consider trade-offs between various risk mitigation approaches and take into account all anticipated costs and benefits (SASB, 2018).

Accounting metrics related to climate change adaptation in the SASB standards (2018, as cited in IFRS, 2022) include:

- area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector;
- description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks.

The disclosure topics and relative accounting metrics related to the Real Estate Services industry are summarised in Figure 5 and Figure 6.

**Figure 5**

*Disclosure topics and relative accounting metrics related to the Real estate owners, developers and investment trusts industry (1).*

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
<b>Energy Management</b>	Energy consumption data coverage as a percentage of floor area, by property subsector	Quantitative	Percentage (%) by floor area (ft <sup>2</sup> )	IF0402-01
	Total energy consumed by portfolio area with data coverage, percentage grid electricity, and percentage renewable, each by property subsector	Quantitative	Gigajoules (GJ), Percentage (%)	IF0402-02
	Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector	Quantitative	Percentage (%) by gigajoules (GJ)	IF0402-03
	Percentage of eligible portfolio that (1) has obtained an energy rating and (2) is certified to ENERGY STAR <sup>®</sup> , by property subsector	Quantitative	Percentage (%) by floor area (ft <sup>2</sup> )	IF0402-04
	Description of how building energy management considerations are integrated into property investment analysis and operational strategy	Discussion and Analysis	n/a	IF0402-05
<b>Water Management</b>	Water withdrawal data coverage as a percentage of total floor area and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector	Quantitative	Percentage (%) by floor area (ft <sup>2</sup> )	IF0402-06
	Total water withdrawn by portfolio area with data coverage and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector	Quantitative	Cubic meters (m <sup>3</sup> ), Percentage (%)	IF0402-07
	Like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector	Quantitative	Percentage (%) by cubic meters (m <sup>3</sup> )	IF0402-08
	Discussion of water management risks and description of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	IF0402-09

*Source: SASB (2018).*

**Figure 6**

*Disclosure topics and relative accounting metrics related to the Real estate owners, developers and investment trusts industry (2).*

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Management of Tenant Sustainability Impacts	Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector	Quantitative	Percentage (%) by floor area (ft <sup>2</sup> ), Square feet (ft <sup>2</sup> )	IF0402-10
	Percentage of tenants that are separately metered or submetered for (1) grid electricity consumption and (2) water withdrawals, by property subsector	Quantitative	Percentage (%) by floor area (ft <sup>2</sup> )	IF0402-11
	Description of approach to measuring, incentivizing, and improving sustainability impacts of tenants	Discussion and Analysis	n/a	IF0402-12
Climate Change Adaptation	Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector	Quantitative	Square feet (ft <sup>2</sup> )	IF0402-13
	Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks	Discussion and Analysis	n/a	IF0402-14

*Source: SASB (2018).*

#### 4.4 Case study

This section will delve into a real-world example to illustrate the application of sustainability accounting and initiatives within the real estate sector. The case study focuses on a Real Estate Asset Management company, “Resolute Asset Management”, a prominent player in the Italian and European industry, to showcase how a company is navigating the complex landscape of sustainability reporting, ESG considerations, and industry-specific initiatives.

##### 4.4.1. Background of the company

Resolute Asset Management (or “Resolute”), a prominent global asset manager and trusted advisor specialising in real estate and real estate loans, operates as a licensed servicer and Alternative Investment Fund Manager across the European Union. Established in the crucible of the 2008 global financial crisis, Resolute emerged with a focus on managing an extensive spectrum of challenging real estate assets, spanning direct real estate, secured loans, and real estate fund and equity investments. The company has earned a reputation for

delivering top-tier expertise in real estate workout solutions, effectively handling real estate investments, non-performing loans (NPLs), and loan portfolios for a diverse clientele comprising banks, investors, government entities, and other stakeholders. Resolute's core mission centres on serving clients with substantial real estate exposures but limited specialised resources for real estate and real estate NPL management.

Beyond formulating strategies and identifying opportunities, Resolute ensures that its guidance translates into tangible, measurable results. The company offers a comprehensive suite of services, spanning strategic real estate and asset management counsel, due diligence expertise at both portfolio and asset levels, asset management solutions, real estate non-performing loan (RE NPL) servicing, and real estate-owned (REO) management. This holistic support equips clients to promptly address specific asset-related challenges and broader strategic portfolio issues.

The range of services offered by the company includes:

- “Servicing & Underwriting”: the company extends special servicing to both real estate and loan portfolio assets for special situations investors and financial sponsors, assisting clients from the initial phases of underwriting and bid structuring through to the execution of asset and loan recovery strategies.
- “Real Estate Management”: the company develops and executes liquidity creation strategies for individual real estate assets or entire real estate portfolios, even in illiquid asset classes and markets.
- “Asset Management”: the company provides ongoing real estate asset management services to a diverse set of investor clients. Their specialisation lies in designing and implementing intensive value creation plans for real estate and NPL assets, offering clients various options, including the establishment of internal asset management platforms.
- “Technology Solutions”: the company’s proprietary analytics and technology platforms offer end-to-end management capabilities for real estate assets and investment portfolios. These technology solutions encompass market and asset intelligence, analytics, and the effective management and monetization of real estate assets and portfolios.

#### *4.4.2. Data collection process*

The primary methods employed for data collection was conducting interviews with key personnel across various departments within the organisation, touching upon topics like property management, energy efficiency, tenant relations, and sustainability strategy. These interviews provided a comprehensive view of the company's sustainability initiatives, uncovering both strengths and areas for improvement.

In addition to interviews, the data collection process involved a thorough review of relevant documents, reports, and records. This included examining financial statements, sustainability policies, and regulatory compliance documents.

#### *4.4.3. Approach to sustainability accounting and reporting*

At Resolute Italy, the integration of ESG principles is a multi-faceted and structured approach, divided by management in “direct” and “indirect”.

In direct ESG initiatives, the focus is on identifying, proposing, and implementing measures that directly reduce the environmental impact of managed assets. These initiatives encompass a range of actions, from energy-saving projects to the installation of solar panels. Meanwhile, indirect ESG initiatives involve the careful selection of partners, suppliers, consultants, and clients whose profiles and policies closely align with ESG principles.

The significance of these initiatives varies depending on the size and visibility of the counterparts involved. For larger entities, such as major corporations and international chains, ESG considerations hold substantial importance due to their significant media exposure. These entities have a direct and pronounced interest in showcasing their commitment to ESG principles. Conversely, smaller counterparts face less media scrutiny and often have limited interest and capacity to demonstrate their ESG commitment. As a result, the focus on smaller counterparts tends to centre around environmental and governance aspects, with an emphasis on compliance with existing legislation.

Specifically, environmental concerns encompass areas like waste disposal for construction suppliers, ensuring adherence to relevant regulations. In terms of governance, the spotlight



shines on clients and collaborators, who are expected to operate in accordance with anti-money laundering regulations. This comprehensive ESG strategy aligns with Resolute Italy's commitment to responsible and sustainable asset management across various dimensions of their operations, ultimately driving positive impacts within their real estate portfolio.

In the sphere of monetization advisory services, Resolute also employs direct and indirect ESG strategies. Direct initiatives are focused on implementing actions that, at the very least, do not contribute to potential financial misconduct. Meanwhile, indirect ESG initiatives extend to the thoughtful selection of counterparts, such as consultants and clients, whose profiles and policies harmonise as closely as possible with ESG principles.

This comprehensive approach underscores Resolute Italy's commitment to incorporating ESG considerations into their core operations, contributing to responsible and sustainable practices throughout their asset management and advisory activities.

Recently, there has been a notable intensification of focus on ESG considerations, largely driven by the surge in energy prices and the mounting government requirements for ESG disclosure. Resolute Asset Management has keenly observed a growing awareness among investors who increasingly prioritise ESG factors in their decision-making. The company has undertaken significant ESG initiatives, exemplified by the installation of solar panels and electric car recharging facilities in a 30,000-square-metre department store in Rome, which has allowed the asset to achieve a remarkable 30% reduction in operating costs compared to the previous year. This approach has been catalysed by two primary factors: the imposition of new disclosure requirements by the European Union and the anticipation of forthcoming regulations, along with the inflation in energy prices triggered by geopolitical events such as the Russia-Ukraine conflict. However, the company recognizes that further efforts will be needed increasingly more in the future due to increasing demands from investors. For this reason, it is actively engaged in the process of obtaining certifications from a certification initiative<sup>10</sup>.

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<sup>10</sup>The company has chosen not to disclose the initiative's name at this stage.

Equally important is the drive to foster sustainable partnerships with local suppliers and resources, aligning their operations with the broader sustainability goals. Crucially, Resolute's ESG objectives are significantly influenced by the growing demand from both customers and shareholders for more ethical and socially responsible investment practices. Concurrently, the organisation places a strong emphasis on compliance with relevant regulations, recognizing the importance of aligning their operations with evolving ESG frameworks and mandates.

In terms of sustainability accounting, Resolute currently admits a lack of specific guidelines and as of today it has not incorporated environmental costs into their financial statements. However, they express a strong willingness to embrace such practices should comprehensive guidelines and regulations become more prevalent in the future in the European Union. This proactive stance underscores Resolute Asset Management's dedication to embracing sustainability and ESG principles as integral components of their operational strategy.

In conclusion, the ever-evolving financial landscape of today, Resolute Asset Management has keenly observed a pronounced shift in investor sentiment. There is a growing emphasis on ESG criteria, with investors increasingly prioritising these factors when making investment decisions. This recognition stems from an understanding of the enduring value inherent in sustainable and responsible investments. However, a significant challenge persists as financial performance often takes centre stage. Striking the right balance between pursuing financial goals and integrating ESG principles remains a pressing issue for Resolute and the broader financial industry. Furthermore, Resolute believes that the current climate presents a favourable opportunity to increase awareness and perhaps introduce a training campaign within the real estate sector, particularly regarding the implementation of sustainability accounting regulations. This could have the potential to transform how companies operating in the real estate market integrate ESG objectives in their operations, from being merely "nice-to-have" to becoming "must-have" essential components of a responsible and sustainable business landscape.

## Conclusions

In recent years, the growing urgency of addressing the issue climate change has led to the implementation of numerous policies and goals aimed at mitigating its effects and achieving sustainable development. Governments, civil society, and businesses are under increasing scrutiny from stakeholders to adopt practices that contribute to sustainability. This growing concern for environmental matters has driven businesses to develop sustainability accounting practices, influenced by both external and internal factors.

While sustainability and accounting have well-established definitions, the concept of "sustainability accounting" is still evolving. It broadly encompasses integrating social, environmental, and economic aspects into an organization's activities, extending beyond traditional financial accounting. Sustainability accounting involves measuring and reporting the allocation of resources, costs, and risks related to environmental and social factors within industries, utilizing concepts like Full Cost, Total Cost Assessment, Carbon Accounting, and Life-Cycle Assessment.

A fundamental principle in sustainability accounting is the concept of double materiality, which recognizes the interdependence between an organisation's impacts on the external environment and its susceptibility to environmental and social risks. It therefore entails the consideration of both internal impacts (financial effects of environmental and social issues on the organisation) and external impacts (organisation's effects on the environment and society) in reporting and decision-making processes. By adopting a double materiality approach, organisations can address both the risks they face due to external factors and the risks they pose to the environment and society.

A range of voluntary and mandatory standards and frameworks which encompass sustainability accounting has emerged worldwide. These initiatives can be categorized into two groups based on their stakeholders and focus: those targeting a wide range of stakeholders, emphasizing impact materiality (like the GRI framework) and those primarily addressing investors, with a focus on financial materiality (prominent initiatives are the

SASB Standards and the TCFD Framework). There are also initiatives which hold a focus on double materiality, such as the framework developed by the European Union.

The real estate sector plays a crucial role in addressing climate change, as highlighted in the IPCC's 2022 report, offering significant potential for global mitigation efforts. Opportunities include improving building efficiency, integrating renewables, and reducing operational emissions by more than 95 percent. Policy makers have recently intensified efforts to address climate change, introducing standards for ESG regulation in the real estate sector, including disclosure, taxonomy, and due diligence requirements. Voluntary initiatives complement these obligatory regulations.

Finally, the evolving financial landscape underscores the growing significance of ESG criteria in investment decisions, and the inclusion into sustainability accounting practices. The case study examined in this paper highlights that, particularly within the real estate sector, while the challenge of balancing financial objectives with ESG principles remains, companies like Resolute Asset Management are increasingly recognizing the inherent value of sustainable investments. Although they have not yet implemented sustainability-related costs into their financial statements, due to the perceived lack of specific guidelines, they express a strong commitment to embracing such practices in the future, especially if comprehensive guidelines and regulations become more prevalent. This commitment reflects the broader shift towards a more sustainable and responsible financial industry, one that recognizes the long-term benefits of aligning financial goals with environmental and social responsibility.

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## Glossary of acronyms and abbreviations

<b>ABC</b>	Activity Based Costing
<b>AICPA</b>	Association of International Certified Professional Accountants
<b>BREEAM</b>	Building Research Establishment Environmental Assessment Method
<b>CDP</b>	Carbon Disclosure Project
<b>CDSB</b>	Climate Disclosure Standards Board
<b>CERES</b>	Coalition for Environmentally Responsible Economies
<b>CIMA</b>	Chartered Institute of Management Accountants
<b>COP27</b>	27th Conference of the Parties
<b>CRREM</b>	Carbon Risk Real Estate Monitor
<b>CSRD</b>	Corporate Sustainability Reporting Directive
<b>DM</b>	Double Materiality
<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation, and Amortization
<b>ESG</b>	Environmental, Social, and Governance
<b>ESRS</b>	European Sustainability Reporting Standards
<b>FCC</b>	Full Cost Concept
<b>FEMA</b>	Federal Emergency Management Agency
<b>GHG</b>	Greenhouse Gas
<b>GRESB</b>	Global ESG Benchmark for Real Assets
<b>GRI</b>	Global Reporting Initiative
<b>IEA</b>	International Energy Agency
<b>IECC</b>	International Energy Conservation Code
<b>IFAC</b>	International Federation of Accountants
<b>IFRS</b>	International Financial Reporting Standards
<b>IIRC</b>	International Integrated Reporting Council
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>ISO</b>	International Organization for Standardization
<b>ITACA</b>	Institute for Innovation and Transparency in Procurement and Environmental Compatibility
<b>KPI</b>	Key Performance Indicator
<b>LCA</b>	Life-Cycle Assessment

<b>LCC</b>	Life-Cycle Costing
<b>LCI</b>	Life-Cycle Inventory
<b>LCM</b>	Life-Cycle Management
<b>LEED</b>	Leadership in Energy and Environmental Design
<b>NDC</b>	Nationally Determined Contribution
<b>NFDD</b>	Non-Financial Disclosure Directive
<b>NFRD</b>	Non-financial Reporting Directive
<b>NPL</b>	Non-Performing Loans
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PPP</b>	Polluter Pays Principle
<b>REIT</b>	Real Estate Investment Trust
<b>REO</b>	Real Estate-Owned
<b>RICS</b>	Royal Institution of Chartered Surveyors
<b>SASB</b>	Sustainability Accounting Standards Board
<b>SBTi</b>	Science-Based Targets initiative
<b>SEC</b>	Securities and Exchange Commission
<b>SFRD</b>	Sustainable Finance Disclosure Regulation
<b>TBL</b>	Triple bottom line
<b>TCA</b>	Total Cost Assessment
<b>TCFD</b>	Task Force on Climate-Related Financial Disclosures
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNEP</b>	United Nations Environment Program
<b>WBCS</b>	World Business Council for Sustainable Development
<b>WEF</b>	World Economic Forum

## Appendix A

Organisation	Definition of Materiality
IIRC	“A matter is material if it could substantively affect the organization’s ability to create value in the short, medium or long term”.
OECD	“Material information can be defined as information whose omission or misstatement could influence the economic decisions taken by users of information.”
CDSB	<p>“Environmental information is material if:</p> <ul style="list-style-type: none"> <li>● The environmental impacts or results it describes are, due to their size and nature, expected to have a significant positive or negative impact on the organization’s financial condition and operational results and its ability to execute its strategy;</li> <li>● Omitting, misstating or obscuring it could reasonably be expected to influence the decisions that users of mainstream reports make on the basis of that mainstream report, which provides information about a specific reporting organization”.</li> </ul>
CDP	See CDSB. Note: “Relevance of emissions should not be limited to sustainability topics that have a significant financial impact on your organization, or “materiality”.
GRI	“‘Material Aspects’ are those that reflect the organization’s significant economic, environmental and social impacts; or that substantively influence the assessments and decisions of stakeholders.” GRI revised its definition of materiality in an 2020 exposure draft to: “the organization prioritizes reporting on those topics that reflect its most significant impacts on the economy, environment, and people, including impacts on human rights”

EU	<p>“Information to the extent necessary for an understanding of the undertaking’s development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters” “In effect, the Non-Financial Reporting Directive has a double materiality perspective: - The reference to the company’s “development, performance [and] position” indicates financial materiality, in the broad sense of affecting the value of the company... - The reference to “impact of [the company’s] activities” indicates environmental and social materiality. Climate-related information should be reported if it is necessary for an understanding of the external impacts of the company.”</p>
ISO	<p>[‘materiality’ = ‘significance’] “The identification of relevant issues should be followed by an assessment of the organization’s impacts. The significance of an impact should be considered with reference both to the stakeholders concerned and to the way in which the impact affects sustainable development.”</p>
SASB	<p>“SASB identifies financially material issues, which are the issues that are reasonably likely to impact the financial condition or operating performance of a company and therefore are most important to investors.”</p>
TCFD	<p>“Importantly, in determining whether information is material, the Task Force believes organizations should determine materiality for climate-related issues consistent with how they determine the materiality of other information included in their financial filings. In addition, the Task Force cautions organizations against prematurely concluding that climate-related risks and opportunities are not material based on perceptions of the longer-term nature of some climate-related risks.”</p>
WEF	<p>“This project uses the term “material” to mean information that is important, relevant and/or critical to long-term value creation.”</p>

Source: adapted from WBCSD, 2021: *The Reality of Materiality - Insights from Real-World Applications of ESG Materiality Assessments*.

## Appendix B

<b>Initiative</b>	<b>Materiality Approach</b>	<b>Adoption status</b>
<b>GRI</b>	Impact	Widely accepted, most used sustainability reporting framework
<b>EU Framework</b>	Double	Mandates reporting by public-interest entities in the EU
<b>SASB Standards</b>	Financial	More than 450 companies adopted, 234 among S&P Global 1200
<b>IFRS Framework</b>	Financial	Widely supported by investors, regulators, and corporations