Evaluating integrated thinking in management disclosures in annual reports: Evidence from the United Kingdom (UK) listed organisations

A research report submitted by
Keegan Jordaan
Student number: 2323425
Date submitted:
Email: 2323425@students.wits.ac.za
Supervisors: Dusan Ecim & Warren Maroun

In partial fulfilment of the requirements for the degree of
Master of Commerce (Accounting)
University of the Witwatersrand

Table of Contents

Foreword

Sections 1 – 6 of this dissertation detail a schematic for measuring integrated thinking using management disclosures in extra-financial reports. The schematic is applied to a sample of listed entities on the LSE to illustrate its functionality and extra-financial reports evidence the extent to which integrated thinking. The first six sections of this dissertation are structured as a research paper. The paper has been submitted to Corporate Social Responsibility and Environmental Management journal.

Sections 1 – 6 are supported by the following appendices.

- Appendix 1 provides a list of all abbreviations used in the research report.
- Appendix 2 provides a list of all entities within their samples, along with their relevant industry and market capitalisation.
- Appendix 3 breaks down the assessment of CDP disclosures and how a relevant score has been allocated to each company per year assessed.
- Appendix 4 provides an additional analysis of the integrated thinking scores per principles and years assessed for each industry, financial performance and firm size; supplementing the information found in sections 1-5.
- Appendix 5 takes evidence from extra-financial reports and uses it to illustrate evidence of best and worst practices in disclosing an organisation's commitment to integrated thinking practices.
- Appendix 6 provides a list of the 179 sub-indicators that were categorised under the principles of integrated thinking per the integrated thinking schematic

Ethics waiver number: WSOA-2024-11-29W

Kind regards,
Keegan Jordaan

Abstract

Purpose: Integrated thinking adopts a thorough, multi-capital approach to decision-making and operations, including using tools to assist in adopting integrated thinking, to drive value creation and informed decision-making. This study develops and applies a schematic to evaluate the levels of integrated thinking among organisations, focusing on LSE-listed companies from 2014 to 2022.

Design/methodology/approach: A longitudinal mixed-method approach was used. Content analysis of corporate reports assessed the adoption of ten integrated thinking principles. Quantitative analysis tested the alignment of integrated thinking scores with ESG ratings, CDP scores, and financial performance measures like ROA. The study also incorporated cross-industry, financial performance and firm size comparisons to identify industry-specific trends.

Findings: The schematic identifies principles such as integrated awareness, integrated intelligence, continuous improvement, and external communication. Findings show increased integrated thinking across industries, with pharmaceuticals, mining, and energy achieving the highest scores. Lower adoption was observed in rental and sports betting. The framework highlights gaps in boundary-setting (P9) and integrated intelligence (P8) but reflects improved leadership alignment and external communication practices.

Research limitations/implications: The study relies on public reports, which may not fully reflect internal integrated thinking practices. Further testing with case studies and interviews can enhance the robustness of the findings.

Practical implications: The proposed schematic provides stakeholders with a practical tool for assessing integrated thinking across organisations. It can guide improvements in governance, stakeholder engagement, and multi-capital integration while addressing industry-specific challenges.

Social implications: By emphasising the interconnectedness of capitals and stakeholder needs, the study supports efforts to integrate sustainability and value creation into leadership and organisational structures, emphasising long-term societal and environmental benefits.

Originality/value: This research advances integrated thinking by offering a developed schematic and empirical insights, contributing to the literature and practice of corporate governance and sustainability reporting.

Keywords

Integrated thinking, corporate governance, sustainability, multi-capital, ESG, LSE-listed companies, stakeholder engagement, and reporting quality.

1: Introduction

The International Integrated Reporting Council (IIRC) define "integrated thinking" as:

> "the active consideration by an organisation of the relationship between its various operating functional units and the capitals that the organisation uses or affects. Integrated thinking leads to integrated decision-making and actions that consider the creation, preservation or erosion of value over the short-, medium- and long-term" (IIRC, 2021, p.3).

However, integrated thinking is not specific to the IIRC's reporting framework. For example, The Global Reporting Initiative (GRI) does not refer explicitly to integrated thinking but stresses the interconnection among economic, environmental and social factors and their importance for an organisation. The logic of integrated thinking is also identified in other sustainability standards published recently by the International Sustainability Standards Board (ISSB, 2021). These standards aim to ensure that both financial and extra-financial capitals are reported and included in corporate decision-making, encouraging the recognition of the interconnectedness between multi-capitals[1] and value creation (De Villiers et al., 2022)
The Task Force for Climate-related Financial Disclosures (TCFD) and Nature-related Financial Disclosures (TNFD) build on integrated thinking in specific contexts (FSB, 2023) These frameworks guide companies on the assessment and disclosure of financial risks associated with climate and nature, integrating financial capital with environmental capital to promote corporate adaptability (FSB, 2023). The concept of dynamic materiality proposed by the European Financial Reporting Advisory Group (EFRAG) in the Corporate Sustainability Reporting Directive (CSRD) promotes integrated thinking by advocating for the disclosure of short-term financial outcomes and long-term sustainability, reinforcing the importance of an integrated approach to decision-making (Dimes & de Villiers, 2023).

Despite the proliferation of integrated thinking in sustainability-related frameworks, guidance and mandatory codes, there is limited guidance on how to evaluate and measure integrated thinking by entities. Scholars have examined the definition of the term (Busco et al., 2017; Dimes & de Villiers, 2023; Dimes et al., 2023; Malafronte & Pereira, 2021) and considered the determinants and consequences of extra-financial reporting (Adams, 2017; Feng et al., 2017; McGuigan et al., 2021). Yet little remains known about how an underlying commitment to

[1] Multi-capitals refer to financial capital, human capital, manufactured capital, social and relationship capital, intellectual capital and natural capital

integrated thinking informs how organisations manage different capitals or resources and report on their performances to stakeholders (Maroun et al., 2023). To address the limitation of the underlying commitment to integrated thinking, the current study uses a schematic developed by Maroun et al. (2023) to gauge integrated thinking levels in the UK.

This research proposes additional indicators of integrated thinking based on the most recent research and work efforts of international standard-setters. In addition to developing a more comprehensive integrated thinking schematic than those advanced by earlier studies (Dimes & de Villiers, 2023; Dimes et al., 2023; Malafronte & Pereira, 2021), the current paper provides the first account of the extent to which UK-based companies are implementing integrated thinking within their organisations using disclosures in extra-financial reports.

Using an integrated thinking schematic, the levels of integrated thinking across the Top 40 London Stock Exchange (LSE)-companies are assessed across 3 years (2014, 2018, and 2022). The application of the integrated thinking schematic also helps identify the key factors contributing to the differences in integrated thinking levels.

Prior research in the UK has explored various aspects of integrated thinking. For example Adams (2017) examines extra-financial reporting and the role of integrated thinking in integrating financial and extra-financial reporting within organisations, highlighting its role in driving sustainable value creation. Similarly Gaia and John Jones (2017) investigate stakeholder engagement, emphasising its critical role in fostering integrated thinking practices. Hassan et al. (2019) focus on the application of integrated thinking in corporate strategies, particularly its contribution to improved decision-making and long-term value. Despite the existing body of work explained above, most studies centre on the conceptual and qualitative aspects of integrated thinking rather than its measurement.

The UK is a developed country with robust financial and extra-financial reporting standards which support integrated thinking and align with international frameworks such as the EU ESRS, GRI, TCFD, and SASB. These standards are reinforced by mandatory climate-related disclosures introduced in 2022 and the requirement for "strategic reports" that address principal risks, including environmental considerations.

Also, prominent UK firms are recognised as leading producers of sustainability reports covering various social and environmental topics (IFAC, 2015). The availability of comprehensive and well-documented corporate disclosures (Subbarao & Zeghal, 1997) facilitates the application of the integrated thinking schematic to measure integrated thinking

levels. The UK's developed and evolving reporting landscape provides a valuable context for studying integrated disclosures in a developed country setting**.** The findings from this research will contribute to understanding how developed countries approach integrated disclosures, offering insights that can inform improvements in reporting practices for developing countries. In addition, there have been increased calls specifically for empirical studies on extra-financial reporting and integrated thinking focused on developed countries such as the UK (Maroun & Ecim, 2024).

Thirdly, recent studies related to integrated thinking have recommended various elements to be considered when measuring integrated thinking (Dimes & de Villiers, 2023; Dimes et al., 2023; Malafronte & Pereira, 2021). As these additional elements have not been taken into account by Maroun et al. (2023), this study is amalgamating different aspects to create a more comprehensive framework. Empirical evidence will be gathered from a developed economy to inform best and worst practices, measure integrated thinking levels using the integrated thinking schematic, and use the integrated thinking levels to identify any factors that influence integrated thinking.

Finally, the integrated thinking schematic serves multiple purposes. Organisations can adopt it to embed integrated thinking into their operations, while external stakeholders can assess integrated thinking using publicly available information. Investors benefit by incorporating sustainability and extra-financial considerations into their decisions, beyond financial performance. Policymakers, such as the ISSB and FSB, can use the schematic as a resource to develop sustainability standards, ensuring alignment with the ten principles and fostering a commitment to integrated thinking. The integrated thinking schematic will be valuable for academics as it provides a foundation for refining the determinants of integrated thinking, the base for developing robust integrated thinking measurement tools and exploring the associations between integrated thinking proxies, i.e. financial performance and firm size, and integrated thinking scores.

The remainder of this paper is set out as follows: Section 2 gives background and makes use of prior literature to create a guide for assessing the levels of integrated thinking across the Top 40 LSE companies. Section 3 outlines and explains the schematic used to assess the levels of integrated thinking. Section 4 explains the methodology used in this study. Section 5 illustrates the results of the study, along with a discussion of the results. Lastly, Section 6 is the conclusion and outlines areas for future research.

2: Literature and background

The origins of integrated thinking and extra-financial reporting are the subject of ongoing debate. Researchers identify the 1980s and 1990s as periods when reporting on social, and environmental factors was gaining prominence (Gray et al., 1995; Guthrie & Parker, 1989). “Integrated thinking” gained momentum following the publication of the International Integrated Reporting Council (IIRC)’s inaugural framework in 2011 which explained how "integrated thinking" provides a structured approach to linking financial and extra-financial information in corporate reporting (IIRC, 2021), emphasising the interconnectedness of value creation across a company’s operations, strategy, and external environment (VRF, 2022).

Standards such as the Global Reporting Initiative (GRI), Task Force on Climate-related Financial Disclosures (TCFD), and the European Sustainability Reporting Standards (EU ESRS) have played a crucial role in embedding integrated thinking principles into corporate practices. These frameworks have encouraged companies to adopt a more thorough view of their operations, considering a wide range of environmental, social, and governance (ESG) factors. The GRI, for example, encourages transparency around a company’s sustainability impacts (Afolabi et al., 2022; Dimes & de Villiers, 2023), while TCFD’s focus on climate-related financial risks aligns with integrated thinking’s emphasis on long-term value creation through a broader understanding of financial and extra-financial risks (FSB, 2023). The EU’s adoption of the European Sustainability Reporting Standards (ESRS) reflects regulatory efforts to standardise and enforce high-quality reporting on sustainability issues, pushing integrated thinking further into the mainstream (EU, 2023). These standards promote transparency and the interconnectedness between financial and environmental capitals, which enhances stakeholders’ ability to make informed decisions based on the organisation’s sustainability footprint (Afolabi et al., 2022).

As these reporting frameworks have evolved, they have solidified the role of integrated thinking by ensuring that companies are accountable for considering a range of economic, social and environmental capitals in their strategic decisions, risk management and operating practices (IIRC, 2021).

2.2: Integrated thinking in management disclosures

Disclosures, particularly in corporate reports, are crucial for obtaining data on integrated thinking. Strategy and business model disclosures in extra-financial reports reduce information asymmetry and enhance the usefulness of annual reports (Athanasakou et al., 2024). These disclosures provide insight into how companies create value and meet their strategic

objectives. Therefore, using disclosures from corporate reports, which include financial and extra-financial information (IIRC, 2021), for collecting data is essential for assessing the levels of integrated thinking as these disclosures provide both a deep understanding of the operations, performance and strategic objectives of a company as well as how they are interconnected, and a forward-looking view on the company's commitment to integrated thinking (Athanasakou et al., 2024). Reporting on social and environmental factors is often explained as an exercise in legitimacy management but the research provides growing evidence of this type of reporting informing investment decisions, regulatory interventions and overarching governance practices (Barth et al., 2017; Myeza et al., 2023).

Companies which practice integrated thinking are likely to reflect it in the quality of their strategy disclosures as these often describe how management integrated the various capitals (Alrazi et al., 2015; Dimes & de Villiers, 2023). Companies that can disclose the integration of financial and extra-financial information will reduce information asymmetry and provide insights into their ability to create value in the long term (Barth et al., 2017; Dimes & de Villiers, 2023).

Extra-financial management disclosures in corporate reports are more than a tool for compliance. They can offer insights into how integrated thinking is implemented within organisations (Athanasakou et al., 2024). Extra-financial disclosures support the argument that stakeholders can differentiate between integrated thinking and surface-level environmental, social, and governance (ESG) reporting by assessing the disclosures in a corporate report (Dimes & de Villiers, 2023; Dumay & Dai, 2017).

2.3: Developing an integrated thinking logic

Integrated thinking includes a multi-capital consideration of interrelated activities and their outcomes to create value for organisations and their broader stakeholders (Dimes & de Villiers, 2023; Maroun et al., 2023). It combines financial and extra-financial information into corporate reports to enhance transparency and communication to meet the expectations of investors and stakeholders. Providers of financial capital play a pivotal role in integrated thinking. Integrated thinking encourages an equitable prioritisation of all stakeholders (Dimes et al., 2023; Maroun et al., 2023; Stacchezzini & Lai, 2020). It facilitates a holistic process to assess risks, capitalise on opportunities and enhance internal processes, in this way fostering financial stability, social and environmental responsibility and legitimacy with material stakeholders (Maroun et al., 2023). Key features of integrated thinking include:

- Responding to stakeholders' needs and interests,
- Responding to the risks and opportunities in the external environment,

- Noting the outcomes and trade-offs of an interconnected and interdependent set of activities and capitals; and
- A multi-timeframe analysis of activities, performance, and outcomes.

adapted from IIRC (2021)

Several principles emerge that outline how integrated thinking is evidenced in organisations. First is the role of leadership commitment and the development of an integrated strategy (Maroun et al., 2023). Integrated thinking relies heavily on the active involvement of senior leadership in driving a culture which prioritises the balance between financial and extra-financial goals, which is informed by stakeholder engagement and materiality assessments (Dimes & de Villiers, 2023). This interconnected culture is achieved by executives and boards aligning their decision-making with long-term value creation that incorporates multiple capitals (Maroun et al., 2023). Long-term value creation incorporating multi-capitals ensures that sustainability and financial objectives are not in conflict but are balanced to achieve an integrated corporate strategy (Dimes & de Villiers, 2023; Dimes et al., 2023). It also involves identifying and addressing the needs of stakeholders (Dimes & de Villiers, 2023) and fostering an organisational culture which adopts integrated thinking principles (Malafronte & Pereira, 2021).

Malafronte and Pereira (2021) specifically identify two main proxies central to integrated thinking - "Stakeholder Responsiveness" and "Organisational Connectivity." The former involves proactive engagement with stakeholder interests, ensuring these are considered within an organisation’s decision-making. The latter emphasises stronger interconnections within the organisation, promoting cross-functional collaboration to align objectives across departments. The four sub-proxies identified by Malafronte and Pereira (2021) support the main proxies by emphasising strategic alignment, departmental integration, continuous feedback loops, and performance metrics that integrate technology as essential components for integrated thinking.

Performance management systems play a critical role in ensuring that integrated thinking is implemented effectively. Integrated thinking needs to be embedded in how an entity tracks and evaluates its performance across various spheres, including financial, social, and environmental impacts and measures both financial and extra-financial outcomes (Dimes & de Villiers, 2023; Maroun et al., 2023). Tracking performance allows for a comprehensive evaluation of how an organisation is performing across multiple capitals. A multi-capital approach is essential to ensure an integrated approach is adopted within an entity. This can be achieved by organisations disclosing their financial returns for investors and their levels of

solvency and liquidity (financial capital), but also their physical assets (manufactured capital) and intangible assets (intellectual capital) they use (IIRC, 2021). They need to consider employees (human capital), stakeholders (social and relationship capital), and the environment (natural capital) along with the impacts that the respective organisation has on the respective capitals (IIRC, 2021).

The role management information systems (MIS) in providing real-time, cross-functional data to aid decision-making enables organisations to track performance holistically. This process will facilitate informed, integrated decisions across various departments (Dimes & de Villiers, 2023). Focusing on technology underscores the importance of digital tools, analytics, and robust data systems in operationalising integrated thinking.

The significance of monitoring systems, such as sustainability indices and external audits, ensures that organisations maintain alignment with their long-term value creation strategies, enabling integrated thinking to be met (Malafronte & Pereira, 2021). The emphasis on strong data systems and performance metrics highlights the critical importance of performance management in the successful implementation of integrated thinking. Integrated thinking can be measured using information other than information included in extra-financial reports (Dimes et al., 2023). A measure of the levels of integrated thinking can be applied to information found in websites (Dimes et al., 2023), social media, news releases (Rivera-Arrubla & Zorio-Grima, 2016) and awards (Barth et al., 2017).

Dimes and de Villiers (2023) identify four "hallmarks" of integrated thinking and further reinforce its application in organisations. These include (1) long-term value creation focusing on prioritising sustainable, long-term goals over short-term gains, and aligning strategic objectives with stakeholder needs; (2) multi-capital decision-making considering the interconnectedness of all capitals when making decisions; (3) extra-financial reporting providing transparency and communicating the organisation's multi-capital performance to external stakeholders; and (4) continuous innovation encouraging organisations to adapt and refine their practices to support integrated thinking consistently.

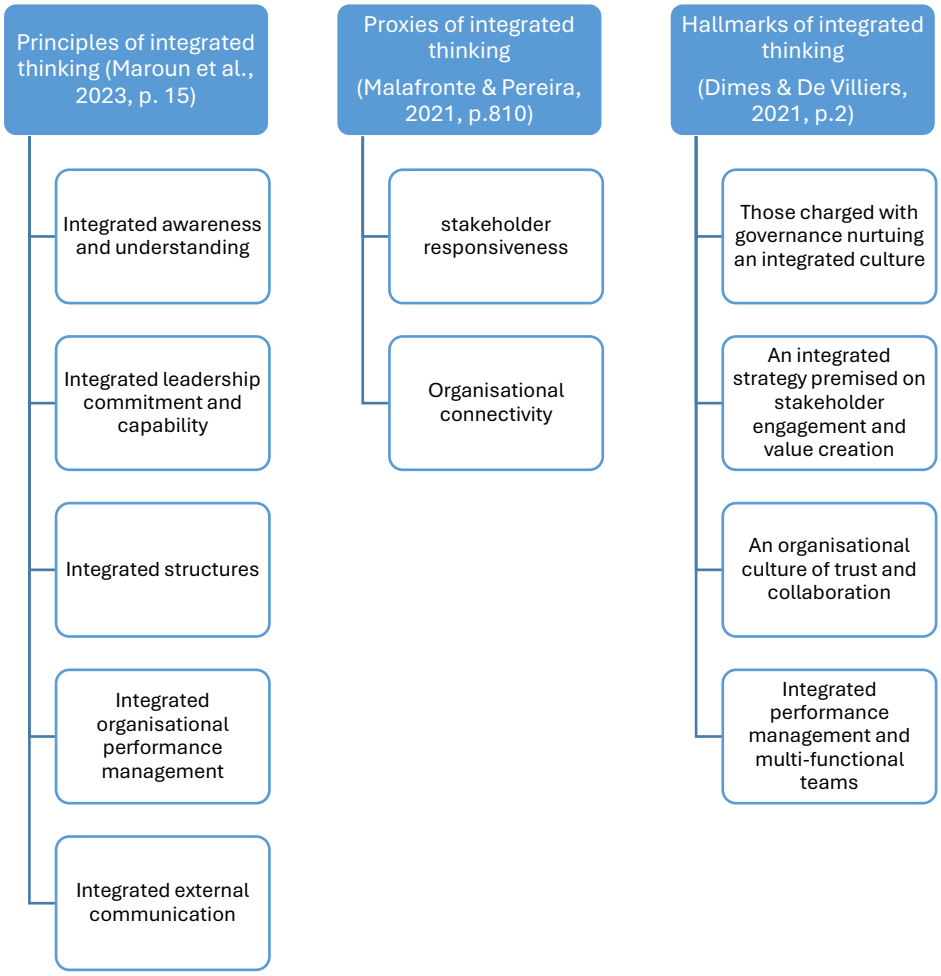
Integrated thinking requires companies to understand the interconnectedness of financial, social, natural, intellectual, and human capital and how decisions impact these capitals over the long term (IIRC, 2021; Malafronte & Pereira, 2021). Maroun et al. (2023) refer to this as " Integrated Awareness and Understanding", emphasising that an organisation must be aware of the interdependencies between its capitals to make sustainable decisions. A culture of trust should be adopted within an organisation, where open communication amongst employees

and collaboration across departments ensures that decision-making considers various capitals holistically (Dimes & de Villiers, 2023; Dimes et al., 2023).

While there are many shared principles pointing to integrated thinking, each study also introduces unique elements which should be considered when measuring integrated thinking. External communication and assurance is an example**.** Maroun et al. (2023) emphasise that "Integrated External Communication" is essential for ensuring that stakeholders are informed about the organisation's performance across multiple capitals. "Integrated External Communication" includes providing transparent reports which reflect the organisation's commitment to sustainability and long-term value creation. The role of external assurance, such as audits, is another way to enhance the credibility of the information disclosed, ensuring that the related entity is accountable (Maroun et al., 2023).

The core elements of integrated thinking as distilled by the seminal literature is included in Figure 1.

Figure 1: Elements of integrated thinking as defined by prior literature



2.4: Benefits and challenges of integrated thinking

Integrated thinking enhances management control systems, making both internal and external reporting more effective. According to the IIRC (2021),integrated thinking helps businesses understand their overall strategy by looking at both financial and extra-financial factors that impact value creation.

Strong internal systems are crucial to the management of integrated thinking within a business (Stubbs & Higgins, 2014). Management control systems (MCS) play a key role in integrating sustainability into core business operations, promoting accountability, ethical behaviour, and informed decision-making (Bui & De Villiers, 2017).

Integrated thinking does not require a complete restructure of an organisation's business model. Instead, it can be implemented through small changes in systems, processes, and structures. With strong leadership, this approach can lead to better decision-making, improved

internal processes and better reporting (Stubbs & Higgins, 2014). Larger companies with greater financial resources are better positioned to implement robust management information systems[2] (MIS), particularly if they face significant environmental risks or stakeholder pressures (Alrazi et al., 2015; Summerhays & de Villiers, 2012). Companies that take such proactive measures in environmental management benefit from improved data collection, better goal alignment, and more effective communication with stakeholders (Bui & De Villiers, 2017), which improves both reporting quality and stakeholder accountability (Alrazi et al., 2015).

Integrated thinking also promotes a business overview. Extra-financial reporting, together with stakeholder engagement adopting integrated thinking, can mitigate information asymmetry[3] about the capitals that create value (Barth et al., 2017). It ensures that financial and extra-financial information is integrated to communicate clearly, support internal decision-making and allow businesses to assess risks and opportunities more effectively (Barth et al., 2017; IIRC, 2021).

Additionally, integrated thinking strengthens and improves communication within a company. It brings different departments together to identify new risks and opportunities, promoting strategic alignment (Dumay et al., 2016). A collaborative approach deepens stakeholder engagement, improving control systems' overall value creation (De Villiers et al., 2020). Effective internal management across the different capitals, combined with proactive oversight by governing bodies and transparent communication with stakeholders, ensures accountability for financial and extra-financial performance (Rinaldi, 2020).

Integrated thinking faces several barriers. One major issue is the IR Framework's explicit focus on financial capital, marginalising extra-financial capital (Flower, 2015; IIRC, 2021). This emphasis on financial capital can lead to the prioritising of financial goals and overall capitals, making it difficult to achieve integrated thinking (Dumay et al., 2015; McNally et al., 2017). Some companies treat integrated thinking as a tick-box exercise rather than embracing integrated thinking principles, making their reports less useful (Atkins & Maroun, 2015). Overly repetitive or lengthy disclosures obscure rather than highlight the benefits of integrated thinking (Maroun et al., 2023; Oliver et al., 2016).

[2] Management information systems
[3] Information asymmetry arises from the separation of ownership (principals) and control (agents).

Integrated thinking must occur at all organisational levels—governing bodies, executives, and senior management—but its benefits are often not visible at lower levels (IRC, 2018). This disconnect at lower levels means that integrated thinking may remain an ideology, not a practice (Oliver et al., 2016). Without measurable results or examples of its successful implementation, many organisations struggle to understand the interdependencies of different types of capitals and how they impact sustainability and business operations (Dumay & Dai, 2017).

Integrated thinking relies heavily on data systems which can collect, monitor, and assess both positive and negative impacts (Dimes & de Villiers, 2023). Smaller entities may find it difficult to put such systems in place, prohibiting them from making informed decisions regarding integrated thinking principles. Companies also often focus only on positive outcomes in their corporate reports for legitimacy (Suchman, 1995), which reduces the transparency and accountability that integrated thinking seeks to promote.

An assurance on extra-financial reports or integrated thinking levels is not mandated, raising questions about the credibility of the reported information (Tweedie & Martinov-Bennie, 2015). External stakeholders need assurance that integrated thinking practices are genuinely in place and being properly executed, but integrated thinking can be difficult to measure or assure (Alrazi et al., 2015). Without appropriate tools to evaluate integrated thinking, organisations may participate in greenwashing rather than adopting integrated thinking (Dumay & Dai, 2017).

The next section will analyse a schematic for evaluating integrated thinking based on underlying principles and associated indicators which have a theoretical underpinning in prior literature.

3.1: A schematic for assessing integrated thinking

To evaluate integrated thinking, a schematic developed by Maroun et al. (2023) is used. Maroun et al. (2023) have developed an integrated thinking schematic comprising five principles. This schematic has been updated using principles introduced by prior literature, guidance from sustainability-related frameworks and codes of corporate governance, and an additional five principles have been added. Refer to Table 1 for the schematic. Each of the principles is discussed in more detail below.

Table 1: Refined integrated thinking schematic

Note: the first 5 principles are taken from Maroun et al (2023)'s schematic. Principles 6 – 10 are then developed by the current paper.

Principle	Indicator
Principle 1: Integrated awareness and understanding The organisation demonstrates clear awareness and understanding of the connectivity and interdependence of matters material to its ability to create value over time.	1.1. Awareness and understanding of external factors impacting the organisation's operating context
	1.2. Awareness and response to the legitimate needs and interest of stakeholders
	1.3. Awareness and understanding of risks and opportunities
	1.4. Awareness and understanding of material themes
	1.5 Articulation of business rationale for sustainability and integrated thinking as a driver of long-term value creation
Principle 2: Integrated leadership commitment and capability Leadership provides the mandate for integrated thinking and makes a deliberate and coordinated effort to connect and integrate matters material to organisational sustainability.	2.1. Leadership ambition and commitment to an integrated approach to sustainability
	2.2 Diversity of leadership experience
	2.3. Strategic positioning of sustainability
	2.4. Values and ethics
	2.5. Conscious and relevant adoption of codes and standards
Principle 3: Integrated structures Organisational structures and systems are conducive to integrated decision making and reporting	3.1 Integrated governance
	3.2 Integrated accountability for sustainability
	3.3. Integrated business model
	3.4 Integrated and devolved stakeholder engagement processes
	3.5 Integrated systems, technologies and processes
Principle 4: Integrated organisational performance management Performance management of targets and KPIs is balanced and integrated to express the holistic and comprehensive performance of the organisation over the short, medium and long term.	4.1. Extra-financial metrics
	4.2. Targets and contextualised performance metrics
	4.3. Response to performance
	4.4. Integrated assurance
Principle 5: Integrated External Communication Communication to external stakeholders offers an accurate, holistic, balanced, and integrated view of the organisation's performance and ability to create value over the short-, medium- and long-term.	5.1 Integrated marketing and communication
	5.2 Integrated external reporting
Principle 6: Systems and management Make use of management information systems to collect, process and analyse data, and include the	6.1 Management control systems to collect and process data
	6.2 Supply-chain integration for multi-capitals
	6.3 Collaboration within the organisation to enhance decision making relating to multi-capitals

Table 1: Refined integrated thinking schematic

Note: the first 5 principles are taken from Maroun et al (2023)'s schematic. Principles 6 – 10 are then developed by the current paper.

Principle	Indicator
finance team in the preparation of corporate reports for all capitals	
Principle 7: Continuous improvement Invest in the improvement of skills and knowledge and include employees in the decision-making of the organisation.	7.1 Employee development and wellness
	7.2 Integrated level of employees
	7.3 Feedback loops and post-implementation reviews
Principle 8: Integrated Intelligence Incorporate the use of technology into decision-making and strategy, and understand how integrated intelligence is changing the way of working	8.1 New technology is integrated into performance evaluation, business model and risk assessment
	8.2 Governance over the use of technology
	8.3 Integrated technology
Principle 9: Multi-capitals and boundary-setting There is evidence of all capitals being considered directly and indirectly when implementing accounting systems. The impact of boundaries needs to be disclosed for multi-capitals, differentiating between organizational and value chain boundaries	9.1 Accounting for multi-capitals
	9.2 Organisational and value chain boundaries
	9.3 Boundary-setting on direct and indirect factors
	9.4 Quality management systems
Principle 10: External sources of evidence There is evidence of integrated thinking awards in corporate reports, and ESG matters on the entity's webpage.	10.1 Integrated Awards
	10.2 Entity webpage
	10.3 Entity news articles

3.1.1: Principle 1 (P1) – Integrated awareness and understanding

P1 emphasises interconnectedness and interdependencies between the various capitals. To apply integrated thinking, companies need to assess both internal and external factors (Alrazi et al., 2015), including the needs of stakeholders and the risks that impact long-term value creation. P1 emphasises the need to focus on all capital and not only financial capital (Dumay et al., 2016; McNally et al., 2017). By aligning business strategy with stakeholder interests and long-term sustainability, organisations illustrate integrated awareness of their role in the broader community, which enhances their understanding and management of risks and opportunities (IIRC, 2021; Maroun et al., 2023).

3.1.2: Principle 2 (P2) – Integrated leadership commitment and capability

P2 focuses on the leadership taking accountability for its strategic direction (Maroun et al., 2023). This responsibility stems from the need for leadership, particularly at the highest levels, to drive the integrated thinking ethos. Effective governance structures, strategic planning and integrated communications are essential to an integrated thinking mindset. Leaders are tasked with not only setting sustainability objectives but also aligning them with corporate strategy to gain legitimacy and drive long-term value (IIRC, 2021). Aligning sustainability objectives with corporate strategy requires commitment at all levels of an organisation, from senior management to operational teams (Guthrie et al., 2017), and reflects a company's commitment to ethical practices, sustainability and stakeholder inclusivity (Dumay & Dai, 2017; IFAC, 2015)

3.1.3: Principle 3 (P3) – Integrated structures

P3 emphasises integrated decision-making. This includes establishing robust information systems that account for both financial and extra-financial metrics (Section 2.3), engaging with stakeholders (Alrazi et al., 2015; Maroun & Ecim, 2024), and setting up governance frameworks that facilitate long-term value creation (Rinaldi, 2020; Tweedie & Martinov-Bennie, 2015). The importance of stakeholder engagement and sustainability management systems is underscored, as they help organisations proactively address risks and opportunities (Stubbs & Higgins, 2014). Integrated structures allow for the alignment of business strategies with multi-capital approaches, ensuring decisions consider the interdependencies between various capitals

3.1.4: Principle 4 (P4) – Integrated organisational management

P4 emphasises the importance of performance measurement in integrated thinking. Key Performance Indicators (KPIs) across economic, social, and environmental dimensions help organisations assess progress toward long-term sustainability (Dumay et al., 2016; Oliver et al., 2016). Integrated assurance processes and performance management systems are crucial in validating the data used for decision-making and ensuring that integrated thinking is implemented effectively (IIRC, 2021; Maroun et al., 2023). Proactive management of performance across capital ensures that integrated thinking remains actionable and leads to sustainable outcomes (Maroun & Atkins, 2018).

3.1.5: Principle 5 (P5) – Integrated external communication

P5 focuses on external communication, emphasising the role of reports like annual reports, sustainability reports, and digital platforms in conveying an organisation's integrated thinking

practices to stakeholders (Stubbs & Higgins, 2014; Zhou et al., 2017). Disclosures in multiple reports provide insights into how well-integrated thinking is applied in practice, though corporate reports alone may not fully capture the depth of implementation (Oliver et al., 2016; Maroun et al., 2023). Further research is necessary to refine frameworks for assessing integrated thinking beyond corporate reports.

3.1.6: Principle 6 (P6) – Systems and management

P6 focuses on systems and management within an entity. This principle evaluates the use of management information systems to promote value creation by implementing systems to address not only financial capital but also social and environmental factors (FSB, 2023; ISSB, 2023). Management information systems (MIS) are being used to assess multi-capitals and inform integrated decision-making across various departments (Dimes & de Villiers, 2023).

Organisational transparency is enhanced when companies disclose changes to MIS systems over time, supporting stakeholders in tracking the evolution of multi-capital management (Dimes et al., 2023). A culture of trust should be adopted within an organisation, where open communication between management and employees and collaboration across departments is established (Maroun & Ecim, 2024) to ensure that decision-making considers a holistic view of value creation (Dimes & de Villiers, 2023; Dimes et al., 2023) (Section 2.3).

Monitoring systems, such as sustainability indices and external audits, ensure that organisations maintain alignment with their long-term value-creation strategies and robust risk responses, which enables integrated thinking to be implemented (Malafronte & Pereira, 2021) (Section 2.3).

Organisations examining how their supply chain management integrates multi-capitals are strengthening sustainability and ensuring long-term value creation by ensuring that all capitals are managed effectively (Dimes et al., 2023). By incorporating multi-capital elements into supply chain strategies, companies can foster a more resilient and responsible supply chain that aligns with the overarching integrated strategy (Maroun & Ecim, 2024).

3.1.7: Principe 7 (P7) – Continuous improvement

P7 focuses on the effort of organisations to promote continuous improvement, as proposed by Dimes et al. (2023) and Malafronte and Pereira (2021)The promotion of an organisational culture that includes trust, collaboration, and teamwork is integral to the continuous improvement necessary for having an integrated thinking ethos (Dimes et al., 2023). Maroun & Ecim (2024) observed that successful companies involve employees in training and decision-making, supporting an environment where skill and knowledge development around

sustainability are prioritised. P7 evaluates the involvement of different levels of employees in decision-making, an investment in improving the skills and knowledge within the organisation, and the use of feedback loops to enable continuous improvement.

Dimes et al. (2023) further emphasise the importance of information systems being implemented to assess an entity's performance. From the perspective of value creation, the implementation of information systems should address all the various capitals (IIRC, 2021).

Post-implementation reviews of organisation projects and employee engagement in biodiversity initiatives align with the continuous improvement framework by enabling organisations to refine their practices based on feedback loops (Bui & De Villiers, 2017; Maroun & Ecim, 2024). Both help ensure a multi-capital approach in assessing performance, as organisations can adjust strategies based on biodiversity project outcomes, leading to more effective decision-making (IFAC, 2020).

3.1.8: Principle 8 (P8) – Integrated intelligence

AI can process vast amounts of data across multiple capitals allowing for more informed and rapid decisions which balance short-term objectives with long-term sustainability goals (Dimes et al., 2023). The fast-track informed decision-making aligns with the principle of Integrated Intelligence, where technology is used to communicate information across departments, ensuring a comprehensive understanding of the interconnectedness between various capitals.

Integrated Intelligence goes beyond mere data collection and emphasises the systems integration, multi-functional teams, and data connectivity necessary to support integrated thinking (Dimes & de Villiers, 2023). Integrated Intelligence refers to the seamless integration of performance management systems, financial and extra-financial data, and various organisational processes, ensuring that decision-makers have access to comprehensive information that includes financial, social, environmental, and governance data (Dimes & de Villiers, 2023; Dimes et al., 2023).

Additionally, AI and advanced technology play a crucial role in optimising KPIs and integrating them into an organisation's business model. By leveraging AI, companies can track and analyse KPIs related to financial performance, environmental impact, and social responsibility, all in real-time (Dimes & de Villiers, 2023).

However, with the rise of technology comes the associated risks, particularly related to data privacy and over-reliance on automated decision-making (Raynovich, 2023). These risks pose

significant challenges to integrated thinking, as they can undermine transparency and stakeholder trust. Organisations must implement risk response strategies which involve regular audits of AI systems, ensuring accountability and mitigating potential biases or errors in decision-making (Rivera-Arrubla & Zorio-Grima, 2016). By using technology responsibly, companies can further enhance their integrated thinking schematics while safeguarding the integrity of their multi-capital strategies.

Technology committees ensure that technology initiatives, like the implementation of AI or MIS, are aligned with strategic goals and risk management frameworks (Forrest et al., 2022; Thornton, 2023). Organisations in sectors where technology has a significant impact (e.g., financial services) often have technology committees that provide strategic oversight on issues like cybersecurity, data management, and AI, ensuring they are integrated into broader corporate governance frameworks (Thornton, 2023).

3.1.9: Principle 9 (P9) – Multi-capitals and boundary-setting

P9 emphasises boundary-setting and accounting for multi-capitals. Boundary-setting in extra-financial reporting emphasises clear boundaries, allowing companies to disclose relevant information about their direct and indirect impacts on multiple (Atkins & Maroun, 2015; Maroun & Ecim, 2024). Effective boundary-setting enables organisations to define both their organisational and value chain boundaries, distinguishing between internal operations and the broader effects on their value chains (Panwar et al., 2023). Defining boundaries at the organisational and value creation level is key for communicating how value is created, preserved, or destroyed across multi-capital capitals (IIRC, 2021) (Section 2.1). Integrated thinking further reinforces boundary-setting by requiring companies to take a thorough view of how interrelated activities impact their broader ecosystem, ensuring that they consider not only the immediate outcomes but also long-term sustainability challenges (Maroun & Ecim, 2024).

The use of quality management systems supports the continuous clarification of an organisation's boundary-setting processes. Quality management mechanisms help ensure that quality checks are institutionalised, enabling entities to monitor and adjust their approach to multi-capital performance based on real-time feedback (Dimes et al., 2023). By developing a quality management system and performing ongoing quality checks (Maroun & Ecim, 2024), organisations can better manage the interdependencies between capitals (Dumay & Dai, 2017), enhancing both the quality of their reporting and their ability to address long-term strategic and sustainability goals (Section 2.4).

Integrated thinking also entails recognising the interconnections and trade-offs between multi-capitals. The availability and influence of these capitals can fluctuate, posing challenges to integrated thinking (IIRC, 2021). Moreover, organisations do not impact all types of capital equally, as their effects depend on their specific industry and operations. Incorporating a multi-capital accounting system, including a "statement of multi-capital position "and a "statement of multi-capital performance" allows organisations to assess and report on their impacts across various capitals comprehensively (IIRC, 2021). The use of a multi-capital financial reporting framework approach captures direct and indirect impacts on multi-capitals, enhancing the impact assessments on capitals and informing decision-making in future.

3.1.10: Principle 10 (P10) – External sources of evidence

Integrated thinking can be measured using information other than information included in annual reports (Dimes et al., 2023). A measure of the levels of integrated thinking can be applied to information found in websites (Dimes et al., 2023b), social media and news releases (Rivera-Arrubla & Zorio-Grima, 2016) and awards (Barth et al., 2017) (Section 2.4).

P10 focuses on external sources of integrated thinking, being sources that exclude the disclosures in corporate reports. This principle is evaluated using the disclosure of any integrated thinking and sustainability awards, evaluating external news articles relating to the entity that affects multi-capitals, and inspecting the organisation's webpage for evidence of ESG matters, as discussed by Dimes et al. (2023). The use of sources other than extra-financial reports not only complements traditional corporate disclosures but also provides a broader perspective on how integrated thinking is communicated in various external channels.

Using the schematic, the levels of integrated thinking can be gauged:

> **RQ1: What are the levels of integrated thinking (according to the integrated thinking schematic) among United Kingdom-listed companies based on the information disclosed in their corporate reports?**

3.2: Potential interrelationships between integrated thinking and other variables

This study assesses if there is a correlation between integrated thinking principles and entity size, financial performance, leverage, industry, and ESG score.

RQ2: What are the interrelationships between integrated thinking levels among United Kingdom-listed companies and independent variables?

Each variable used to assess the above correlations is detailed below:

3.2.1: Entity size, financial performance, leverage

Adopting an integrated approach to resource allocation, risk management, strategy development, and performance evaluation can lead to many financial advantages for a company (Maroun et al., 2023). The advantages include improved decision-making processes and liquidity (Barth et al., 2017), higher market returns (Zhou et al., 2017) and a lower cost of equity (Bui & De Villiers, 2017). A multi-capital resource allocation approach suggests that the implementation of integrated thinking may positively impact financial performance and leverage, improving business sustainability (Dumay & Dai, 2017). When companies disclose their integrated thinking practices, they demonstrate effective management of economic, social, and environmental issues (Malola & Maroun, 2019), providing reassurance to investors regarding the business's processes (Barth et al., 2017).

RQ2.1: Does a higher level of integrated thinking result in better financial performance and lower leveraging for an organisation?

Larger companies, with more resources, are typically better equipped to implement the necessary structures and processes for integrated thinking across the organisation (Rinaldi, 2020). Smaller companies may not perceive the value in producing integrated reports (Velte & Stawinoga, 2017) and may lack the controls or reporting systems to ensure high-quality reporting (Bui & De Villiers, 2017). Businesses of all sizes can still implement integrated thinking, underscoring the need for a comprehensive framework (Maroun et al., 2023).

RQ2.2: Does a higher level of integrated thinking come about as a result of being a larger-sized organisation?

3.2.2 CDP scores and ESG performance

The integrated thinking schematic needs to be calibrated against other tools which use management disclosures, such as ESG performance and CDP scores, to ascertain the validity of the results. Proxies of integrated thinking include ESG scores and CDP scores.

Companies operating in socially sensitive industries are expected to disclose more information regarding ESG impacts (Cho et al., 2015; Malola & Maroun, 2019). An increase in extra-

financial disclosures within corporate reports supports integrated thinking – considering multi-capitals – and should increase integrated thinking scores. Organisations are categorised by industry and assigned an ESG impact score (Malola & Maroun, 2019).

CDP scores are used, which is an assessment of a company's environmental impact (Appendix 3) (CDP, 2020). The CDP assigns scores to businesses based on their social and environmental effects, focusing on their influence on climate change, forests, and water security. The CDP score per company for each year under review is used. CDP scores per climate change, water security, and forestry were captured, and the average CDP score per company, considering all three categories of scores, was calculated.

RQ2.3 Are the integrated thinking scores as per the integrated thinking schematic correlated with other proxies of integrated thinking?

4. Method

This mixed-methods study uses an integrated thinking schematic to collect data from corporate reports for the top 40 LSE-listed companies to evaluate their levels of integrated thinking. The study uses an exploratory two-stage approach to measure the levels of integrated thinking. The first stage includes the development of the integrated thinking schematic using the schematic developed by Maroun et al. (2023) and additional determinants of integrated thinking from academic literature. The second stage involves using the developed integrated thinking schematic to measure integrated thinking using management disclosures in extra-financial reports and identifying any relationships between integrated thinking and group variables (Section 3.2). Measuring integrated thinking is done using content analyses and descriptive statistics, Kruskal Wallis tests and Jonckheere-Terpstra tests.

4.1 Sample

The study is based on the Top 40 LSE-listed companies by market capitalisation (as of 07/03/2024), which have prepared corporate reports consistently from 2014 to 2022. The largest listed companies are focused on in this study to mitigate potential issues such as resource constraints, limited technical expertise, lack of financial analyst attention, or insufficient experience in applying the IR Framework, which can impact the quality of reports (De Villiers et al., 2020; IIRC, 2021; Malola & Maroun, 2019). The largest listed companies are more likely to possess the resources and controls needed to gather the data necessary for implementing integrated thinking principles[7] (Stubbs & Higgins, 2014).

This research paper assesses the level of integrated thinking using entities listed on the LSE. The UK is a novel setting due to the lack of research regarding integrated thinking (see Section 1). The UK is a developed country that has robust financial and extra-financial reporting standards that reinforce integrated thinking. (Section 1). The UK has readily accessible information disclosed in corporate reports which are generally well documented (Subbarao & Zeghal, 1997), which facilitates the use of the integrated thinking schematic to measure integrated thinking levels.

The 2014, 2018, and 2022 financial years are covered. In the UK, the EU Non-Financial Reporting Directive (NFRD)[4] was adopted in 2014 (EU, 2014), making this a good base year as the directive encouraged organisations to take a more active role in integrated thinking. The NFRD is used by organisations to ensure they are taking the relevant steps towards a holistic view of financial and extra-financial information. The year 2018 has been selected as it marks one of the initial years in which compliance with the NFRD had to be reported in annual reports (EU, 2014). By 2018, Integrated thinking would have had an opportunity to expand and be reflected within the business models, strategies and risk assessments of organisations. Furthermore, 2018 serves as the midpoint between 2014 and 2022, allowing for the evaluation of the progression in integrated thinking over time.

The 2022 reports are assessed as this year coincides with an observed growth in integrated thinking and sustainability-focused initiatives (Maroun et al., 2023). Additionally, the 2022 reports represent the second year following the COVID-19 pandemic and were the most recent reports available for data collection. By comparing the 2022 reports to those from 2018, researchers can evaluate how integrated thinking practices have developed over time, particularly after an initial period of adaptation and enhancement following their adoption in 2014.

The Corporate Sustainability Reporting Directive (CSRD) was announced in 2021 and adopted in 2022. Companies were encouraged to adopt the directive early, leading to changes expected in subsequent years' disclosures (Fiechter et al., 2022). The requirements for disclosures include a commitment by UK organisations to net zero, further emphasising environmental capital and a need to consider multi-capital impacts. Therefore, 2022 reports

[4] The EU NFRD is still relevant within a UK setting. Companies that were subject to the EU NFRD need to transition to the Corporate Sustainability Reporting Directive (CSRD), adopted in 2022 (Baumüller & Grbenic, 2021). The objectives of CSRD align with those of EU NFRD, thus EU NFRD continues to influence UK regulations.

should reflect how organisations have increasingly incorporated extra-financial considerations and stakeholder needs into their disclosures as a result.

4.2: Data collection and analysis

Phase 1: Content analysis of corporate reports

Secondly, to measure integrated thinking levels across companies, the refined schematic is applied to the corporate reports of the Top 40 companies listed on the LSE. Following a similar approach used in environmental reporting (Gray, 2006), sustainability reporting (Cho et al., 2015) and integrated reporting (Maroun, 2019) literature, qualitative content analysis is employed to gather data and analyse the corporate reports of companies. Content analysis is well-suited for handling inconsistently formatted material while also identifying trends and examining both textual and descriptive statistics (Krippendorff, 2018).

Each entity's corporate reports are read several times to get a sense of the structure and content (Solomon & Maroun, 2012). The reports are then re-examined to identify disclosures, both quantitative and qualitative, relating to the principles identified in the developed integrated thinking schematic. Examples include the materiality determination process, the identification and assessment of risks relating to each multi-capital, combined assurance for corporate reports, and the use of MIS to collect, process and analyse information relating to multi-capitals to inform decision-making.

Phase 2: Scoring and evaluation

Each company is analysed against 179 sub-indicators[5], which are grouped under the main 10 principles outlined in Table 1. Once the data per company are aggregated, each disclosure, grouped per sub-principle, was awarded a score out of five:

(1) Level 1: No disclosures made relating to the principle
(2) Level 2: Disclosure is made relating to the principle without explanation of the relevance to creating value

[5] The 179 sub-indicators referred to above are indicators of integrated thinking as explained in Table 1 further broken down into sub-indicators. These indicators are a representation of the overarching indicator as illustrated in Table 1. Refer to Appendix 6.

(3) Level 3: A basic explanation is made relating to the principle, including a limited or incomplete overview of its relevance to value creation and integration with relevant sub-principles
(4) Level 4: A good explanation is made relating to the principle, including a clear but not exhaustive overview of its relevance to value creation and integration with relevant sub-principles
(5) Level 5: A thorough and detailed explanation addressing the principle, providing a comprehensive overview of its relevance to value creation and integration with relevant sub-principles

The average integrated thinking percentage per principle for each year is then determined.

Descriptive statistical tests show variances between different variables and the levels of integrated thinking for LSE companies for the longitudinal analysis 2014-2022. The Kruskal Wallis and Jonckheere-Terpstra tests analyse differences in integrated thinking across each variable being reviewed. The non-parametric tests are selected as they do not assume normality in data distribution, making them well-suited to the nature of integrated thinking levels and variability between companies. These statistical tests determine if integrated thinking levels per principle differ with the grouping level, independent variable, and any associations. The use of these statistical tests is consistent with integrated reporting research (Malola & Maroun, 2019; Prinsloo & Maroun, 2021). To provide additional insights into the relationship between the group variable and integrated thinking, Spearman Rank Order Correlations are used to calculate the strength of the relationships between the group variables. The statistical tests and variables tests are summarised below.

Table 2: Summary of variables used for statistical tests

Grouping variable	Assessment[6]	Statistical approach[7]	Background theory
Size	Entities are allocated to a size quartile based on the market capitalisation of the entity.	H statistic & J-T statistic	Section 3.2.1 RQ2.2
Financial Performance	Entities are allocated to a quartile based on the "return on assets" metric. This is calculated by taking the profit after tax divided by the total assets	H statistic & J-T statistic	Section 3.2.1 RQ2.1
Leverage	Entities are allocated to quartiles based on the debt/equity ratio of the entity. This is calculated by is derived by dividing the total liabilities	H statistic & J-T statistic	Section 3.2.1 RQ2.1

[6] 1 is allocated to the lowest quartile (i.e. smaller size/weaker financial performance/higher leveraging/weaker ESG scores) and 4 to the highest quartile (higher performing metrics).
[7] The three statistical tests used in the quantitative assessment are the Kruskal-Wallis H (H statistic); Jonckheere-Terpstra Test (J-T statistic); and Mann-Whitney U (U statistic).

Table 2: Summary of variables used for statistical tests			
Grouping variable	**Assessment[6]**	**Statistical approach[7]**	**Background theory**
Industry	Entities are allocated a score dependent on the environmental impact within the specific industry: mining/industrial [value of 2]; financial services [value of 1] and other industries [value of 3] (Michelon et al., 2015). Refer to Appendix 2[8].	H statistic & J-T statistic	Section 3.2.1 RQ2.3
CDP	CDP scores are obtained (CDP, 2020) for the available entities and rated as per Appendix 3. The scores are allocated to each company and obtained for 2014, 2018 and 2022.. Each entity is allocated to a quartile for statistical analysis.	H statistic & J-T statistic	Section 3.2.2 RQ2.3
ESG score	Companies are rated from high exposure to ESG risks and failure to those leading in the management of significant ESG factors and capitalising on emerging ESG-related opportunities. These are then allocated to a quartile with [4] allocated to top performing companies and [1] to lowest performing companies.	H statistic & J-T statistic	Section 3.2.2 RQ2.3

4.3: Reliability and validity checks

The use of a five-point scale introduces subjectivity into the content analyses. This is consistent with the nature of measuring integrated thinking, as illustrated by the use of a ranking system for ESG disclosures (EY, 2020; Vitolla et al., 2020). Because of the subjectivity, various reliability and validity checks have also been implemented. The use of a five-point scale introduces subjectivity into the content analyses. The subjectivity is consistent with the nature of measuring integrated thinking, exampled by the use of a ranking system for ESG disclosures (EY, 2020; Vitolla et al., 2020). Various reliability and validity checks have also been implemented due to the subjectivity.

The coding process is piloted with ten LSE-listed companies[9]. This is to ensure consistency in the coding process, identify additional sub-indicators that need to be added to the integrated thinking schematic, and sub-indicators where judgement may be required and reach a consensus on how to code these sub-indicators. The pilot tests are independently analysed by the researcher, and both research assistants and material differences are flagged for the attention of the lead researcher to resolve.

[8] In total, 8 entities are allocated to mining/industrial, 10 to financial services, and 32 to other industries (2 – A total of 40 entities).

[9] All researchers involved hold, at minimum, undergraduate degrees in accountancy/auditing with experience in extra-financial reporting analysis.

The pilot study also provided initial insights and trends that will be explored further in a larger sample study. The next steps involve re-running the tests with a larger sample, incorporating the adjustments identified during the pilot, and refining the scoring process based on pilot findings.

All information to measure the integrated thinking is obtained from the extra-financial reports. There is an assumption that a company will disclose its integrated thinking practices in publicly available information (Farooq & Maroun, 2017). Disclosures may not show the application of integrated thinking, or disclosures may be withheld by companies to maintain a competitive advantage in their industry (McNally et al., 2017; Oliver et al., 2016). Disclosures could also be an attempt at greenwashing. Consequently, what is being reported in extra-financial reports is not an ideal proxy for integrated thinking (McNally et al., 2017; Tweedie & Martinov-Bennie, 2015).

5: Results

5.1: Integrated thinking scores

Figure 2 shows a longitudinal analysis of the average level of integrated thinking for each year (2014, 2018 and 2022) across the entire sample. There has been material improvement in the level of integrated thinking over the three years analysed.

Figure 2: The average integrated thinking levels per year for all top 40 LSE companies

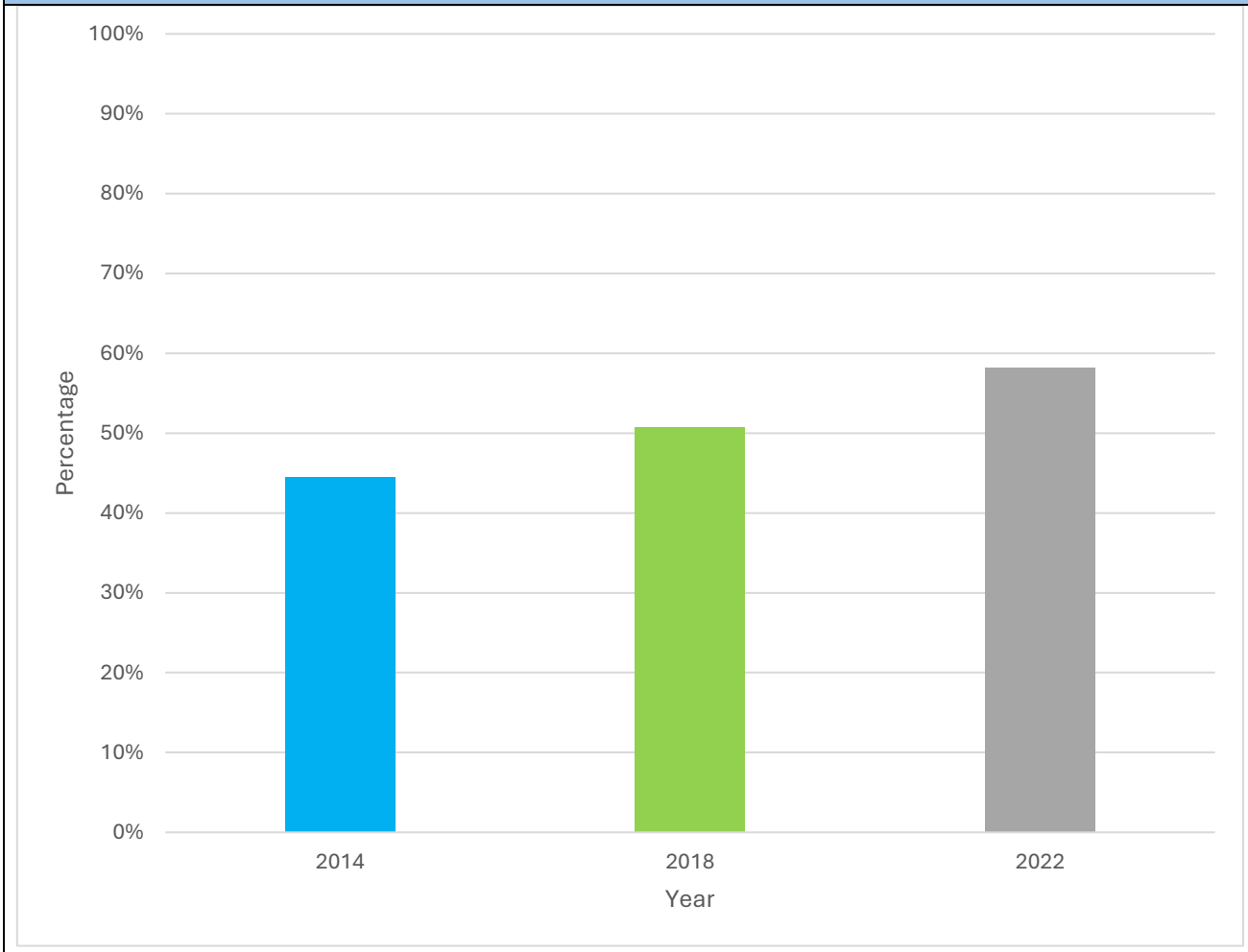


Table 3: The statistical findings for the movement in integrated thinking scores between 2014-2022 and 2018-2022

	H-test	JT-test	JT std. test	H-test	JT-test	JT std. test	Min	Max	Average
	(2018-2022)	(2018-2022)	(2018-2022)	(2014-2022)	(2014-2022)	(2014-2022)			
Principle 1	0,100	0,752	-0,316	2,252	0,263	1,120	28%	76%	53%
Principle 2	0,168	0,682	-0,410	1,601	0,407	0,830	32%	84%	69^
Principle 3	0,335	0,563	-0,579	0,488	0,953	0,059	20%	75%	55%
Principle 4	0,203	0,652	-0,451	0,680	0,416	-0,814	25%	75%	58%
Principle 5	1,716	0,190	-1,310	6,389**	0,219	1,228	10%	80%	58%
Principle 6	0,549	0,459	0,741	0,559	0,747	0,323	0%	60%	32%
Principle 7	0,258	0,612	-0,508	0,782	0,370	-0,897	20%	80%	50%
Principle 8	0,446	0,504	-0,668	1,354	0,620	0,495	0%	40%	20%
Principle 9	0,744	0,388	0,863	2,166	0,141	1,472	0%	20%	5%
Principle 10	0,114	0,735	0,338	0,188	0,668	0,428	0%	80%	42%
Total	0,334	0,563	-0,578	1,383	0,547	0,603	23%	66%	51%

*Significant correlations are at the ***1%, **5% and *10% level*

Table 4 indicates the LSE-listed entities within the sample which have achieved 50% or more for each principle. This is illustrated per year under review. The results illustrated in Table 3 reinforce the improvement in integrated thinking emphasised in Figure 2.

Table 4: Percentage of entities in the study group scoring below 50% per principle against the integrated thinking schematic over a three-year period [10]

Principle	Percentage of entities in 2014 scoring above 50%	Percentage of entities in 2018 scoring above 50%	Percentage of entities in 2022 scoring above 50%
P1	30%	65%	92,5%
P2	87,5%	95%	100%
P3	37,5%	65%	90%
P4	65%	70%	87,5%
P5	70%	82,5%	97,5%
P6	0%	0%	15%
P7	15%	55%	87,5%
P8	0%	0%	0%
P9	0%	0%	0%
P10	5%	35%	67,5%

It is noted that there are consistently higher scores for principles 1 to 5 and comparatively lower scores for principles 6 to principle 10. This is likely because of the new principles being introduced using more recent academic literature and the sustainability standards that have been introduced. The UK organisations have, therefore, had less time to implement the new indicators of integrated thinking into their organisation and value chain.

P9 (5%) is identified as the weakest principle. This is likely because of the introduction of various sustainability standards and best practice codes, such as the GRI, TCFD, and EU ESRS, across the period in review, which organisations are still in the process of adopting. A strong governing body to ensure consistent application of the above standards can further support integrated thinking. However, there remains a gap in reporting on boundary setting

[10] The percentage per column will not cast to 100% as this table looks at entities scoring below 70% across principles and not equal to and above 70%. Entities may score below 70% in some, but not all, principles.

and presenting statements which reflect an entity's impact across all capitals, underscoring the need for more comprehensive disclosures.

The maximum scores of integrated thinking indicate that there are no entities which achieve a perfect application of the indicators in the respective principles. This indicates that even though there is a commitment to integrated thinking, there is still work which needs to be done in the UK to implement integrated thinking within organisations.

Some entities score very poorly, particularly across P6-P10. This highlights the existing gap in the implementation of integrated thinking among the UK's largest companies. The trend shown in Figure 2 emphasises that the principles included in the schematic already developed by Maroun et al. (2023) (P1-P5) are implemented better. P6-P10, only being introduced more recently by academic research and sustainability related standards is likely the reason for their lack of implementation.

Figure 2 highlights an increase in integrated thinking levels across each of the principles of integrated thinking from 2014 through 2022. This emphasises a commitment by UK companies to ensure that their operations consider the multi-capitals and stakeholders for value creation. increases in integrated thinking levels are also driven by the introduction of additional sustainability reporting standards in the UK that support the disclosure of both financial and extra-financial information. The first of the standards is the NFRD, which is being replaced by the CSRD. This standard, along with more recent standards such as EU ESRS, TFCD, and GRI, guides reporting both financial and extra-financial information, promoting integrated thinking.

Each principle is discussed separately below.

Principle 1

Figure 2 illustrates a poor commitment to an integrated understanding and awareness in the UK in 2014. This is indicated by organisations only disclosing information relating to 44.5% of the sub-indicators in P1. The lack of disclosure show a lack of stakeholder engagement, a multi-capital approach, and a risk management process that focuses on multi-capitals - elements critical for aligning corporate strategy with long-term value creation.

There is an increasing trend in P1 from 2014 to 2022, with an increase of 16.24% to 60.74% ($H = 2.252$ $p > 0.1$; JT std. = 1.120, $p > 0.1$). This indicates a better commitment to understanding all aspects of the operations of the organisation, engaging with stakeholders to understand their needs, and ensuring that its corporate strategy and risk management process promotes a multi-capital approach for value creation.

In 2022, table 4 shows that 92.5% of the companies within the sample have managed to achieve more than 50% for P1. This is a 62.5% increase from 2014 (30%). This upward trend supports a greater commitment to understanding the external environment and stakeholder needs, using a risk management process and ensuring a relevant strategy that accounts for multi-capitals and changes in the external environment and the organisation's business model.

The upward trend in disclosures for P1 is possibly because of the increasing demand by stakeholders for engagement and transparency (Dimes & de Villiers, 2023) and the rise in sustainability standards which promote stakeholder engagement and a focus, particularly on environmental and social impacts (Afolabi et al., 2022; Dimes & de Villiers, 2023). Specific frameworks, such as the Global Reporting Initiative (GRI) and Task Force on Climate-related Financial Disclosures (TCFD), have also played a role in shaping reporting practices toward a multi-capital and stakeholder-focused approach. Consequently, the upward trend suggest that UK companies are increasingly embedding integrated thinking practices to enhance long-term value creation and resilience by considering multi-capitals and external factors.

Principle 2

P2 focuses on leadership commitment, ensuring that the governance structure of an entity is focused on ensuring that the strategic objectives of the organisation align with a multi-capital approach and promote a corporate strategy that promotes long-term value creation. The average score for P2 rose from 62.3% in 2014 to 75.37% in 2022. The improvement suggests more disclosures within the sample indicating that the CEO and chairman of the respective organisations have committed to incorporating multi-capital considerations, aligning with the likelihood that they have become aware of the introduction of new sustainability standards. Alongside the CEO and chairman, UK entities have governance structures that promote good corporate governance through the composition of the board and respective committees and adhere to ethical standards (FRC, 2018). Even with the good performance in the sample practising P2, 75.37% indicates that the full principle has not yet been adopted by the sample. A commitment by UK organisations to rectifying this would further enhance their integrated thinking ethos.

The 2022 data shows that 100% of entities achieved a score above 50% for this principle, compared to only 87.5% in 2014. The upward trend suggests that organisations increasingly recognise the importance of executive responsibility in driving sustainable, integrated strategies and have invested in governance structures to support commitments to interconnecting multi-capitals (H = 1.601, p>0.1; JT std. = 0.830, p>0.1).

The high scores for principle 2, along with the full sample scoring above 50% in 2022, emphasise a commitment by companies in the UK to adopt the available codes of best practice. There is a commitment by UK organisations to practising integrated thinking, as the adoption of these standards, is not mandatory but voluntary.

Principle 3

The average score for P3 rose from 48% in 2014 to 62.89% in 2022, reflecting a notable improvement (14.89%) in the acceptance of governance responsibility and transparency over this period (H = 0,488, p>0.1; JT std. = 0.059, p>0.1).

The increase in scores indicates a stronger commitment by governing bodies and executives to integrate internal and external outcomes into the organisation's business model and link key performance indicators (KPIs) to business model outcomes. This alignment supports a comprehensive approach to value creation, incorporating both financial and non-financial factors. The adoption of a multi-capital approach reflects a more holistic governance perspective.

By 2022, 90% of entities achieved a score above 50% for Principle 3, up from just 37.5% in 2014 (as shown in Table 4). This considerable increase illustrates that companies are increasingly committed to stakeholder engagement and maintaining transparent governance structures that promote accepting responsibility for outcomes. Governing bodies are working together to ensure the integrity and accuracy of the information disclosed by the organisation. The use of IT in integrated reporting has likely facilitated the improvement in disclosures for P3, enabling organisations to provide real-time, accurate information that supports informed decision-making and accountability.

The upward trend in P3 aligns with growing stakeholder expectations for more transparent governance and enhanced responsibility. As sustainability standards such as the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD)

become more relevant, companies are pressured to disclose both positive and negative impacts, reinforcing the principle of integrated accountability. UK-listed companies are committed to strengthening stakeholder trust, promoting governance transparency, and adopting extra-financial reporting practices that support long-term value creation.

Principle 4

The score for P4 increased 5.94% from 55.38% in 2014 to 61.32% in 2022. This positive trend is not as noticeable ($H = 0.680$, $p>0.1$; JT std. = -0.814, $p>0.1$) as the other trends, such as P2 and P5. The less significant increase reflects a commitment towards extra-financial performance metrics being included in KPIs, responses to poor performance and the commitment to assurance over extra-financial reporting but not an as noticeable commitment. Performance measurement and assurance may not have been a focus area for many of the UK companies.

According to Table 4, the percentage of companies scoring above 50% for Principle 4 was already relatively high in 2014, at 65%, rising to 87.5% by 2022. This suggests that most entities in the sample have achieved a basic level of transparency and credibility over financial and extra-financial information. UK entities must meet the demands of stakeholders for credible and reliable information, including the very relevant extra-financial reports that are becoming more important with the introduction of sustainability reporting standards.

Balanced reporting requires a commitment to disclosing the successes, failures and areas needing improvement within an organisation. Integrating both positive and negative disclosures may require a shift in organisational culture and further development of internal processes to ensure balanced reporting is encouraged. The incremental improvement in P4 reflects a cautious approach to transparency, indicating that while companies are increasingly meeting the baseline expectations for accountability and credibility, further improvements may need additional stakeholder pressure on the credibility of extra-financial reports.

Principle 5

Figure 2 indicates a significant improvement in P5 from 2014 through 2022. The increase is 19.32% between 2014 (49%) and 2022 (68.68%). This indicates that as more sustainability reporting standards have been introduced, there is a noticeable increase in the commitment of LSE-listed companies to achieving all the sub-indicators included in P5, relating to the use of more reports to provide information using management disclosures ($H = 6.389$, $p<0.05$; JT

std. = 1.228, p>0.1) (i.e., Annual Report and Sustainability Report) to disclose their financial and extra-financial information.

97.5% of the UK companies in the sample have achieved above 50% for P5, 27.5% more than in 2014. This further emphasises the increase in commitment to transparent reporting in the UK and the improvement that non-financial reporting standards are having.

Principle 6

Figure 2 shows a very poor adoption of MIS in 2014 (24%). This emphasises that UK entities are not committing to the use of systems which improve the efficiencies and accuracy of data collected. There may also be a lack of inclusion of employees in decision-making. The lack of collaboration across the organisation may have led to possible incorrect decisions being made. A likely reason for the lack of management disclosures relating to the sub-indicators of P6 in 2014 is that the use of technology and data analytics was not as topical as it has become in more recent years.

From 2014 to 2022, the average score for P6 increased by 17.58% to 41. 58%. Even with the score indicating that MIS and collaboration are still not being used effectively for informed decision-making, there is a commitment to collaboration and the use of MIS to ensure accurate data are used to make decisions (H = 0.559, p>0.1; JT std. = 0.323, p>0.1). With a further commitment to achieving the full adoption of P6 within the UK, entities will ensure that their decision-making is made using sufficient and accurate data, and the decisions will consider a wide range of perspectives.

In 2022, only 15% of the UK-listed companies within the sample managed to achieve above 50% for P6. This is a 15% increase from 2018 (0%) and 2014 (0%). Even though there is a commitment to collaboration within the entity through employees and departments, and obtaining sufficient and accurate information, decisions may not align and effectively promote integrated thinking and value creation within UK organisations.

Principle 7

According to Figure 2, Principle 7 improved from 41% in 2014 to 58.42% in 2022, reflecting a 17.42% increase over the period. This upward trend suggests a gradual commitment to continuous improvement, investing in mechanisms such as employee development, feedback loops, and process optimisation to enhance overall performance. As organisations focus on

building a culture of ongoing learning and adaptation, they become better positioned to make informed, agile decisions that contribute to long-term value. With only just more than half of the sub-indicators for continuous improvement being disclosed, the organisations in the sample should review internal policies to ensure they are committed to employee development and wellness and open to criticism for continuous improvement through feedback loops.

Table 4 further supports the upward trend in P7, showing that in 2022, 87.5% of the organisations scored above 50% for Principle 7, compared to only 15% in 2014. This substantial increase illustrates a broader recognition across UK companies of the need to embed continuous improvement practices within their operations. By fostering an environment where employees are supported and encouraged to grow, organisations can ensure that their workforce remains competent, adaptable, and aligned with the evolving demands of integrated thinking. The scores indicate that many organisations still face challenges in fully embedding a continuous improvement mindset, with room for further investment in structured feedback mechanisms and employee development programs.

Principle 8

In 2022, the average score for Principle 8 was 26.32%, a 14.32% increase from 11.5% in 2014. This modest improvement suggests that while management disclosures within extra-financial reports are beginning to indicate a commitment to integrated intelligence—using technology for data processing and multi-capital analysis – they indicate that organisations are still in the early stages of implementation. This is evidenced by 26.32% indicating that less than half of the sub-indicators relating to integrated technology are being met by management disclosures. Integrated intelligence requires the adoption of advanced information systems that allow organisations to gather, analyse, and distribute real-time data across departments, facilitating more agile and informed decision-making.

Despite some progress, Table 4 further emphasises the limited adoption of integrated intelligence, as no organisations scored above 50% for Principle 8 throughout the 2014-2022 period ($H = 1.354$, $p>0.1$; JT std. = 0.495, $p>0.1$). This indicates ongoing challenges for UK companies in fully embedding technological systems which support governance and multi-capital considerations. The low scores highlight a need for increased investment in digital infrastructure and analytics capabilities to better integrate financial and extra-financial information, which would strengthen risk management, accountability, and alignment with integrated thinking principles.

External pressures, such as investor demand for transparency and rapid advancements in technology, are likely to drive further adoption of integrated intelligence across sectors. Companies driving commitment to P8 can expect to see improvements in risk management, enhanced governance, and greater innovation. To fully harness the benefits of integrated intelligence, companies should prioritise investments in digital infrastructure and data analytics, enabling real-time insights that reinforce resilience and contribute to sustainable, long-term value creation.

Principle 9

According to Figure 2, P9 has increased by 4.14% from 3.75% in 2014 to 7.89% in 2022, reflecting a lack of management disclosures for boundary-setting practices and accounting for multi-capitals. This limited improvement suggests that, the sub-indicators for boundary-setting and accounting for multi-capitals are not a consideration in the practices of organisations within the UK. The limited improvement in P9 is likely due to the lack of emphasis placed on boundary-setting and multi-capital accounting. The focus by standard setters in the UK is on sustainability reporting, with boundary-setting not prioritised.

Table 4 supports low scores by indicating that zero organisations scored above 50% across the 2014-2022 period ($H = 2.166$, $p>0.1$; JT std. $= 0.428$, $p>0.1$). The lack of disclosures toward P9 suggests that companies are struggling to assess and report on the direct and indirect impacts of their operations across organisational boundaries and value chains.

Implementing P9 can be complex, as it requires robust systems for data collection and analysis to capture the impacts on multi-capitals. Many companies may lack the necessary resources and expertise [P8] to conduct boundary-setting assessments comprehensively. Additionally, embedding multi-capital accounting in their reporting frameworks often demands significant investments, which some entities may not be capable of doing depending on their financial performance and debt levels, and a shift in strategic focus from traditional reporting methods to an unorthodox way of illustrating the financial impact on each capital.

Principle 10

Figure 2 illustrates a significant increase of 28.29% in P10 from 27.5% in 2014 to 55.79% in 2022. This shows a growing recognition among UK companies for external sources of integrated thinking, such as social media presence, the achievement of sustainability awards, webpages and news articles. By incorporating insights from external sources, organisations

are enhancing their credibility and transparency, specifically relating to sustainability practices and disclosures.

Table 4 supports the improvement in sources of evidence for integrated thinking other than extra-financial reports, with 5% of UK-listed organisations scoring above 50% in 2014 and increasing by 62.5% to 67,5% in 2022 (H = 0.188, p>0.1; JT std. = 0.603, p>0.1). UK organisations are increasingly disclosing carbon emissions, pursuing integrated thinking and sustainability awards. Such practices indicate an acceptance of external validation of an organisation's implementation of integrated thinking within their operations.

As stakeholders demand greater transparency, the upward trend in P10 emphasises the importance of engaging with third-party evaluations and publicly accessible sources to validate and enhance reporting processes. By using external sources to disclose integrated thinking practices, UK companies are building stakeholder trust and adapting their strategies to better address ESG expectations, contributing to long-term value creation.

5.2: Relationships between principles and variables

The relationships between integrated thinking scores and group variables are presented in Table 5.

Table 5: The relationships between integrated thinking scores and group variables												
	Industry			**Leverage**			**Financial performance**			**Size**		
	H-test	**JT-test**	**JT std. test**	**H-test**	**JT-test**	**JT std. test**	**H-test**	**JT-test**	**JT std. test**	**H-test**	**JT-test**	**JT std. test**
P1	4,621*	0,420	0,806	1,292	0,569	-0,570	23,229***	0,000	4,285	6,376*	0,014	2,462
P2	6,146**	0,469	0,724	12,240***	0,003	-2,964	5,167	0,043	2,028	17,643***	0,000	4,069
P3	18,175***	0,739	0,334	7,830**	0,077	-1,768	8,492**	0,269	1,106	35,768***	0,000	6,002
P4	2,431	0,298	-1,040	6,178	0,152	-1,434	1,005	0,864	0,172	5,861	0,022	2,286
P5	18,808***	0,253	-1,143	1,020	0,356	-0,923	1,706	0,265	1,115	7,256*	0,007	2,698
P6	3,028	0,247	1,157	9,071**	0,005	-2,788	3,093	0,162	1,398	4,430	0,072	1,797
P7	1,142	0,440	0,773	6,18299974	0,201	-1,279	3,662	0,059	1,891	8,730**	0,017	2,382
P8	0,625	0,619	0,497	2,132	0,406	-0,831	0,369	0,903	0,122	6,093	0,020	2,320
P9	15,624***	0,000	-3,766	5,150	0,682	0,410	2,002	0,339	-0,956	3,654	0,800	0,254
P10	4,140	0,497	-0,679	2,803	0,348	-0,939	4,608	0,261	1,123	13,168***	0,000	3,527
Total	10.396***	0,808	-0,24258571	5.715	0,07179824	-1,800	8.632**	0,023	2,270	18.260***	0.000	4,354

*Significant correlations are at the ***1%, **5% and *10% level*

Table 6 illustrates the relationship between the group variables. The results within the table will be discussed below.

Table 6: The correlations between the group variables illustrated using spearman's rho test

	IND_CODE	FIN_PER_QUART	SIZE_QUART	LEV_QUART
IND_CODE	1	0,387**	0,093	-0,145
FIN_PER_QUART	0,387**	1	0,08	0,1
SIZE_QUART	0,093	0,08	1	-0,287**
LEV_QUART	-0,145	0,1	-0,287**	1

***. Correlation is significant at the 0.01 level.*

***. Correlation is significant at the 0.05 level (2-tailed).*

Relationship between group variables

The Spearman's rho analysis revealed several noteworthy relationships between the group variables, as presented in Table 6. A significant positive correlation was identified between industry and financial performance (r_s = 0.387, p < 0.01), suggesting that the industry sector influences financial performance. This implies that integrated thinking practices may differ based on economic dynamics, with certain industries potentially prioritising financial and extra-financial considerations differently.

Additionally, a significant negative correlation was observed between firm size and average (r_s= −0.287, p < 0.01), indicating that larger firms tend to maintain lower leverage. These firms do not need to prioritise financial capital, and rather use their resources to ensure a multi-capital strategy is implemented.

No significant correlations were observed between industry and either firm size or leverage or between financial performance and these variables. These findings suggest that while industry and financial performance may shape integrated thinking, the effects of firm size and leverage are less notable. Larger firms often have more complex structures and resources, allowing them to adopt integrated thinking practices regardless of leverage levels.

Industry

The industry codes used in this study represent 1 = financial services, 2 = energy and mining, and 3 = other sectors (Table 9). Organisations in different industries vary in the way they apply integrated thinking. The positive relationship indicates that Industries with high stakeholder scrutiny and larger multi-capital impact (for example, retail organisations), are more likely to understand the external environment in which they operate, implement strong risk management structures and understand the needs of their respective stakeholders [P1] (H = 4.621, p < 0.1; JT std =0.806, p > 0.1).

Industries with greater extra-financial impacts are likely to adopt standards of best practice and ensure a leadership structure which is diverse to ensure decision-making includes multi-capital considerations to achieve value creation [P2] (H = 6.146, p <0.05; JT std = 0.469, p > 0.1). These standards include GRI, TFCD, and EU ESRS which assist organisations in

adopting an organisational approach that considers extra-financial impacts. Implementing a leadership structure that is diverse and driven by corporate governance ensures that the organisation's decision-making is driven by long-term value creation.

Industries subject to intense stakeholder expectations are more likely to focus on (1) the acceptance of responsibility by those charged with governance (TCWG), (2) their ability to collaborate effectively, and (3) the integration of internal controls to ensure the integrity of information [P3] ($H = 18.175$, $p < 0.01$; JT std = 0.334, $p > 0.1$). For example, industries such as financial services or pharmaceuticals may need to adopt comprehensive internal controls and reporting processes to ensure accountability and manage risks effectively. These sectors may be particularly focused on embedding integrated governance within their organisational practices.

Industries with greater environmental or social impacts, such as energy and mining, may adopt the use of multiple reports to disclose their organisational performance and ability to create value [P5] ($H = 18.808$, $p < 0.01$; JT std = -1,143, $p > 0.1$). The significant relationship reflects the increasing trend in many industries to embed multi-capital considerations, particularly regarding environmental and social capital, into business strategies and governance processes.

Industries with complex supply chains (such as mining and energy, and financial services), are more carefully outlining boundaries and considering the impacts of their value chains on multi-capitals [P9] ($H = 15.624$, $p < 0.01$; JT std = -3,766, $p > 0.1$). This is done to ensure the organisations adhere to sustainability standards and stakeholder expectations.

Industries with a greater emphasis on integrating governance, sustainability, and multi-capital frameworks are likely to demonstrate higher levels of overall integrated thinking [Total] ($H = 10.396$, $p < 0.01$; JT std = -0,243, $p > 0.1$). This indicates that specific industries are more advanced in integrating governance processes and effective interconnectedness of multi-capitals across all areas of the organisation. The factor influencing this is likely to be the impact that the respective industry has on the external environment, specifically the multi-capitals and stakeholders.

Leverage

Highly leveraged organisations do not have leadership commitment towards the adoption of integrated thinking [P2] ($H = 12.240$, $p < 0.01$; JT std. = -2.964, $p < 0.05$). The increase in

financial challenges faced by highly leveraged entities shifts the focus of leadership from sustainability and best practices to financial survival. This suggests high leverage can constrain long-term planning and sustainability efforts within organisations.

Highly leveraged organisations may not have the liquidity to invest in governance structures to promote stakeholder engagement and commit to accountability and integrity of the process to achieve value-creation [P3] ($H = 7.830$, $p < 0.05$; JT std. = -1.768, $p < 0.1$). With the focus being placed on financial pressures, the organisation's business model will focus largely on financial capital, placing less emphasis on stakeholder needs and the interconnectedness of multi-capitals, therefore, not prioritising long-term sustainability.

High leverage may constrain an organisation's ability to invest in MIS, collaborative structures and communication channels necessary for multi-capital management ($H = 9.071$, $p < 0.05$; JT std. = -2.788, $p > 0.1$). These entities focus significantly on their financial pressures, resulting in limited resources available to collect, process and analyse data that can be used collaboratively between departments to meet greater company objectives and foster an integrated thinking ethos.

Financial Performance

Organisations performing better financially are more likely to have the ability to allocate resources to understand their impact on multi-capitals and stakeholder expectations [P1] ($H = 23.229$, $p < 0.01$; JT std. = 4,285, $p < 0,01$). The positive correlation indicates that financial stability provides the means to implement a more holistic and integrated approach to managing various capitals and stakeholders, leading to better sustainability outcomes.

Organisations with financial stability also allow governing bodies to engage stakeholders more proactively, demonstrating commitment to accountability and long-term sustainability goals. These organisations also have the resources to ensure that the composition of their board and the relevant committees support the entity's risk management and sustainability process [P3]. This will ensure that informed decision-making for value creation is achieved ($H = 8.492$, $p < 0.05$; JT std. = 1.106, $p > 0.1$). These organisations are also better positioned to invest in IT systems that promote accountability and accuracy of data being disclosed.

The overall relationship between firm size and integrated thinking highlights that financially stronger organisations tend to score higher in integrated thinking due to their ability to allocate resources to governance structures, sustainability reporting, and multi-capital decision-making

[Total] (H = 8.632, p < 0.05; JT std. = 2.270, p < 0.05). This relationship underscores the ability of financially strong organisations to lead in integrated governance practices, which are critical for long-term success and resilience.

Size

The size of an organisation can allow it to engage with stakeholders more successfully, apply the materiality determination process and allocate resources effectively to the internal and external impacts. [P1] (H = 6.376, p < 0.1; JT std. = 2,462, p > 0,1). The positive correlation indicates that financial stability and firm size provide the means to implement a more holistic and integrated approach to managing various capitals and stakeholders, leading to better sustainability outcomes.

Large organisations have the resources to ensure personnel in leadership positions have the skill set to promote value creation and sustainability through a multi-capital approach. This is supported by a governing body that consists of committees that support risk management, innovation and the sustainability of the organisation [P2] (H = 17.643, p < 0.01; JT std. = 4.069, p < 0.01). This correlation implies that size facilitates leadership's capability to foster a sustainable, integrated approach across all areas of the business.

Larger organisations have the resources and infrastructure to establish comprehensive governance frameworks that promote accepting responsibility for negative outcomes and ensuring committees have been created to safeguard the entity's sustainability. These organisations are more likely to use advanced IT systems which support governance frameworks in aligning the business model with multi-capital outcomes and enhance communication with stakeholders and informed decision-making [P3] (H = 35.768, p < 0.01; JT std. = 6.002, p > 0.1).

These organisations are more likely to engage in robust external communication practices [P5] (H = 7.256, p < 0.1; JT std. = 2.698, p < 0.01). Larger entities often have more resources and established internal departments for producing detailed reports. These organisations are more noticeable to the public and subject to greater scrutiny, motivating them to disclose financial and extra-financial information about their operations. Therefore, they are better positioned to use multiple reports as a tool for accountability and stakeholder trust.

Larger organisations are more likely to adopt continuous improvement practices, such as investing in employee wellness, development programs, and feedback mechanisms, which

drive ongoing enhancements in operations [P7] ($H = 8.730$, $p < 0.05$; JT std. = 2.382, $p > 0.1$). These entities generally have greater resources to implement structured communication channels that allow employee input to inform decision-making and ensure that feedback loops are established to continuously improve processes. This alignment with continuous improvement practices positions these organisations to adapt more readily to change, remain competitive, and foster a culture of learning.

Larger organisations are more likely to showcase external evidence of integrated thinking [P10] ($H = 13.168$, $p < 0.01$; JT std. = 3.52, $p < 0.01$). Larger firms often have more resources to build a strong public profile through sustainability practices that are recognised through awards, social media presence, webpages, and carbon disclosures. This alignment indicates that larger organisations may be more visible to the public for their integrated thinking efforts, contributing to their sustainability and transparency.

Finally, the relationship between firm size and total integrated thinking demonstrates that larger organisations are better positioned to adopt integrated thinking practices [Total] ($H = 18.260$, $p < 0.01$; JT std. = 4,354, $p < 0.01$). This is likely due to the availability of resources, expertise, and the capacity to implement comprehensive integrated thinking strategies. Larger companies tend to perform better in terms of overall integrated thinking, as they are more capable of addressing the diverse needs of stakeholders through robust governance processes.

There are no group variables which are statistically significant when considering performance management and the use of KPIs by organisations to promote a commitment to a multi-capital approach and achieve value creation in the short, medium and long term. This indicates that P4 is an aspect of integrated thinking that does not vary from entity to entity based on their industry, financial performance, leveraging, CDP and ESG score. This could imply that the adoption of integrated performance measurement depends more on internal organisational priorities and culture than on external characteristics.

On the other hand, the lack of statistically significant relationships may also reflect multiple approaches to performance measurement across organisations. Some entities may focus on financial KPIs, while others emphasise environmental or social metrics, leading to differences in how Principle 4 is applied. This variability can make it challenging to identify clear patterns based on the selected variables.

5.3: Relationship between integrated thinking, CDP scores and ESG performance

In this section, integrated thinking scores are compared to CDP scores and ESG scores (Section 4.3). A comparison is made between the above three scores per company in the sample (Figure 3) and per year (Figure 4). The similar trend indicated below between integrated thinking scores and, more specifically, CDP scores enhances the accuracy of integrated thinking scores. Both scores make use of management disclosures of extra-financial information to provide a score. Integrated thinking is also built around the idea of a focus on multi-capital impacts. Therefore, the expectation is that all three scores should follow a similar trend.

Figure 3: A comparison of integrated thinking scores, CDP, and ESG scores per company

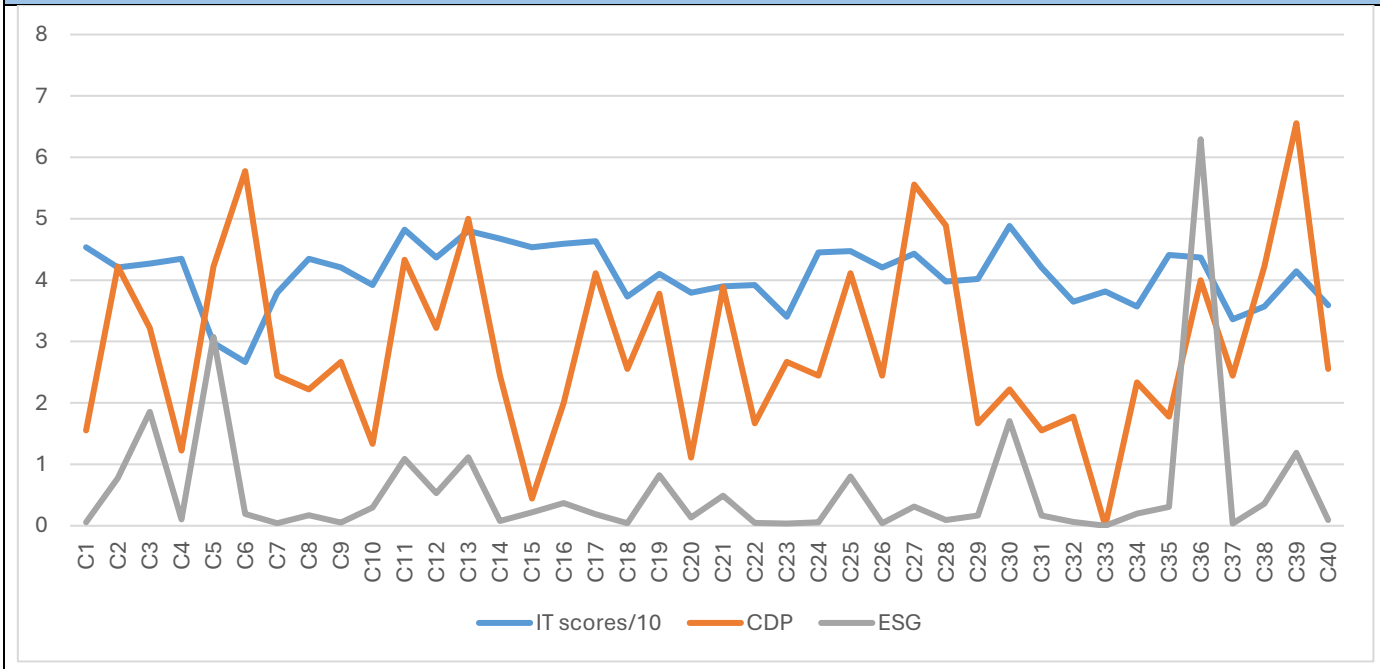


Figure 3 shows the integrated thinking, CDP, and ESG scores across the companies in the sample. The integrated thinking scores remain relatively steady from company to company, suggesting a consistent level of integrated thinking as measured by the integrated thinking schematic for LSE-listed organisations. The consistency in integrated thinking scores over CDP and ESG scores shows that the integrated thinking scores may capture a more stable aspect of management disclosures, while other sustainability scores can vary. The stability in

integrated thinking further emphasises the commitment of organisations in the UK to adopt an integrated thinking ethos.

CDP scores, which focus mainly on environmental reporting, vary greatly across organisations, with some showing very high or very low scores. The variances in CDP scores reflect differences in how companies approach environmental reporting. One limitation of CDP reporting is that not all companies participate fully, which sometimes results in an 'F' rating (see Appendix 3).

ESG scores are generally lower and more scattered, with a few companies scoring notably high numbers. This suggests that while some companies perform well in all three areas (environmental, social, and governance), others may struggle, particularly in areas like social and governance factors. The differences between integrated thinking and ESG scores can be explained by the fact that, although integrated thinking includes elements related to environmental and ESG reporting, it also considers other important factors, such as continuous improvement and strong leadership. The additional areas of integrated thinking might account for the variations we see, indicating that integrated thinking captures a broader perspective of an entity’s operations than ESG alone.

Figure 4 compares the same three scores as Figure 3, just across the years in review instead of per company. The findings for this comparison are discussed below.

Figure 4: A comparison of integrated thinking scores, CDP and ESG scores over time

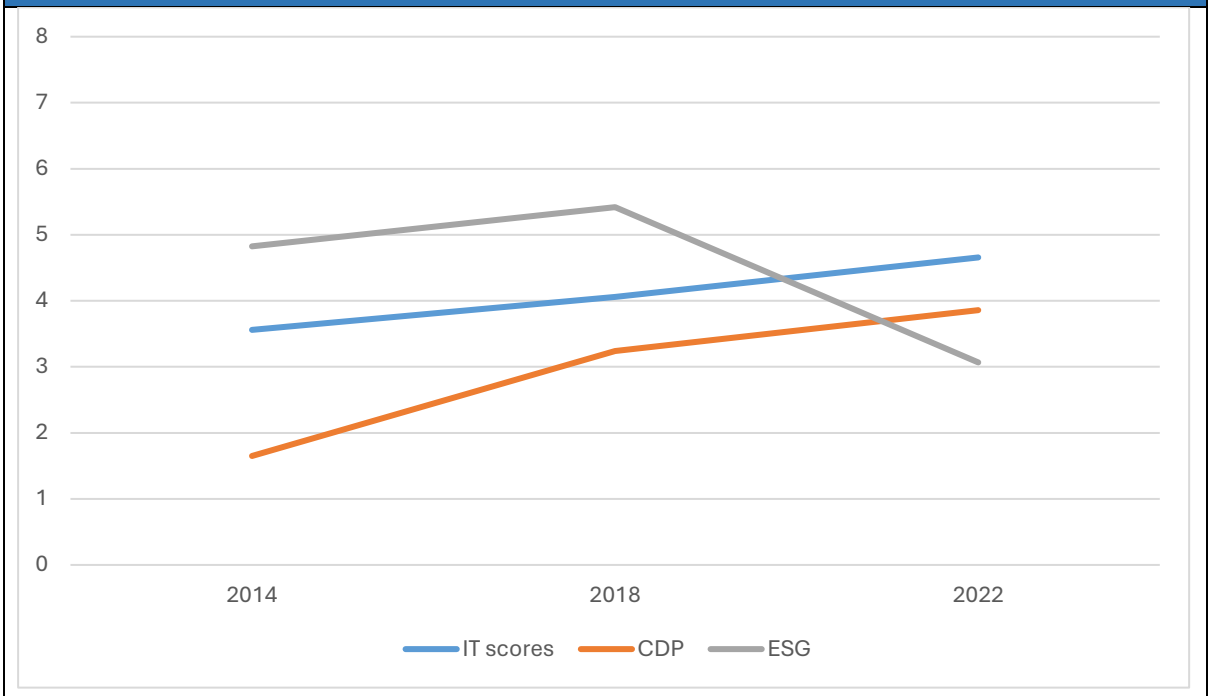


Figure 4 provides a comparison over time, showing integrated thinking, CDP, and ESG scores for 2014, 2018, and 2022. Both integrated thinking and CDP scores show a steady upward trend, suggesting companies have been improving their reporting in both areas over time. The shared trend between integrated thinking and CDP supports the accuracy of integrated thinking scores, as both measures make use of management disclosures relating to extra-financial information when scoring organisations.

ESG scores increase between 2014 and 2018 but then drop noticeably by 2022. This may indicate that some companies find it challenging to maintain high performance in all ESG areas over time. The drop in 2022 suggests that while integrated thinking includes elements of ESG, it might focus on different priorities which remain stable over time. The other priorities of integrated thinking are because of the introduction of additional procedures to the integrated thinking schematic. Integrated thinking placing more emphasis on MIS, continuous improvement and the use of technological advancements can explain the steady improvement in integrated thinking scores even though ESG scores have experienced a decrease between 2018 and 2022.

6: Conclusion

This paper presents a schematic to measure the level of integrated thinking among the top 40 London Stock Exchange (LSE) organisations, refining the approach by Maroun et al. (2023)

with additional principles to better align with recent developments in sustainability standards and academic literature. This enhanced integrated thinking schematic, based on principles such as integrated intelligence, continuous improvement, and multi-capital boundary setting, offers a comprehensive approach for measuring integrated thinking through publicly available extra-financial reports and other accessible information sources.

While prior studies have approached integrated thinking from theoretical or conceptual angles, this research measures integrated thinking, offering a practical model that can be adapted to various settings. Notably, the schematic is not restricted to the UK or large firms but is flexible enough to assess integrated thinking across different jurisdictions and organisation sizes. Organisations can use the integrated thinking schematic as a guideline to implement integrated thinking, while external stakeholders can leverage it to assess integrated thinking through publicly available information (Maroun et al., 2023). Policymakers could use the integrated thinking schematic to assist in the setting of sustainability standards, and this schematic will be useful to academics as deeper insights into integrated thinking can be obtained, as well as areas for future research being outlined in the concluding paragraph of this study.

The findings highlight varying levels of integrated thinking among sampled UK firms, with strong commitment to integrated thinking observed in areas such as leadership accountability, integrated structures, and external communication. In contrast, principles introduced more recently, like management information systems and boundary setting, show lower scores, indicating room for further improvement. The steady upward trend in integrated thinking scores from 2014 to 2022 suggests that UK companies are gradually embedding integrated thinking within their operations, influenced by the rise of extra-financial reporting standards such as the EU's CSRD, EU ESRS, TCFD and GRI.

Our analysis found significant relationships between integrated thinking levels and variables such as industry, leverage, size, ESG, and CDP, underscoring the role these variables play in shaping integrated thinking. Larger companies with greater financial performance in environmentally impactful industries, such as mining and pharmaceuticals, generally exhibited higher integrated thinking levels, likely due to greater resources, increased regulations and stakeholder expectations in these industries. Additionally, companies with strong ESG scores and high CDP ratings showed advanced integrated thinking practices, emphasising the link between ESG performance and integrated decision-making. Therefore, external pressures and company characteristics collectively drive organisations toward more holistic, sustainable practices.

While this study provides valuable insights, the absence of direct access to organisations' internal processes may limit the completeness of the integrated thinking measures. The limitations of this study include the absence of direct access to organizations' internal processes may limit the completeness of the integrated thinking measures. The study's limitations include a sample restricted to JSE-listed entities, with no consideration of other jurisdictions. The findings should be generalised to other jurisdictions with caution. Furthermore**,** only reports from large, listed entities were assessed, excluding organizations in the SME sector. The information used to score integrated thinking was solely derived from disclosures. Interviews, case studies, and practical applications were not considered beyond the disclosures made by the organisations

Poor disclosures do not necessarily indicate a lack of integrated thinking in practice. Weak disclosures may reflect a lack of understanding of how to properly disclose integrated thinking or highlight areas within the organization that need improvement. In some cases**,** poor disclosures may point to weaknesses in reporting controls rather than the absence of integrated thinking practices. Finally, the quantitative analysis focused only on statistically significant relationships, without further econometric analysis to provide deeper insights.

Despite the limitations above, this study makes an important contribution by providing a comprehensive schematic to evaluate integrated thinking, an underdeveloped concept in both academic literature and practice. By analysing extra-financial reports in more detail and incorporating qualitative and quantitative methods, the integrated thinking schematic expands on previous models to capture more detailed principles.

Future studies could expand the sample beyond the UK, comparing integrated thinking in developed and developing economies. Additionally, interviews with company leaders could result in deeper insights into how integrated thinking is understood and adopted internally, addressing potential gaps in public disclosures. Applying the schematic to SMEs or start-ups could also reveal unique challenges with integrated thinking, supporting the broader adoption of integrated thinking across various sectors and organisation sizes.

7: Appendices

Appendix 1: List of abbreviations

Abbreviation	Full Name
AI	Artificial Intelligence
BAE Systems	British Aerospace Systems
BATS	British American Tobacco
CDP	Carbon Disclosure Project
CSO	Chief Sustainability Officer
CSRD	Corporate Sustainability Reporting Directive
ESG	Environmental, Social, and Governance
ESRS	European Sustainability Reporting Standards
EU	European Union
FRC	Financial Reporting Council
FSB	Financial Stability Board
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
GSK	GlaxoSmithKline
IIRC	International Integrated Reporting Council
ISSB	International Sustainability Standards Board
IT	Information Technology
IHG	InterContinental Hotels Group
JSE	Johannesburg Stock Exchange
KPI	Key Performance Indicator
LGEN	Legal & General
LSE	London Stock Exchange
MIS	Management Information Systems
NFRD	Non-Financial Reporting Directive
P1–P10	Principles 1 to 10 (as outlined in the integrated thinking schematic)
Q1-Q4	Quartile 1-4
RELX	Relx Group
ROA	Return on Assets

Abbreviation	Full Name
SDG	Sustainable Development Goals
Shell PLC	Shell Public Limited Company
SME	Small and Medium Enterprises
TCFD	Task Force on Climate-related Financial Disclosures
TNFD	Task Force on Nature-related Financial Disclosures
UK	United Kingdom
VRF	Value Reporting Foundation
ZAR	South African Rand

Appendix 2: List of entities assessed

Table 7: List of entities in the sample

Number	Alpha	Company _Name	Granular industry	Market capitalisation ZAR 'Billions – 01/03/2023
1	RKT	RECKITT BENCKISER GROUP PLC	Consumer goods	20 639 598
2	ULVR	UNILEVER PLC	Consumer goods	10 995 497
3	HSBA	HSBC HOLDINGS PLC	Financial Services	10 221 484
4	SHEL	SHELL PLC	Energy	7 014 998
5	GSK	GSK PLC	Pharmaceutical	6 197 987
6	GLEN	GLENCORE PLC	Mining	4 731 827
7	BP.	BP PLC	Energy	4 451 480
8	AAL	ANGLO AMERICAN PLC	Mining	4 329 071
9	AZN	ASTRAZENECA PLC	Pharmaceutical	3 802 725
10	RIO	RIO TINTO PLC	Mining	3 399 614
11	DGE	DIAGEO PLC	Beverage	2 584 882,88
12	VOD	VODAFONE GROUP PLC	Telecommunications	2 059 793
13	FLTR	FLUTTER ENTERTAINMENT PLC	Sports Betting	1 988 077,57
14	BATS	BRITISH AMERICAN TOBACCO PLC	Tobacco	1 923 467
15	REL	RELX PLC	Information services	1 683 598
16	PRU	PRUDENTIAL PLC	Financial Services	1 564 163
17	RTO	RENTOKIL INITIAL PLC	Facilities services	1 325 540,98
18	NG.	NATIONAL GRID PLC	Energy	1 296 928
19	CPG	COMPASS GROUP PLC	Foodservice	1 178 369,06
20	LLOY	LLOYDS BANKING GROUP PLC	Financial Services	1 046 329
21	BARC	BARCLAYS PLC	Financial Services	986 938
22	TSCO	TESCO PLC	Retail	974 699
23	SSE	SSE PLC	Energy	963 391
24	LSEG	LONDON STOCK EXCHANGE GROUP PLC	Financial Services	956 508

25	BA.	BAE SYSTEMS PLC	Defense and aerospace	951 851
26	AHT	ASHTEAD GROUP PLC	Rental	935 393
27	IMB	IMPERIAL BRANDS PLC	Tobacco	881 568
28	EXPN	EXPERIAN PLC	Information services	747 464,76
29	STAN	STANDARD CHARTERED PLC	Financial Services	717 114
30	III	3I GROUP PLC	Financial Services	542 148
31	LGEN	LEGAL & GENERAL GROUP PLC	Financial Services	539 169
32	RR.	ROLLS-ROYCE HOLDINGS PLC	Defense and aerospace	510 555
33	ANTO	ANTOFAGASTA PLC	Mining	508 826
34	IHG	INTERCONTINENTAL HOTELS GROUP PLC	Hospitality	502 434
35	SGRO	SEGRO PLC	Real Estate	485 139
36	ABF	ASSOCIATED BRITISH FOODS PLC	Retail	465 556
37	INF	INFORMA PLC	Information services	396 422
38	SGE	SAGE GROUP PLC	Software	302 504
39	SMT	SCOTTISH MORTGAGE INV TST PLC	Financial Services	151 918
40	AV.	AVIVA PLC	Financial Services	1 981

Appendix 3: CDP levels and associated scores

Table 8: An illustration of how CDP scores have been allocated to the organisations within the sample

CDP Level	CDP Ranking	Score Allocated
A	Leadership level	9
A-	Leadership level	8
B	Management level	7
B-	Management level	6
C	Awareness level	5
C-	Awareness level	4
D	Disclosure level	3
D-	Disclosure level	2
E		
E-		
F	Failure to respond to a request for a CDP score	1
F-		
G		

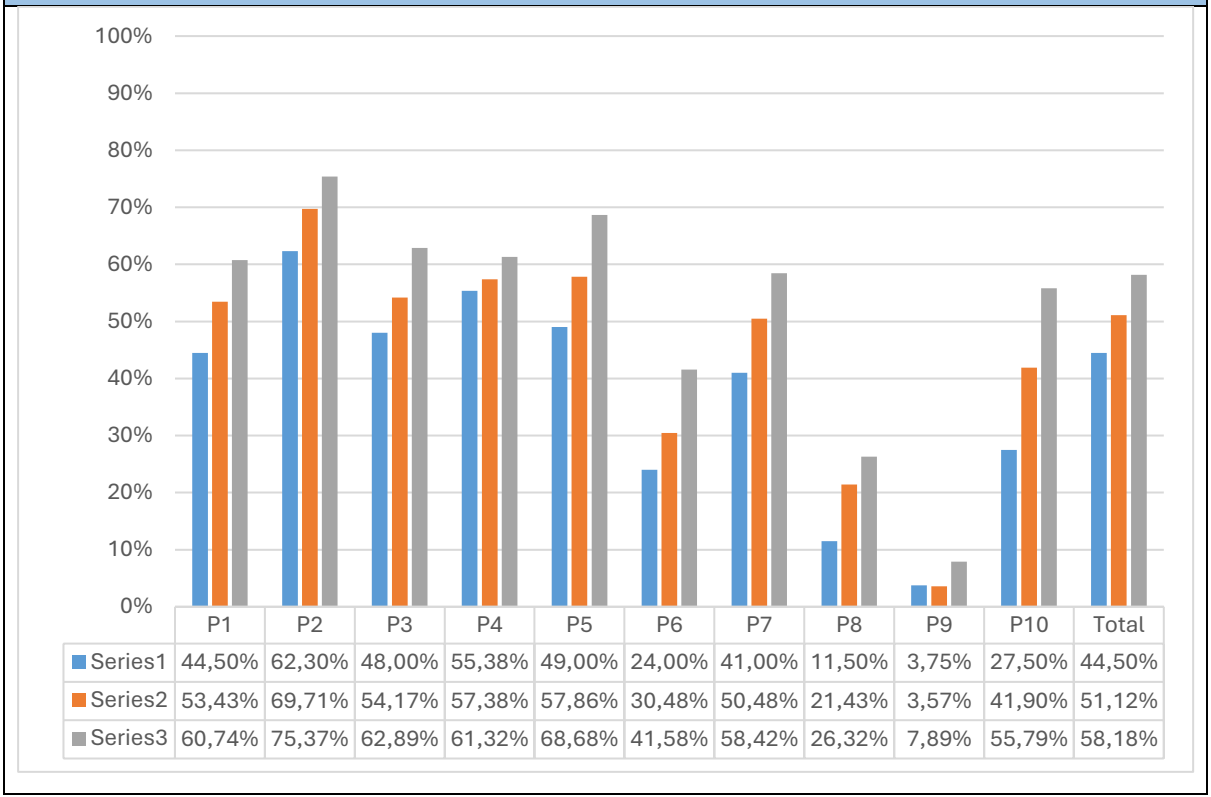
G-		
N/A	No CDP score	0

scores obtained from CDP (2020)

Appendix 4: Additional Analysis

Figure 5 shows each individual principle of integrated thinking over the period. This illustration indicates an increase in integrated thinking per principle over the period. It is also evident that UK organisations have performed better in P1-P5 than P6-P10. The reason for the worse performance in P6-P10 may be due to these principles being introduced more recently in academic literature, sustainability-related standards and corporate governance standards in the UK, giving the UK organisation less time to integrate them into their business practices.

Figure 5: The average integrated thinking scores per principle across 2014-2022 for the top 40 LSE-listed organisations



	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Total
Series1	44,50%	62,30%	48,00%	55,38%	49,00%	24,00%	41,00%	11,50%	3,75%	27,50%	44,50%
Series2	53,43%	69,71%	54,17%	57,38%	57,86%	30,48%	50,48%	21,43%	3,57%	41,90%	51,12%
Series3	60,74%	75,37%	62,89%	61,32%	68,68%	41,58%	58,42%	26,32%	7,89%	55,79%	58,18%

Additional industry insights are provided below.

Analysis by industry

Table 9 illustrates the industries within the sample, the number of organisations within the sample and the way in which the industries within the sample have been categorised. The industries within the sample have been categorised into 3 main categories, (1) financial services, (2) mining and energy, and (3) other which includes pharmaceutical, consumer goods, retail, rental, real estate, defence and aerospace, foodservice, sports-betting, beverage, tobacco, facilities, telecommunications, information services industries.

Table 9: An illustration of the industries within the sample

Industry	Number of entities in the industry	Grouping for industry test
Financial services	10	Financial services
Pharmaceutical	2	Other Industries
Energy	4	Mining/Industrial
Mining	4	Mining/Industrial
Information services	3	Other Industries
Telecommunications	1	Other Industries
Consumer goods	2	Other Industries
Beverage	1	Other Industries
Aerospace and defence	2	Other Industries
Retail	2	Other Industries
Tobacco	2	Other Industries
Foodservice	1	Other Industries
Sports betting	1	Other Industries
Facilities service	1	Other Industries
Rentals	1	Other Industries
Real estate investment trust	1	Financial services
Hospitality	1	Other Industries
Software	1	Other Industries

Figure 6 illustrates the integrated thinking scores achieved by the various industries per principle.

Figure 6: The average integrated thinking levels per principle per industry for all top 40 LSE companies

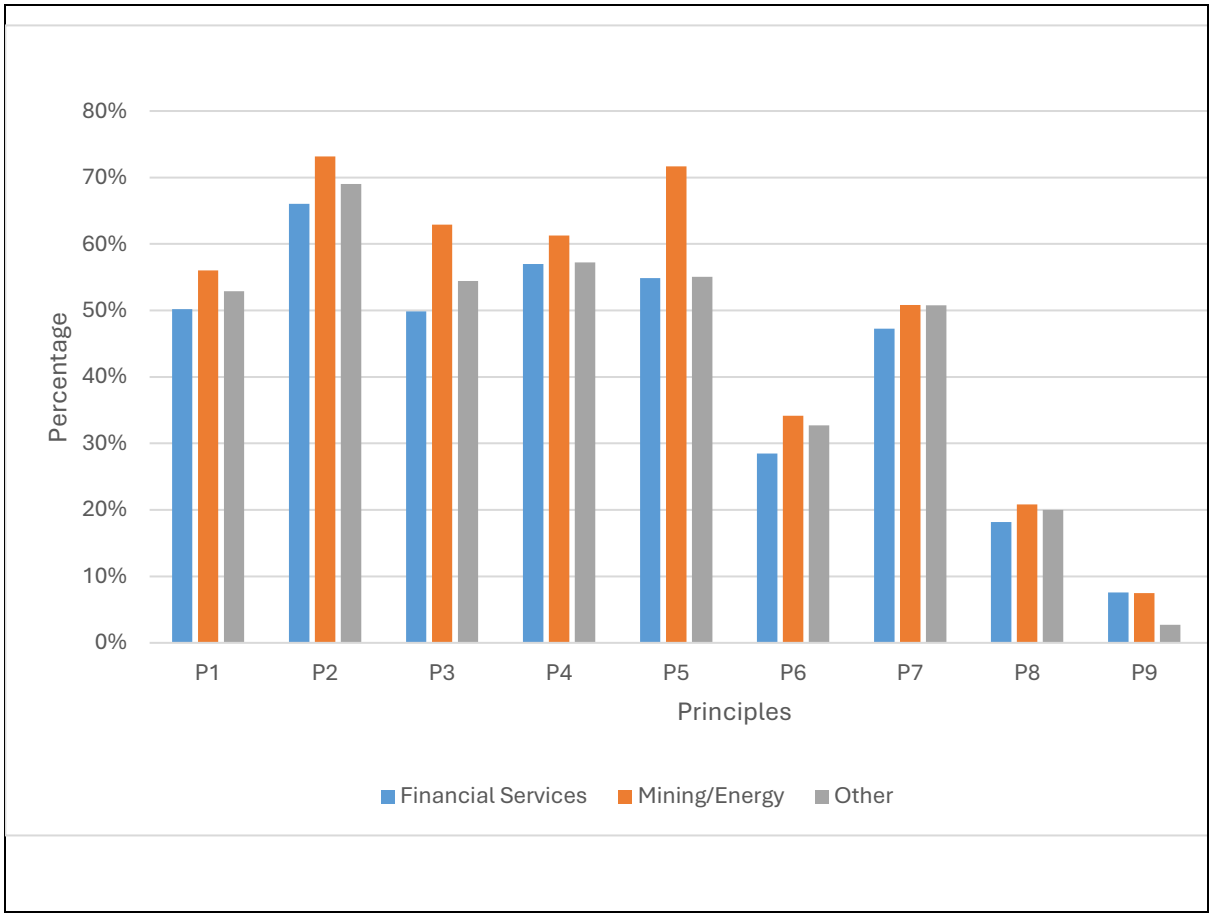


Table 9 illustrates the integrated thinking scores achieved by the industries within the sample. These scores are shown for 2014, 2018 and 2022, to identify the trend of integrated thinking within the various industries. The scores are also illustrated per principle to identify the priorities of integrated thinking for the respective industries.

Table 10: An illustration of the integrated thinking levels per industry across 2014-2022 and the principles of integrated thinking													
Industry	**Average integrated thinking level of total principles**			**Average integrated thinking score across principles**									
	2014	**2018**	**2022**	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**
Financial services	42%	48%	55%	49%	66%	50%	56%	56%	29%	46%	19%	7%	39%
Pharmaceutical	48%	57%	63%	57%	73%	68%	61%	55%	40%	50%	23%	10%	57%
Energy	48%	53%	63%	51%	73%	64%	59%	70%	33%	50%	18%	9%	45%
Mining	52%	58%	63%	61%	73%	62%	63%	73%	35%	52%	23%	6%	52%
Information services	45%	48%	58%	50%	68%	56%	54%	64%	31%	47%	22%	3%	44%
Telecommunications	46%	51%	57%	51%	73%	52%	62%	60%	27%	40%	33%	3%	33%
Consumer goods	45%	56%	60%	58%	73%	60%	54%	57%	37%	60%	23%	2%	47%
Beverage	49%	54%	59%	59%	76%	57%	65%	60%	27%	53%	13%	0%	33%
Defence and aerospace	48%	52%	58%	52%	71%	61%	53%	63%	40%	60%	27%	2%	43%
Retail	43%	45%	53%	50%	69%	48%	60%	35%	30%	50%	20%	0%	30%
Tobacco	43%	50%	61%	56%	71%	48%	59%	60%	37%	50%	10%	0%	47%
Foodservice	42%	46%	57%	51%	69%	55%	45%	63%	33%	47%	20%	3%	20%
Sports Betting	28%	45%	53%	49%	59%	47%	47%	47%	20%	40%	20%	0%	13%
Facilities services	37%	50%	58%	49%	63%	52%	63%	33%	40%	60%	13%	0%	60%
Rental	34%	38%	57%	48%	49%	55%	63%	30%	20%	47%	7%	0%	27%
Real Estate	46%	50%	58%	61%	67%	45%	68%	43%	27%	60%	7%	10%	47%

Over the periods of 2014, 2018, and 2022, there is a general upward trend in the integrated thinking levels across all industries. The pharmaceutical, mining, and energy sectors show consistent improvements, reflecting a strong adoption of the integrated thinking schematic. The pharmaceutical sector increased its average score from 48% in 2014 to 63% in 2022, while the energy and mining sectors both achieved a 63% score by 2022, up from 48% and 52%, respectively, in 2014. The increasing trend in total integrated thinking suggests that industries with high regulatory demands or environmental impacts are progressively embedding integrated thinking into their corporate governance to ensure the needs of stakeholders are understood, and value creation is achieved.

The financial services (55%), sports betting (53%), and retail (53%) industries report lower scores, indicating room for improvement in applying integrated thinking. The lower scores might be due to the unique characteristics of these industries, which focus less on stakeholder engagement, long-term value creation, and emphasis on all multi-capitals, all core components of integrated thinking.

Principle 1

The mining sector leads in P1 with a score of 61%, suggesting a moderately developed awareness of risks and stakeholder engagement, likely due to regulatory requirements, environmental impact, and the stakeholder scrutiny faced by mining organisations. The pharmaceutical and beverage industry has similarly prioritised being transparent in their disclosures toward the sub-indicators of P1. Given the high regulatory scrutiny and public health implications, companies in the pharmaceutical sector focus on understanding external factors, risks, and stakeholder needs. In contrast, financial services, information services, sports betting, facilities services, and rental all score below 50%, with the lowest being rental (48%). Rental organisations may place less emphasis on interconnectedness with societal needs and multi-capitals. For instance, financial services may place more emphasis on financial capital, making the rest less of a priority. Information services may prioritise intellectual capital over others.

Industries with regulatory pressures that impact social and environmental capital more intensively (e.g., pharmaceuticals and mining) prioritise awareness and integration of various capitals for long-term value. The highest score, 61%, indicates a need for improvement in P1. Organisations need to ensure there is more interconnectedness between capitals and stakeholders to drive the value-creation process.

Principle 2

UK organisations meet the majority of the sub-indicators of P2, suggesting strong leadership commitment to stakeholder engagement, strong governance frameworks that promote a holistic, integrated view, and the adoption of codes of best practice. Leadership within the industries emphasises integrated sustainability efforts, which is important in sectors with environmental and regulatory standards. The mining and energy industry, pharmaceutical industry and beverage industry are highly regulated and impact the environment. On the other hand, telecommunications and consumer goods are also the top-scoring industries for P2, emphasising the need for leadership to prioritise stakeholder engagement to adopt integrated thinking appropriately.

The rental sector is the only one to score below 50% (49%), which suggests a relatively low commitment from leadership in prioritising stakeholder engagement and sustainability. This lower score may be because of the industry's traditionally asset-focused business model, where leadership often emphasises profitability and operational efficiency over long-term stakeholder relationships. Unlike highly regulated industries such as energy, mining, and pharmaceuticals, the rental sector may experience fewer pressures to adopt rigorous sustainability practices or to engage in extensive stakeholder dialogues.

The high adoption of indicators relating to P2 among UK organisations illustrates how an industry that impacts ESG factors correlates with the extent to which management prioritises these factors, as seen in sectors like energy and mining. The stronger an industry's impact on ESG concerns and its interactions with the broader community, the more likely organisations within that industry are to adopt best practice codes, showing their commitment to integrated thinking and governance over sustainability.

Principle 3

Energy (64%) and mining (62%), pharmaceuticals (68%), consumer goods (60%), and defence and aerospace (61%) are industries which have achieved above 60% for P3. This suggests a strong integration of structures that enable decision-making to be based on financial and extra-financial information and a business model that is focused on multi-capitals, internal and external considerations, and value creation over the short-term, medium-term, and long-term.

Real estate (45%), telecommunications (48%), and financial services (50%) are among the lowest-scoring sectors for P3, indicating limited integration of governance structures and a business model that supports decision-making based on both financial and non-financial metrics. These sectors may prioritise immediate financial performance, with less emphasis on the multi-capitals and long-term value creation. In these industries, there may be fewer regulatory pressures, or stakeholder demands to incorporate environmental and social considerations, which could account for the lower integration of sustainability-focused frameworks.

The 23% gap between real estate (45%) and pharmaceuticals (68%) emphasises how industries with significant ESG impacts and high public visibility tend to adopt stronger structures to meet P3 requirements. In sectors like energy, mining, and pharmaceuticals, where the environmental and social impacts are high, organisations are more inclined to build comprehensive frameworks that enable sustainable decision-making. Industries facing greater ESG scrutiny are better equipped to implement the structures necessary for integrated thinking across financial, environmental, and social dimensions.

Principle 4

Pharmaceuticals, real estate, rental, facilities services, beverage, telecommunications, and mining all score above 60% on P4, reflecting their commitment to using a combination of financial and non-financial performance metrics to achieve strategic objectives, as well as assurance practices to maintain stakeholder trust. Using a multi-capital approach emphasises balanced performance management across economic, social, and environmental dimensions.

It's important to note that the sample size for the real estate, rental, and facilities services sectors is relatively small. This may affect the reliability of the scores illustrated in, but it still suggests that organisations within these sectors are increasingly recognising the value of assurance and comprehensive metrics in building long-term value and stakeholder confidence.

On the other hand, foodservice (45%) and sports betting (47%) are the lowest-scoring industries for P4, indicating a prioritisation of financial KPIs instead of holistic multi-capital metrics. These industries may lack emphasis on assurance over their management disclosures, potentially undermining the accuracy and reliability of the information shared with stakeholders. Without assurance practices, these sectors risk losing stakeholder trust and confidence, as the data they disclose may not fully capture their operations.

The high percentage of disclosure made in respect of P4 underscores the critical role of multi-dimensional performance tracking, particularly in industries where social and environmental factors have a direct impact on the operations of organisations. Industries which prioritise both financial and extra-financial metrics and make use of assurance services are better positioned to foster transparency, address stakeholder concerns, and promote integrated thinking across all areas of performance.

Principle 5

Energy (70%), mining (73%), information services (64%), and foodservice (63%) are the best-performing sectors for P5. This reflects strong external communication practices, which likely are driven by stakeholder demands for transparency and regulatory compliance for these industries. Due to their environmental and social impacts, are often required to maintain higher levels of public accountability, which is facilitated by detailed reporting practices, such as annual reports, sustainability reports, and ESG disclosures. Making use of multiple reports provides stakeholders with a holistic view of organisational performance for both financial and non-financial impacts. Management disclosures in multiple reports enhance stakeholder trust and engagement by communicating the organisation's commitment to integrated thinking and value creation across all capitals.

Rental (30%), facilities services (33%), and retail (35%) are the lowest-scoring industries for P5, indicating limited external communication and possibly a lesser focus on stakeholder engagement and transparency. These sectors may traditionally prioritise operational efficiency over external reporting, with less regulatory pressure to disclose detailed information on sustainability and non-financial performance. Stakeholders in these industries may receive a limited view of the organisation's operations, reducing overall transparency and trust. The minimal external communication in these sectors suggests a gap in integrated thinking practices.

The significant 40% difference between rental (30%) and mining (73%), the lowest- and highest-scoring industries for P5, indicates that industries with substantial environmental impact or regulatory pressure prioritise reporting and transparency. This contrast between rental and mining indicates how external pressures can drive organisations to adopt external communication strategies. Industries with a high degree of environmental or social accountability are more likely to integrate multiple reports that reflect multi-capital considerations and strengthen relationships with stakeholders.

Principle 6

The scores for P6 are low across all industries, with no industry scoring above 40%. The highest scores, at 40% (pharmaceuticals, facilities service, and defence and aerospace), still show a significant lack in the adoption of integrated management information systems that support integrated thinking by collecting, processing and analysing data for multi-capitals, resulting in effective and accurate information being available for decision-making. The lack of disclosures with respect to P6 suggests a pervasive challenge across industries in the UK in fully implementing the systems needed to support integrated thinking.

The low scores suggest that most industries face barriers to implementing MIS. A key barrier may be the high cost and complexity involved in setting up MIS, which can require significant infrastructure and training investments. Many organisations may lack the technical expertise or frameworks to integrate non-financial data into decision-making effectively.

The slightly higher scores among pharmaceuticals, facilities service, and defence and aerospace suggest that some sectors are beginning to recognise the importance of the use of MIS within their operations, making more accurate information available quickly for informed decision-making. However, scores still indicate that, on the whole, these sectors have yet to fully integrate systems that comprehensively provide accurate information regarding financial and extra-financial information. Without integrated systems, it becomes challenging for organisations to fully adopt multi-capital decision-making.

Principle 7

For Principle 7, which emphasises continuous improvement, the lowest scores were found in the telecommunications and sports betting industries, each achieving 40%. This suggests that these industries may not yet have fully embraced a culture of continuous improvement in terms of embedding practices like employee development, inclusive decision-making, and structured feedback processes. The low scores indicate a possible focus on immediate financial results rather than fostering an organisational culture that values ongoing skill enhancement, team collaboration, and the systematic evaluation of past actions to drive future improvements.

In contrast, industries such as mining, energy, financial services, and pharmaceuticals scored around 50%, showing some progress in implementing continuous improvement practices, though there remains significant potential for further growth. For sectors like mining and energy, which face high regulatory demands and have complex impacts on society and the environment, adopting stronger continuous improvement practices could enhance their

resilience and adaptability. Future growth might involve greater investment in employee development, more integrated decision-making processes that include various levels of staff, and effective feedback loops to learn from and adapt based on past performance.

The difference in scores suggests that industries with inherently complex operational challenges, like mining and pharmaceuticals, may recognise the importance of continuous improvement but have yet to fully capitalise on its benefits. By deepening their focus on employee involvement, development programs, and structured feedback mechanisms, these sectors could better align their operations with long-term sustainability and integrated thinking goals, ultimately supporting more effective, holistic decision-making.

Principle 8

For Principle 8, focusing on integrated intelligence, the highest score was 33% for the telecommunications sector, indicating some adoption of data-driven insights and technology in decision-making processes, strategy and business models within this industry. Aerospace and defence followed with a score of 27%, suggesting a similar emphasis on using advanced analytics and integrated intelligence. The above industries demonstrate a commitment to utilising technology, AI and committees within their governance structures to support integrated thinking, involving real-time tracking and analysis of multi-capitals, thereby ensuring that decision-making aligns with both short-term objectives and long-term sustainability goals.

Conversely, the beverages and facilities management sector scored 13%, and the rental and real estate industry scored only 7% for Principle 8. The lower scores suggest that rental and real estate may not be using integrated intelligence tools to inform decision-making across multiple capitals. In such sectors, the underutilisation of AI and data analytics can lead to slower responses to emerging risks and limited alignment with multi-capital approaches, potentially impacting long-term value creation and stakeholder trust.

Overall, the adoption of integrated intelligence across industries remains low, revealing that many organisations have yet to fully embrace data-driven, multi-capital decision-making. This limited uptake of integrated intelligence can be attributed to several factors, including the substantial investment required for advanced technology and skilled personnel, which can be prohibitive for industries with constrained budgets or traditional operational models. Additionally, concerns around data privacy, cybersecurity, and over-reliance on automated systems contribute to the lack of adoption of technology, as organisations carefully consider the risks involved. Resistance to change within organisational cultures further hinders the shift

from established practices to technology-driven processes. The challenges relating to technology explained above create significant barriers to the widespread use of integrated intelligence, limiting its potential to enhance real-time, multi-capital decision-making and thereby support integrated thinking.

Principle 9

The consistently low scores across all industries for P9, with only pharmaceutical and real estate achieving 10%, suggest that most industries are struggling significantly to define and disclose their impacts across multiple capitals. Distinguishing between direct and indirect impacts on different capitals is underdeveloped within UK organisations. Lack of boundary-setting can lead to incomplete and unclear reporting on multi-capital impacts and the unnecessary use of resources, limiting an organisation's ability to make informed decisions that consider long-term value creation.

The extremely low scores across all industries suggest the complexity of defining organisational and value chain boundaries, particularly for multi-capital impacts. This can be complex and resource-intensive. Many organisations may struggle with establishing a consistent framework for boundary-setting, particularly when it comes to indirect impacts within the value chain.

Industries with low scores may prioritise financial reporting over multi-capital reporting due to a lack of external pressure. If stakeholders and regulatory bodies are not actively demanding boundary-setting information and multi-capital accounting, organisations may be less motivated to allocate resources to implementing both aspects.

The very low scores on P9 highlight a critical area for improvement in adopting integrated thinking across industries. Boundary setting is essential for capturing an organisation's holistic impact on all relevant capitals and for providing stakeholders with a transparent view of its indirect and direct contributions. To improve adherence to P9, industries may benefit from developing standardised approaches to boundary-setting, fostering industry-wide best practices, and increasing collaboration to share strategies for multi-capital impact assessment.

Principle 10

Facilities service (60%), pharmaceutical (57%), and mining (52%) demonstrate a proactive approach to external communication, making use of reports, webpages, social media and

news articles to disclose sustainability and integrated thinking disclosures, committing to comprehensive external transparency. The higher scores suggest that these sectors prioritise engaging stakeholders through external sources like awards, ESG disclosures, webpages, and social media mentions. For example, organisations in high-scoring sectors may promote their sustainability achievements on websites, participate in sustainability awards, and receive positive media attention for their integrated thinking practices.

Sports betting (13%), foodservice (20%), and rental (27%) indicate minimal engagement with external sources of evidence for integrated thinking. These industries may have limited ESG disclosures and may not prioritise awards or social media engagement to communicate their sustainability efforts. The lack of external validation could suggest that these industries focus more on internal metrics and performance, with little emphasis on external credibility or public accountability.

Industries under higher public scrutiny or regulatory requirements, such as pharmaceutical and mining, may be more motivated to validate their sustainability efforts through external channels. These industries often have stakeholders who expect transparency and accountability, which drives them to seek awards, a social media presence, and news articles to demonstrate their commitment to integrated thinking. Lower-scoring industries may face resource constraints that limit their ability to pursue integrated thinking and sustainability awards, engage with media, or establish comprehensive ESG reporting on public platforms, such as web pages.

The significant 47% in P10 scores between sports betting and facilities services highlights the importance of external sources of evidence in establishing an organisation's credibility and commitment to integrated thinking. Industries that score highly on P10 demonstrate an understanding of the value of transparency in building stakeholder trust, which is crucial for long-term value creation. For industries with lower scores, enhancing external communication efforts could help bridge the gap, providing stakeholders with clearer insights into their sustainability initiatives and multi-capital impacts.

Improving adherence to P10 may require industries to adopt approaches to external communication, such as establishing webpages, participating in public awards, and regularly engaging with social media on ESG matters. By increasing their external transparency, UK organisations can enhance their accountability and strengthen their relationships with stakeholders.

Industries facing substantial regulatory oversight and public attention—including pharmaceuticals, mining, energy, defence and aerospace, and financial services—exhibit a higher adherence to integrated thinking principles. These sectors perform well in P2 (leadership commitment), P3 (Integrated Structures), and P5 (external communication) because they must meet regulatory requirements and respond to stakeholder expectations. For example, financial services demonstrate moderate alignment with multi-capital frameworks, especially concerning risk management and governance structures (P3), although their emphasis remains on financial-oriented metrics. Nevertheless, there is still potential for improvement in P6 (MIS Integration) and P9 (boundary-setting), where enhanced data systems and well-defined boundaries could further facilitate integrated decision-making and support strategic goals.

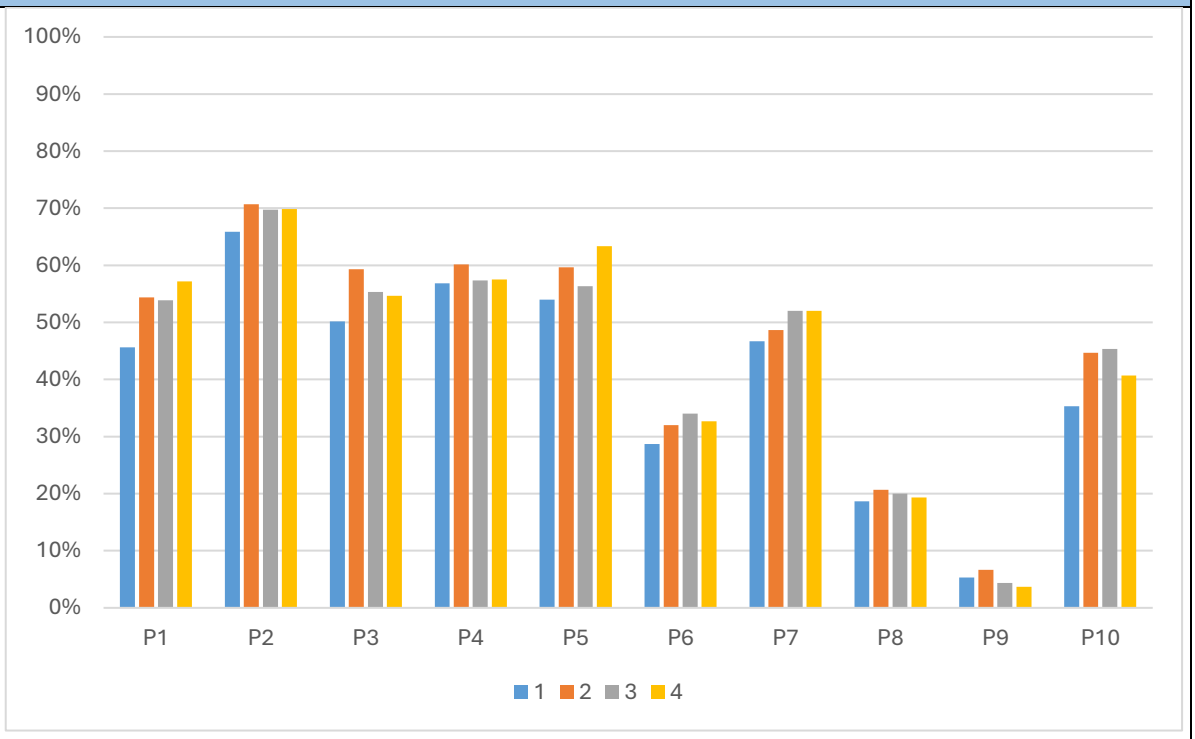
Asset-focused and consumer-oriented industries, including real estate and rental, demonstrate limited adherence to integrated thinking principles, particularly in areas such as P3 (integrated structures), P5 (external communication), P6 (systems and management, and P9 (boundary-setting), and P10 (external validation). These industries often prioritise short-term operational efficiency over sustainability considerations, largely due to fewer regulatory pressures. Their low scores in boundary-setting and MIS integration indicate a lack of frameworks for capturing indirect multi-capital impacts, which may limit their ability to make fully informed decisions.

Service-oriented and consumer goods industries, such as foodservice, retail, telecommunications, facilities services, and consumer goods, show moderate performance, especially in P4 (performance management) and P5 (external communication). These industries generally recognise the value of financial and non-financial metrics and stakeholder transparency to maintain public trust. However, similar to other industries, they underperform in P8 (continuous improvement) and P9 (boundary-setting), suggesting a need for increased investment in employee development, innovation, and multi-capital reporting practice.

Analysis by financial performance

Figure 7 below illustrates the extent to which the principles of integrated thinking have been achieved per quartile of financial performance. The quartiles have been derived using the return of assets for each organisation in the sample. Quartile 1 includes the entities with the lowest return on assets, which increases until quartile 4, which consists of all entities with the greatest return on assets. In this section, only the most significant results will be discussed, and a general trend will be emphasised.

Figure 7: The average integrated thinking levels per principle per quartile of financial performance for all top 40 LSE companies



The analysis of integrated thinking practices across quartiles of financial performance reveals no consistent pattern between return on assets with higher or lower levels of integrated thinking (P1 to P10). Both high-ROA (Q4) and low-ROA (Q1) entities display varied performance across the integrated thinking principles, suggesting that financial performance alone may not drive integrated thinking adoption.

Scores in P2, which focuses on leadership accountability and strategic alignment, are relatively high across all quartiles, implying that companies of different financial positions recognise the importance of strategic leadership in integrated thinking. This suggests that leadership accountability may be a universally prioritised principle, irrespective of financial performance.

Better financially performing organisations in Quartile 4 generally score better in P5, suggesting a stronger commitment to transparent and comprehensive disclosures. UK companies may recognise the importance of diverse communication channels in building stakeholder trust and enhancing reputation, which can indirectly support financial

performance. Organisations in Q4 having the necessary resources to make use of various reports to disclose the operations of the organisation.

P9, which addresses boundary-setting and multi-capital accounting, shows underdevelopment across quartiles. Both better financially performing entities and poorly financially performing organisations have scored low in P9, suggesting that boundary-setting practices are not affected by financial performance, but rather the lack of emphasis placed on boundary-setting and multi-capital accounting in the UK has resulted in UK organisations scoring poorly.

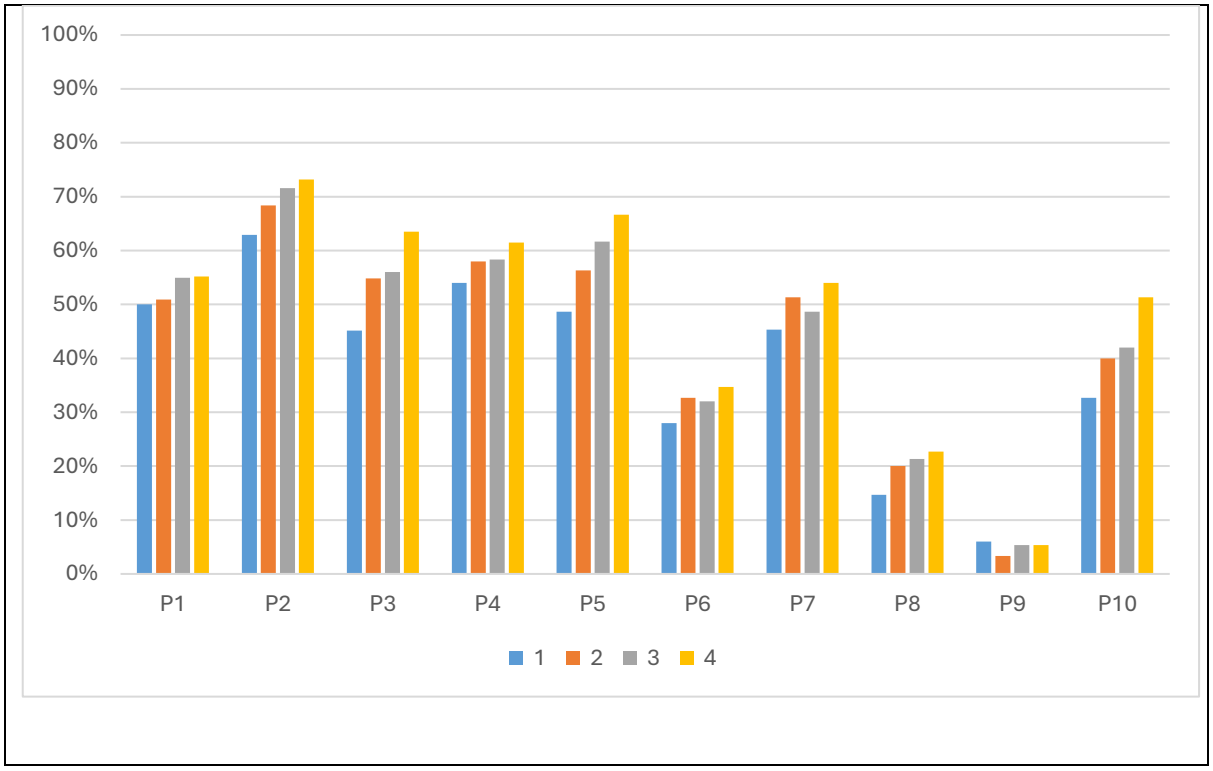
The figure above suggests that integrated thinking practices do not align consistently with financial performance. This finding indicates that factors other than ROA, such as industry, firm size, or commitment to ESG, may have a more pivotal role in the promotion of integrated thinking practices.

Analysis by firm size

Figure 8 below illustrates the extent to which the principles of integrated thinking have been achieved relative to the size of organisations. The metric used to measure the size of a company is market capitalisation. Each organisation in the sample is categorised in quartiles, ranging from 1-4.

Quartile 1 includes the entities with the lowest market capitalisation (the smallest organisations). This increases to quartile 4, which consists of all entities with the greatest market capitalisation (largest-sized organisations). In this section, only the most significant results will be discussed, and a general trend will be emphasised.

Figure 8: The average integrated thinking levels per principle per quartile of firm size for all top 40 LSE companies



The analysis of integrated thinking practices across company sizes, categorized by market capitalisation quartiles, indicates that larger organizations (Quartile 4) generally perform better in implementing integrated thinking principles. This trend aligns with previous research, suggesting that larger firms with more resources are better equipped to establish structures, processes, and reporting frameworks necessary for integrated thinking (Rinaldi, 2020). Smaller companies (Quartile 1) may not have similar capacities and may see less value in comprehensive integrated reporting, often due to limited controls and reporting systems (Bui & De Villiers, 2017; Velte & Stawinoga, 2017).

In P2, Q4 companies tend to score the highest. This indicates that larger organisations with more resources are better positioned to establish governance structures and leadership roles that reinforce integrated thinking. In contrast, smaller companies may struggle with embedding accountability measures and governance structures that promote integrated thinking due to resource constraints.

For P5, Q4 organisations demonstrate the strongest performance. Larger firms are more likely to engage in comprehensive external reporting, such as sustainability reports, to communicate their practices transparently and satisfy a broader range of stakeholders. Smaller firms, with fewer resources, may be limited in their ability to produce multiple types of reports and therefore may not prioritise external communication as heavily, and make use of only annual reporting.

P9 appears underdeveloped across all quartiles. Both large organisations and small organisations show low scores in P9, indicating that effective boundary-setting and multi-capital practices are not strongly influenced by firm size. A lack of emphasis has been placed on boundary-setting practices within the UK context, resulting in generally low scores for organisations regardless of size or resources.

Overall, the findings show a positive relationship between company size and integrated thinking performance. Larger organisations with greater market capitalisation tend to score higher on integrated thinking principles, particularly in areas requiring extensive resources and reporting structures, such as leadership accountability and external communication. While integrated thinking is achievable for companies of all sizes, larger firms are generally better equipped to fully implement integrated thinking practices, emphasising the need for a scalable framework that supports smaller companies in adopting integrated thinking principles (Maroun et al., 2023).

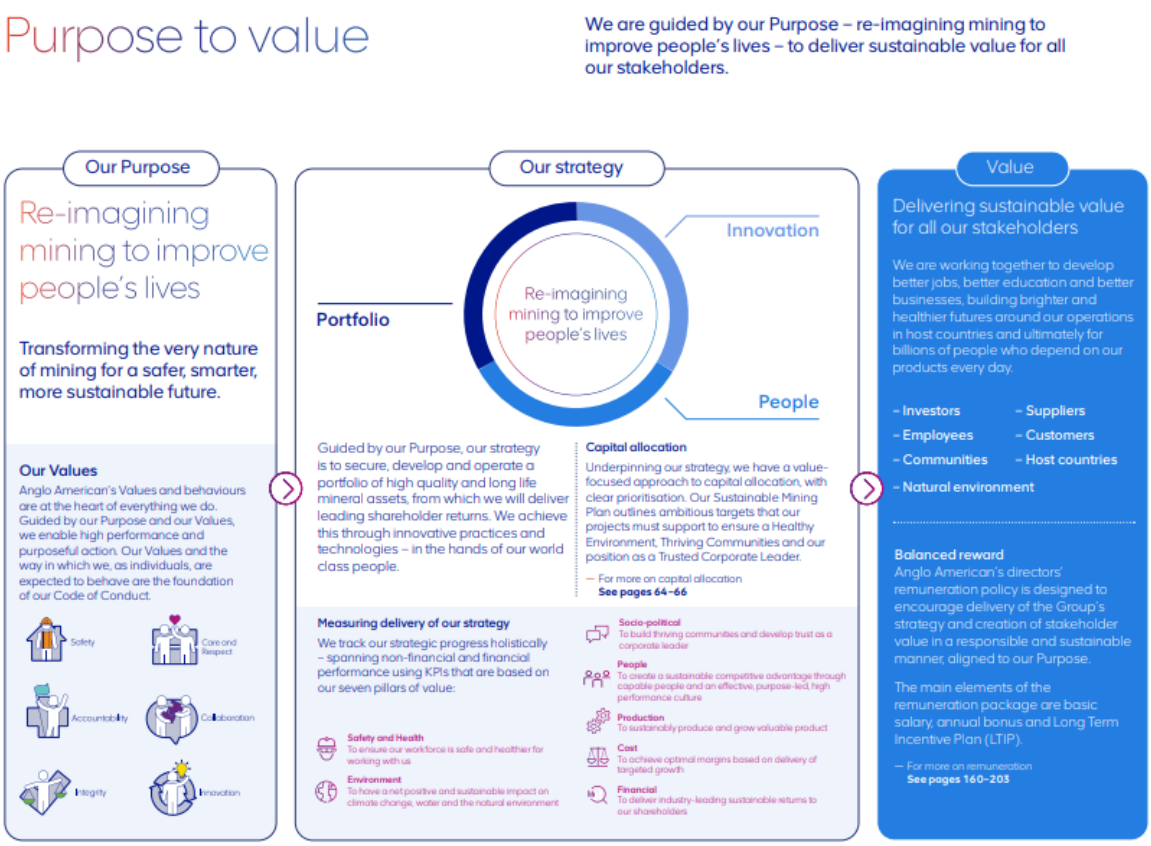
Appendix 5: Evidence of best and worst practice among extra-financial report disclosures

This highlights how the integrated thinking schematic is applied to disclosures in extra-financial reporting and the execution of the principles per Table 1. The use of the integrated thinking schematic can add value through guidance on the execution of integrated thinking principles. Examples are selected from the sample of companies and are anonymised where necessary.

Principle 1: Integrated awareness and understanding

As outlined in Section 3.1.1, demonstrating the interconnection and interdependence of capitals is a critical indicator of integrated thinking. Figure 1.1 shows how Anglo American's purpose, "Re-imagining mining to improve people's lives," is central to its strategy, which integrates portfolio management, innovation, and people-focused initiatives. The figure details specific value-driven activities, such as sustainable mining practices and capital allocation priorities, emphasising the alignment with stakeholder needs across timeframes. Each multi-capital highlights the commitment to sustainable outcomes, with links provided for stakeholders to further explore the objectives and impacts. Additionally, the emphasis on delivering sustainable value for investors, employees, and host communities reinforces Anglo American's stakeholder-focused approach. This interconnected disclosure exemplifies the practical application of integrated thinking by showing how stakeholder engagement and capital impact drive value creation, contributing to long-term sustainability.

Figure 1.1: An illustration of Anglo American's interconnectedness between core values, strategy and stakeholder input to create value



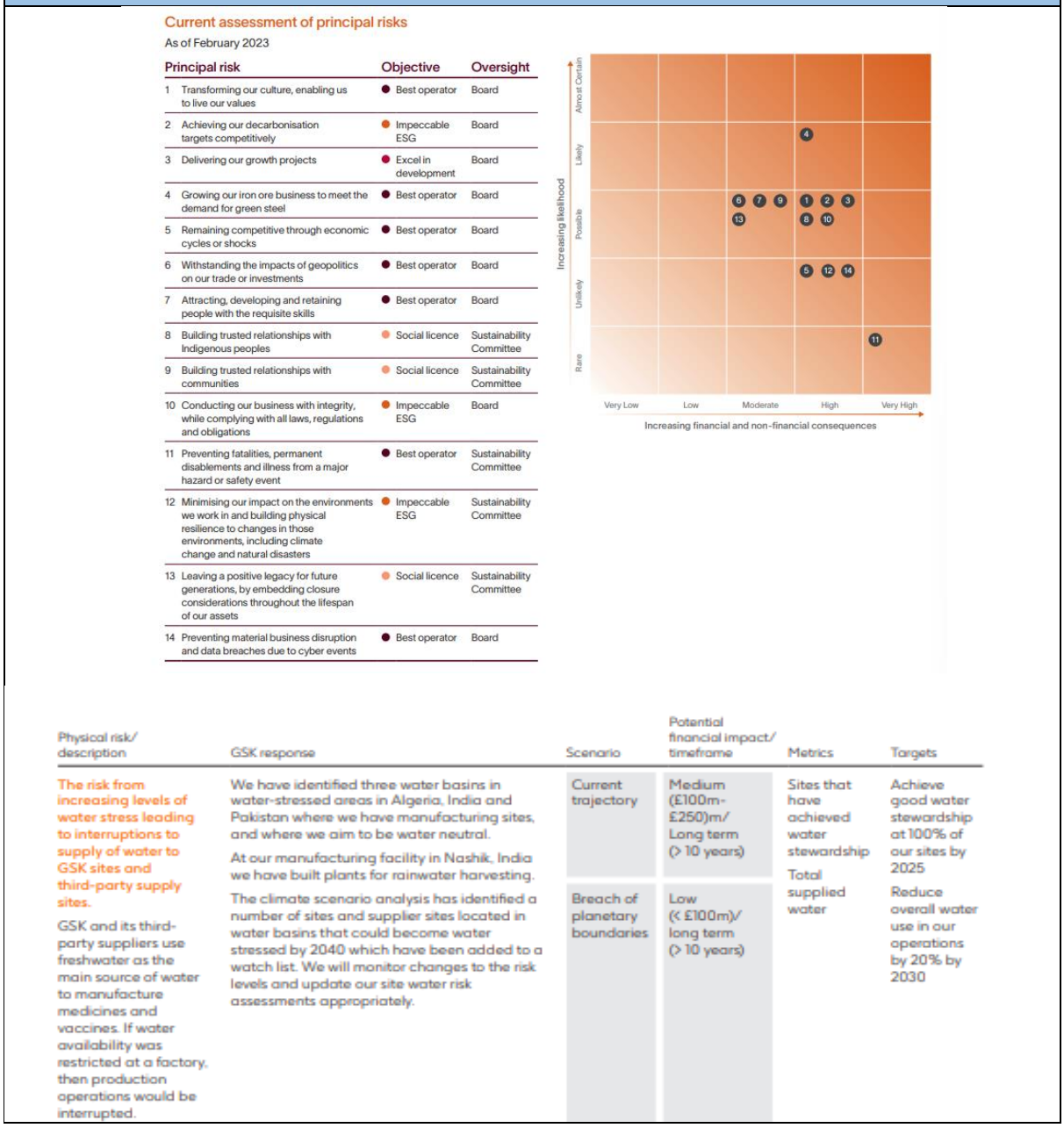
British American Tobacco (BATS) provides detailed disclosure of the policies and procedures it employs to manage various capitals and identifies the stakeholder groups impacted. This comprehensive disclosure informs stakeholders about specific actions taken, reflecting the practical application of integrated thinking. BATS presents clear activities and outcomes related to human, social and relationship, and environmental capital, demonstrating a material commitment to considering different capitals and creating value for a diverse range of stakeholders (Sections 2.2 and 3.1.1).

Figure 1.2: The procedures and policies implemented by BATS to ensure stakeholders and multi-capital considerations

Policies and Procedures	Summary of areas covered	Key stakeholder groups
Standards of Business Conduct (SoBC)* Available at www.bat.com/principles	Sets out our policies for: Speak Up, respect in the workplace, human rights, health, safety and welfare, environmental, lobbying and engagement, conflicts of interest, anti-bribery and corruption, gifts and entertainment, political contributions, community investment, protection of corporate assets and financial integrity, competition and anti-trust, anti-money laundering and tax evasion, sanctions, anti-illicit trade, data privacy and information security.	Our People Governments and Wider Society
Supplier Code of Conduct* Available at www.bat.com/principles	Covers: compliance, human rights, environmental sustainability, marketing and trade and business integrity.	Customers Suppliers
Environment Policy* Available at www.bat.com/principles	Our commitments to following high standards of environmental protection, adhering to the principles of sustainable development and protecting biodiversity, covering our direct operations and supply chain, including agricultural, manufacturing and distribution operations. Our Environment Policy was revised in 2022 to include an assessment of our value chain impacts, our circular economy principles, our new biodiversity commitments and information on metrics and targets.	Our People Suppliers Customers Governments and Wider Society
International Marketing Principles (IMP)* Available at www.bat.com/principles	Govern marketing of all our products and include the requirement for all our marketing to be targeted at adult consumers only.	Consumers Customers Suppliers
Global Product Stewardship Framework Policy*	Sets out our approach to product stewardship and fulfilling our duty of care to consumers when bringing new products to market. This policy was revised in 2022 to articulate our approach to robust product stewardship across our multi-category portfolio.	Consumers Suppliers Customers Governments and Wider Society
Youth Access Prevention (YAP) Guidelines	Supports our strict IMP requirement to market our products to adult consumers only by setting out requirements for retailer-facing YAP activities to be carried out in all our markets.	Consumers Customers
Biodiversity Statement	Sets out the principles we follow to manage our impact on biodiversity and the wider environment.	Suppliers Governments and Wider Society
Circular Economy Position Statement	Our commitment to applying circular economy principles across our operations and product categories.	Consumers Suppliers Governments and Wider Society
Operational Standard on Child Labour Prevention	Detailed guidance and procedures for tackling the risk of child labour in BAT Group's own Leaf Operations.	Our People Suppliers Governments and Wider Society
Group Community Investment Framework	Sets out the Group strategy for community investment and charitable donations, aligned to the United Nations Sustainable Development Goals.	Our People Governments and Wider Society
Climate Change and Energy Standard	Provides guidance for all managers or others within BAT that have a duty for the application of implementing a climate change related initiative across all BAT's facilities and working environments.	Our People Suppliers Governments and Wider Society
Green Mobility Standard	Specifies BAT's green mobility strategy aimed at reducing the environmental impact of BAT's fleet, namely carbon dioxide equivalent emissions (CO_2e), air pollution, and noise, by deploying strategic beyond Internal Combustions Engine (ICE) options.	Our People Suppliers Governments and Wider Society

Risk identification is essential for anticipating future events and implementing effective mitigation strategies (Sections 2.2.2 and 3.1.1). GSK's approach, illustrated in Figure 1.4, covers the different aspects of risk magnitude, scenario analysis, and timeframes, setting a benchmark in an area often underdeveloped in risk disclosure across the sample entities. For each identified risk, GSK provides context and outlines mitigation strategies, with direct links to relevant strategies for further information. GSK's interconnected approach offers stakeholders a comprehensive view of the organisation's risk response, enhancing their confidence in its internal risk management processes. In contrast, a lack of such disclosure may indicate potential weaknesses in the company's approach to risk response, underlying risk assessment, and opportunity identification.

Figure 1.3: Risk matrix adopted by GSK to achieve a holistic risk assessment process.



Current assessment of principal risks

As of February 2023

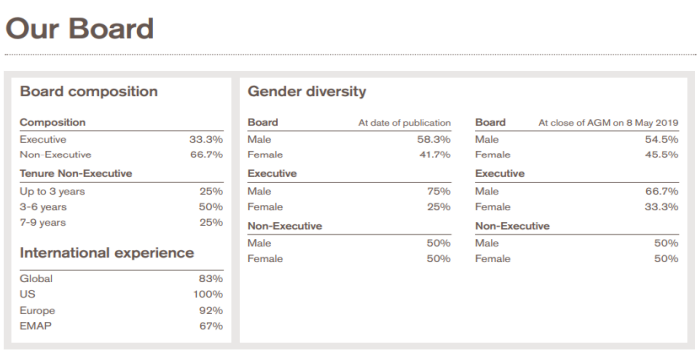
Principal risk	Objective	Oversight
1 Transforming our culture, enabling us to live our values	Best operator	Board
2 Achieving our decarbonisation targets competitively	Impeccable ESG	Board
3 Delivering our growth projects	Excel in development	Board
4 Growing our iron ore business to meet the demand for green steel	Best operator	Board
5 Remaining competitive through economic cycles or shocks	Best operator	Board
6 Withstanding the impacts of geopolitics on our trade or investments	Best operator	Board
7 Attracting, developing and retaining people with the requisite skills	Best operator	Board
8 Building trusted relationships with Indigenous peoples	Social licence	Sustainability Committee
9 Building trusted relationships with communities	Social licence	Sustainability Committee
10 Conducting our business with integrity, while complying with all laws, regulations and obligations	Impeccable ESG	Board
11 Preventing fatalities, permanent disablements and illness from a major hazard or safety event	Best operator	Sustainability Committee
12 Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural disasters	Impeccable ESG	Sustainability Committee
13 Leaving a positive legacy for future generations, by embedding closure considerations throughout the lifespan of our assets	Social licence	Sustainability Committee
14 Preventing material business disruption and data breaches due to cyber events	Best operator	Board

Physical risk/ description	GSK response	Scenario	Potential financial impact/ timeframe	Metrics	Targets
The risk from increasing levels of water stress leading to interruptions to supply of water to GSK sites and third-party supply sites. GSK and its third-party suppliers use freshwater as the main source of water to manufacture medicines and vaccines. If water availability was restricted at a factory, then production operations would be interrupted.	We have identified three water basins in water-stressed areas in Algeria, India and Pakistan where we have manufacturing sites, and where we aim to be water neutral. At our manufacturing facility in Nashik, India we have built plants for rainwater harvesting. The climate scenario analysis has identified a number of sites and supplier sites located in water basins that could become water stressed by 2040 which have been added to a watch list. We will monitor changes to the risk levels and update our site water risk assessments appropriately.	Current trajectory	Medium (£100m-£250)m/ Long term (> 10 years)	Sites that have achieved water stewardship Total supplied water	Achieve good water stewardship at 100% of our sites by 2025 Reduce overall water use in our operations by 20% by 2030
		Breach of planetary boundaries	Low (< £100m)/ long term (> 10 years)		

Principle 2: Integrated leadership commitment and capability

Board structures are generally well disclosed across the sample reports. Most reports emphasise board diversity in terms of race, age, gender, and skillset. They also provide details about each board member's qualifications and additional board memberships. Stakeholders benefit from knowing who is accountable for decision-making, who oversees operations, and who supervises governance functions. Additionally, linking board structures to remuneration and performance incentives (P4) is significant, as it clarifies the board's contribution to organisational value. An example of linking board structures to remuneration is presented in Figure 2.1.

Figure 2.1: detailed information regarding the composition of the board



Our Board

Board composition

Composition	
Executive	33.3%
Non-Executive	66.7%
Tenure Non-Executive	
Up to 3 years	25%
3-6 years	50%
7-9 years	25%

International experience

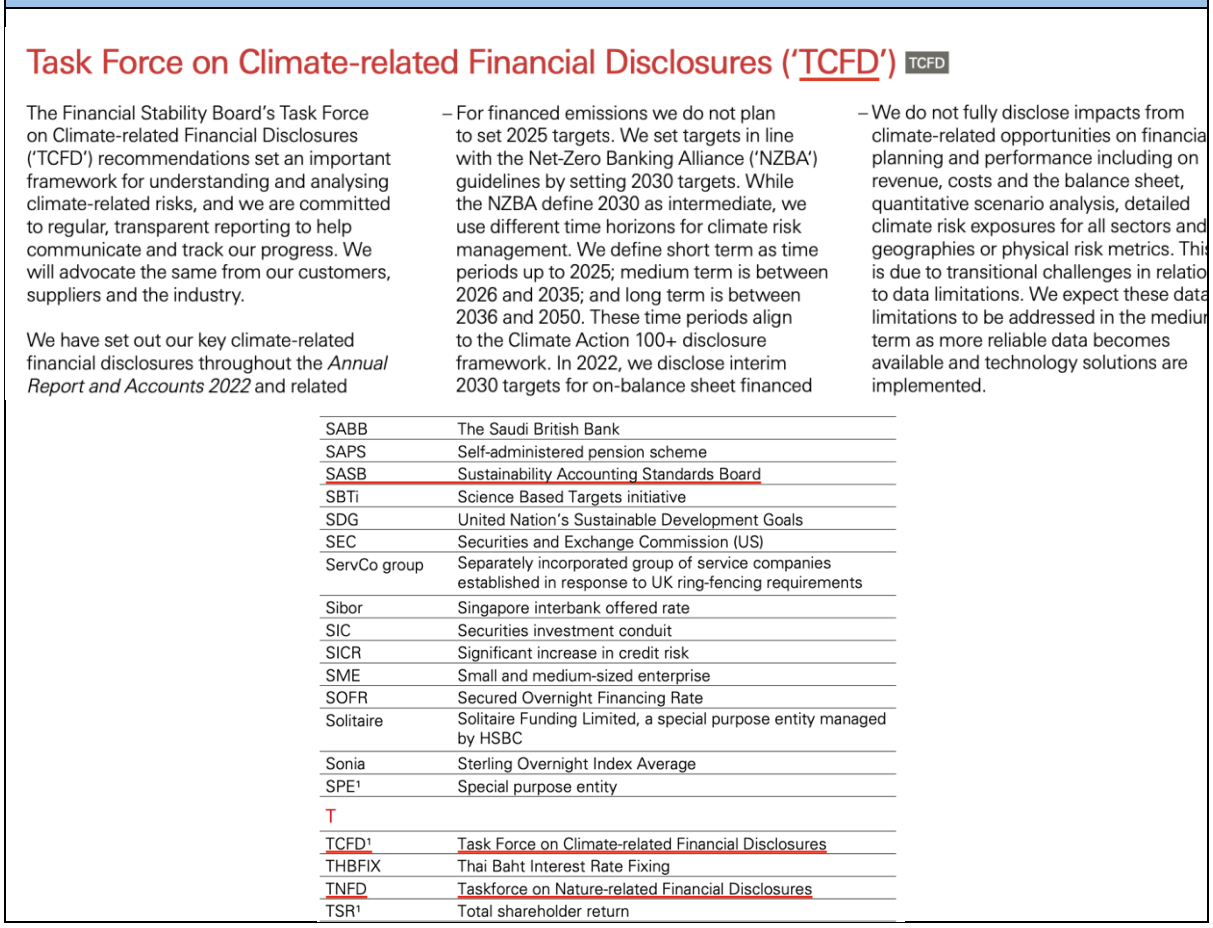
Global	83%
US	100%
Europe	92%
EMAP	67%

Gender diversity

Board	At date of publication	Board	At close of AGM on 8 May 2019
Male	58.3%	Male	54.5%
Female	41.7%	Female	45.5%
Executive		**Executive**	
Male	75%	Male	66.7%
Female	25%	Female	33.3%
Non-Executive		**Non-Executive**	
Male	50%	Male	50%
Female	50%	Female	50%

Entities are encouraged to consciously adopt relevant standards (P2), such as the GRI, SDGs, or TCFD, to address ESG indicators as part of a comprehensive communication strategy (Malola & Maroun, 2019). By adopting these standards, companies give off a sense of legitimacy (Section 2.3). It's essential to demonstrate how these standards are implemented and the resulting year-on-year performance. Figure 2.2 provides an example of lacklustre disclosures indicating the implementation of various standards within the organisation. Disclosures of standards are not something that has been adopted explicitly in the extra-financial reports of the sample. There are mentions of codes of best practice throughout the report and a list of abbreviations, but no list of codes in one place.

Figure 2.2: The underdevelopment of indicating explicitly the use of codes for best practice



Task Force on Climate-related Financial Disclosures ('TCFD') TCFD

The Financial Stability Board's Task Force on Climate-related Financial Disclosures ('TCFD') recommendations set an important framework for understanding and analysing climate-related risks, and we are committed to regular, transparent reporting to help communicate and track our progress. We will advocate the same from our customers, suppliers and the industry.

We have set out our key climate-related financial disclosures throughout the *Annual Report and Accounts 2022* and related

– For financed emissions we do not plan to set 2025 targets. We set targets in line with the Net-Zero Banking Alliance ('NZBA') guidelines by setting 2030 targets. While the NZBA define 2030 as intermediate, we use different time horizons for climate risk management. We define short term as time periods up to 2025; medium term is between 2026 and 2035; and long term is between 2036 and 2050. These time periods align to the Climate Action 100+ disclosure framework. In 2022, we disclose interim 2030 targets for on-balance sheet financed

– We do not fully disclose impacts from climate-related opportunities on financia planning and performance including on revenue, costs and the balance sheet, quantitative scenario analysis, detailed climate risk exposures for all sectors and geographies or physical risk metrics. This is due to transitional challenges in relatio to data limitations. We expect these data limitations to be addressed in the mediu term as more reliable data becomes available and technology solutions are implemented.

SABB	The Saudi British Bank
SAPS	Self-administered pension scheme
SASB	Sustainability Accounting Standards Board
SBTi	Science Based Targets initiative
SDG	United Nation's Sustainable Development Goals
SEC	Securities and Exchange Commission (US)
ServCo group	Separately incorporated group of service companies established in response to UK ring-fencing requirements
Sibor	Singapore interbank offered rate
SIC	Securities investment conduit
SICR	Significant increase in credit risk
SME	Small and medium-sized enterprise
SOFR	Secured Overnight Financing Rate
Solitaire	Solitaire Funding Limited, a special purpose entity managed by HSBC
Sonia	Sterling Overnight Index Average
SPE[1]	Special purpose entity
T	
TCFD[1]	Task Force on Climate-related Financial Disclosures
THBFIX	Thai Baht Interest Rate Fixing
TNFD	Taskforce on Nature-related Financial Disclosures
TSR[1]	Total shareholder return

Section 3.1.2 highlights the importance of translating board skills and diversity into actionable outcomes. EOH Holdings, for example, used a "Question and Answer" format in its Chairman's and CEO's reports (Figure 2.3), which ultimately limited the breadth of disclosure and did not effectively capture the capitals in a concise, holistic way. The format diluted the interconnections needed to portray integrated thinking among executives.

Figure 2.3: Q&A format used to illustrate the CEO statement

Turning to 2022, what have been the highlights of the year?

We have again delivered a strong set of results for our shareholders in 2022. Adjusted operating profit and cash and capital generation are up, return on equity is over 20%, and our Solvency II coverage ratio is very strong at 236%.

You will read on the following pages many examples of our purpose in action – investments, small and large, in infrastructure, housing, SME finance, and clean energy, all backed by both our own and our pensioners' capital. We have both delivered in 2022 and sown the seeds for future growth on a large scale.

We emerged strongly from the economic turbulence seen in 2022, having experienced both negative and positive impacts on our business from market and interest rate movements. We wrote record levels of pension risk transfer (PRT) business in the US and delivered more houses for sale and rent in the UK than ever before. Both of these are core elements in the virtuous circle of inclusive capitalism.

Principle 3: Integrated structures

Stakeholder engagement is fundamental to integrated thinking (Sections 2.2 and 3.1.3). Figure 3.1 highlights the stakeholder engagement process directly related to P3. Engaging with stakeholders (Rinaldi, 2020) enables an organisation to activate its integrated thinking approach and establish systems that promote long-term value for a diverse stakeholder group beyond just financial capital providers. By demonstrating an understanding of each stakeholder's influence, identifying their needs, and engaging with them to address expectations and needs, the organisation ensures stakeholders feel involved in its decision-making process. Proactive and ongoing engagement with stakeholders also allows the organisation to swiftly adapt to evolving stakeholder expectations, as illustrated below.

Figure 3.1: The comprehensive stakeholder engagement process followed by AstraZeneca

	Shareholders, Investors & Analysts	Patients	Employees
Overview Significance of the stakeholder to the business	The Board is accountable to shareholders, and, in accordance with section 172 of the Companies Act 2006, must act in a way that is likely to promote the success of the Company for the benefit of its members as a whole. AstraZeneca aims to ensure that a good dialogue with shareholders, investors and analysts is maintained, and that their issues and concerns are understood and considered.	To achieve our Purpose we need to engage with and understand the needs of patients.	Our 64,600 employees make AstraZeneca what it is. We are committed to ensuring that AstraZeneca is a Great Place to Work for our employees and we rely on their commitment to uphold the Values, deliver the strategic priorities and deliver the changes necessary to sustain and improve short- and long-term performance.
Issues and factors Issues and factors which are most important to the stakeholder group	> Understanding the strategy and operations of the Group > Financial performance and commercial success, including return to sales growth > Successful development of the pipeline > Understanding the exposure to macro-economic risk > Opportunity for dialogue with management on key matters, eg performance and executive remuneration > Sustainability and the environmental and ethical impact of the Group	> Support throughout the entire patient journey – through diagnosis, treatment and wellness > Safety and efficacy of medicines > Access to an uninterrupted supply of medicines	> Understanding the Group performance and the factors that impact this > Engagement with, and the opportunity to put questions and ideas to, senior leaders > Collaboration across the Group and the opportunity to learn and share
Engagement Examples of engagement in 2018	> Annual General Meeting in May 2018 > Board Directors met investors, analysts and investor bodies > Quarterly results conference calls for analysts and investors > Investor Relations Team and senior management met regularly with investors, including office visits, industry and broker conferences, roadshows and group meetings > Comprehensive investor perception study, the results of which were presented to the Board > Hosted an Emerging Markets call in Shanghai with a focus on China	> Engaged patients in our development and clinical trial programmes to ensure a more patient-informed medicine > Collaboration with patient advocacy groups and establishment of patient advisory boards > Established patient support and patient affordability programmes > Organisation of Patient Engagement Day in the US	> CEO and SET provided quarterly performance reports to employees > Group-wide strategy crowdsourcing event generated 56,000 ideas and comments in two weeks > All employees invited to participate in Pulse survey > Board and SET conducted site visits, and in-person and webcast town hall/Q&A sessions with employees > Senior Leadership engagement via Trades Union and Employee Representative forums
Outcomes Any actions which resulted	> The Investor Relations Team has been recognised for best practice by the Investor Relations Society > Following discussions with investors, there has been an increased focus on sustainability matters within our quarterly results announcements	> Patient insight has been integrated into the development of innovative digital technologies (iPREDICT) and clinical trials (study design and protocol simulation) > Initiated a Group-wide initiative on patient-centricity and patient-centric business models > Increased number of programmes deployed to support patients throughout the patient journey	> Ideas generated from the crowdsourcing event reviewed and incorporated into annual strategy recommendations to the Board > Unit action plans developed in response to Pulse survey results

Shell conducts a comprehensive qualitative and quantitative assessment of each capital, focusing on outcomes while considering both positive and negative dimensions. The integrated thinking approach is exemplified in the trade-off section (Figure 3.2), which illustrates the interconnections and interdependencies among the capitals. Figure 3.2 indicates that Shell is committed to integrating multi-capitals into its operations, leading to a more robust application of integrated practices.

Figure 3.2: ShellPLC's approach to showing their full operational value in 2022

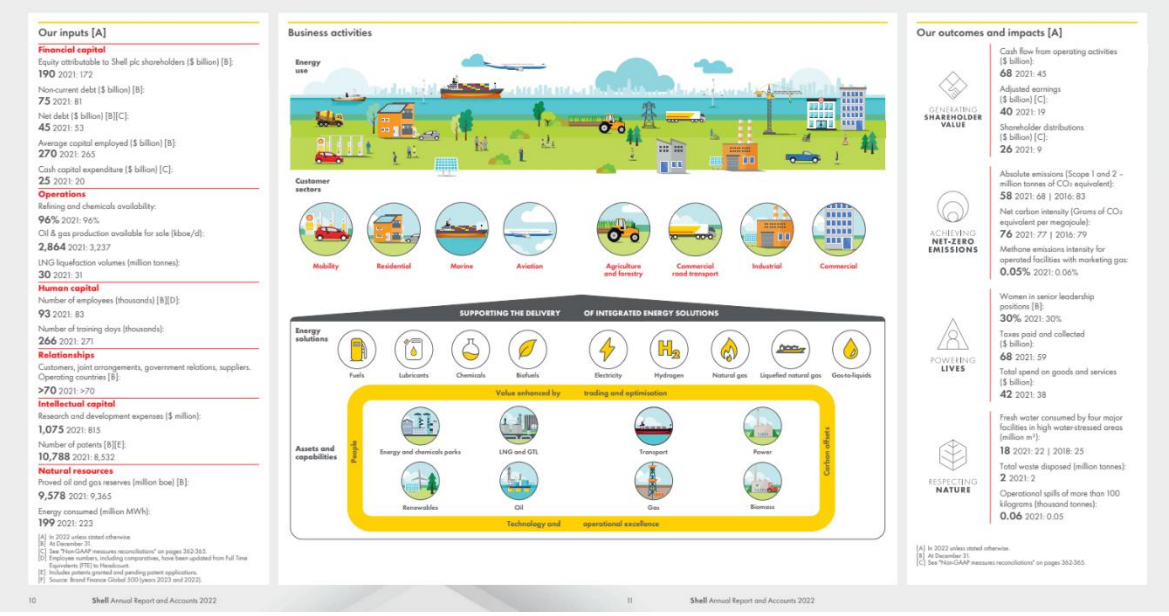
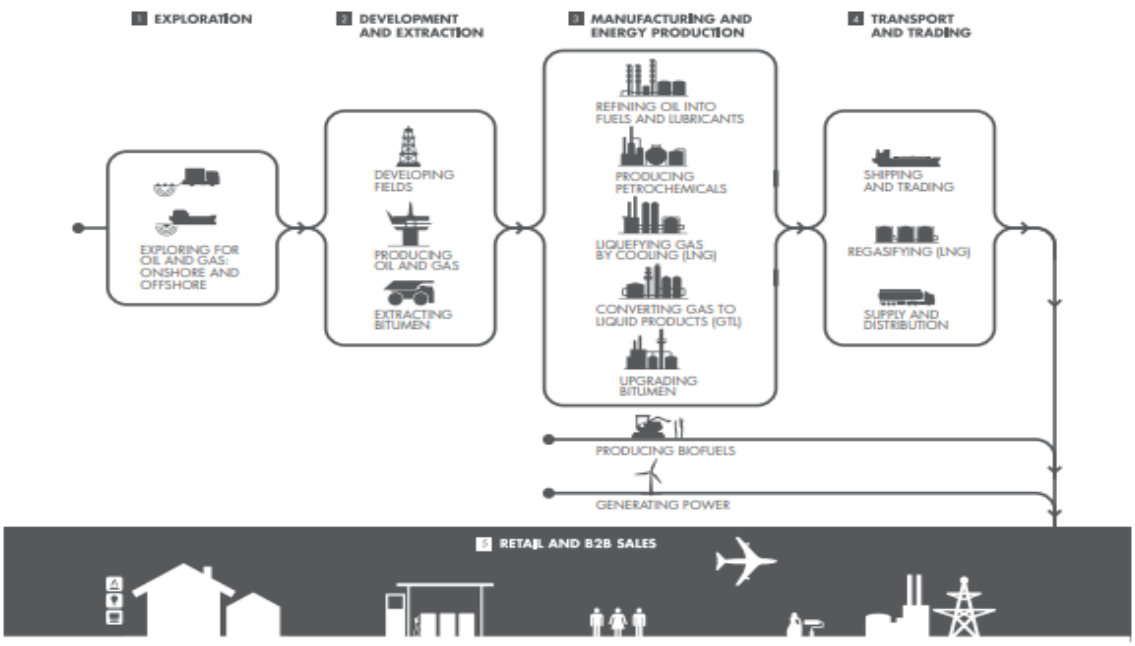


Figure 3.3 illustrates boilerplate disclosure, revealing a limited understanding of and connection among the capitals (Section 2.3). Insufficient focus on all capitals can hinder value creation and compromise long-term sustainability (IIRC, 2021). This is evidenced by Shell's integrated thinking score of 47% in 2014, which highlighted the need to address the impacts of other capitals and associated risks and opportunities. The visuals provided do not enhance context, resulting in inadequate information for stakeholder comprehension. The lack of information can create the perception that the organisation lacks an integrated understanding (P1) and cohesive structure (P3). The application of the integrated thinking schematic helped Shell PLC identify the gap in their disclosures, ensuring they provided further information regarding their corporate strategy. Establishing a working group focused on multi-capitals and risk/opportunity identification could enhance interconnections between inputs, business activities and outputs (Section 2.3), fostering a long-term management perspective (Maroun & Atkins, 2018).

Figure 3.3: Shell PLC's limited detail of their strategic process in 2014

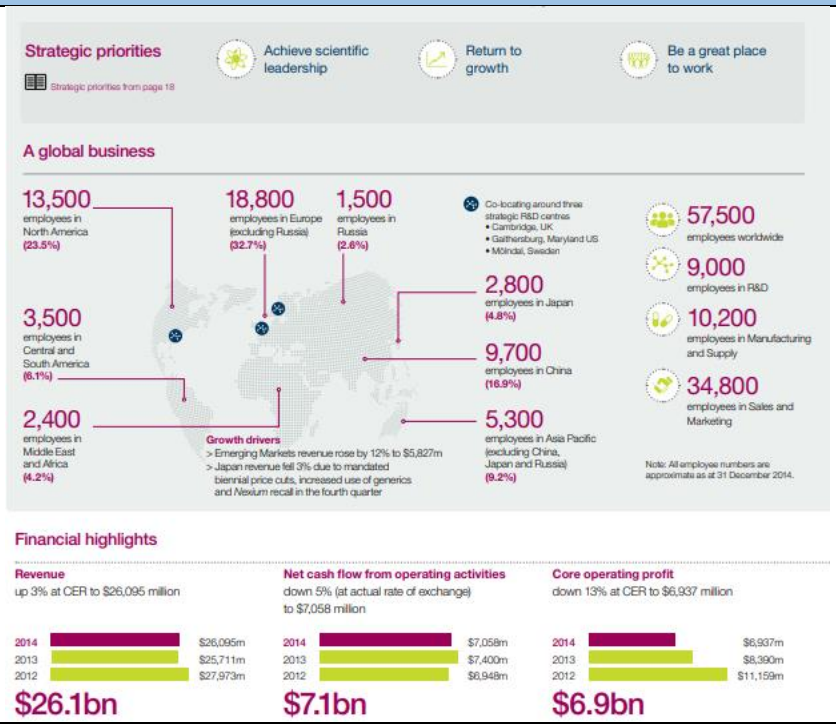


The difference between Figure 3.2 and Figure 3.3 emphasises the drive by Shell to adopt integrated thinking practices in 2014 and 2022. In 2022, not only did Shell illustrate their business activities, but they also linked their inputs, outputs and outcomes, providing sufficient context for understandability. Their improvement promotes interconnectedness and links between their business operations and the capitals that they impact.

Principle 4: Integrated organisational performance management

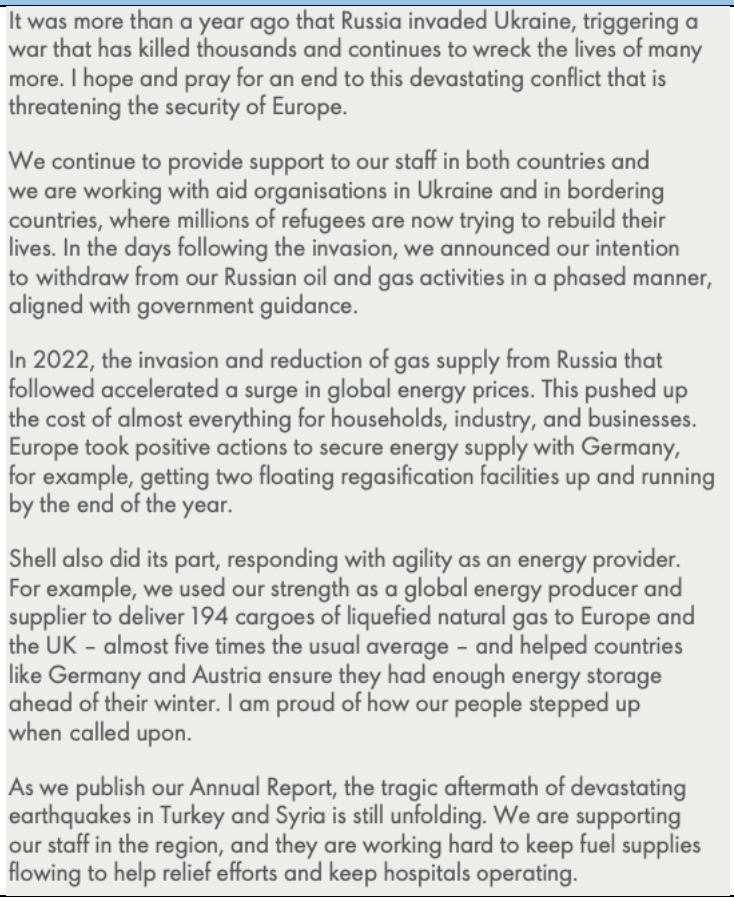
Figure 4.1 highlights AstraZeneca's emphasis on disclosing financial performance as a primary driver of business success. This transparency enables stakeholders to gain a clear understanding of the company's performance. By breaking down performance and global footprint, AstraZeneca provides a detailed view of value creation, its operational scale, key regions for growth, and specific financial outcomes. Reporting progress against strategic goals is essential for stakeholders to assess the company's advancement toward its objectives.

Figure 4.1: AstraZeneca's detailed performance overview



An important element of integrated thinking involves evaluating both negative and positive factors (Sections 2.2 and 2.3). This is exemplified in the report from Shell PLC (see Figure 4.2 below), in which the company acknowledges operational challenges and employees who are in difficult situations. The disclosures on the negative and positive outcomes demonstrate to stakeholders how their related issues will be addressed and the measures that have been implemented to restore legitimacy.

Figure 4.2: Shell PLC's disclosure addressing negative outcomes relating to employees



It was more than a year ago that Russia invaded Ukraine, triggering a war that has killed thousands and continues to wreck the lives of many more. I hope and pray for an end to this devastating conflict that is threatening the security of Europe.

We continue to provide support to our staff in both countries and we are working with aid organisations in Ukraine and in bordering countries, where millions of refugees are now trying to rebuild their lives. In the days following the invasion, we announced our intention to withdraw from our Russian oil and gas activities in a phased manner, aligned with government guidance.

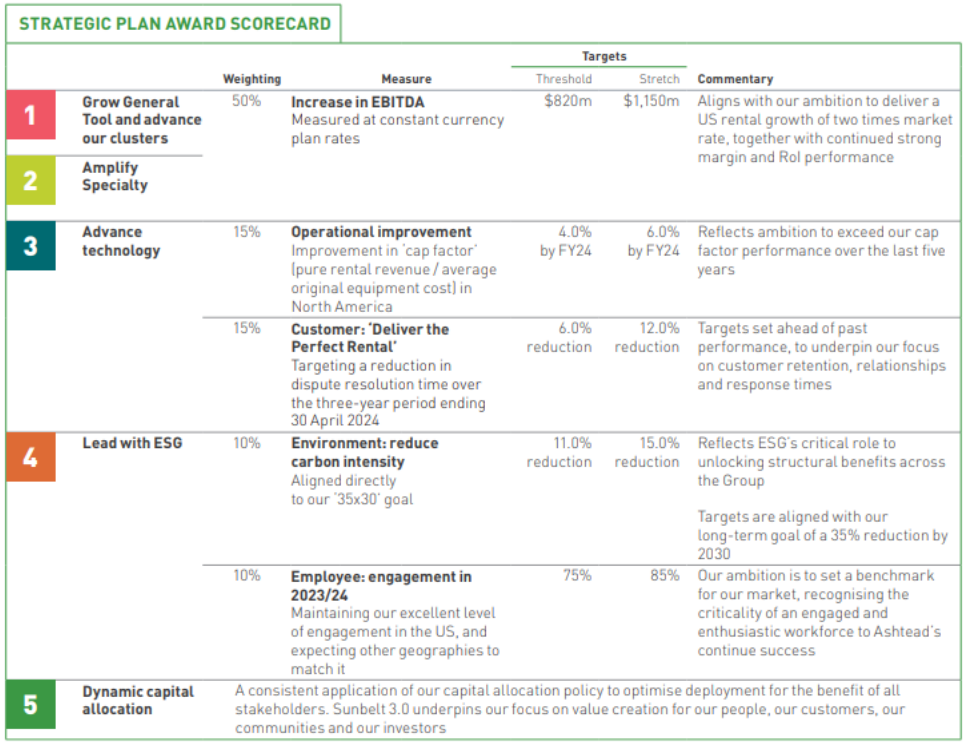
In 2022, the invasion and reduction of gas supply from Russia that followed accelerated a surge in global energy prices. This pushed up the cost of almost everything for households, industry, and businesses. Europe took positive actions to secure energy supply with Germany, for example, getting two floating regasification facilities up and running by the end of the year.

Shell also did its part, responding with agility as an energy provider. For example, we used our strength as a global energy producer and supplier to deliver 194 cargoes of liquefied natural gas to Europe and the UK – almost five times the usual average – and helped countries like Germany and Austria ensure they had enough energy storage ahead of their winter. I am proud of how our people stepped up when called upon.

As we publish our Annual Report, the tragic aftermath of devastating earthquakes in Turkey and Syria is still unfolding. We are supporting our staff in the region, and they are working hard to keep fuel supplies flowing to help relief efforts and keep hospitals operating.

Entities typically received low scores in P4 (performance measures). Figure 4.3 presents the key performance indicators (KPIs) utilised by Ashtead Group, showcasing a comprehensive measurement strategy that includes both financial and non-financial metrics, along with clear and accessible disclosures. This enables stakeholders to gain greater confidence that executives are compensated based on the company's long-term sustainability. More emphasis is places on a balanced capital approach over a purely financial focus (Section 2.3).

Figure 4.3: Ashtead Group's multi-capital performance metrics

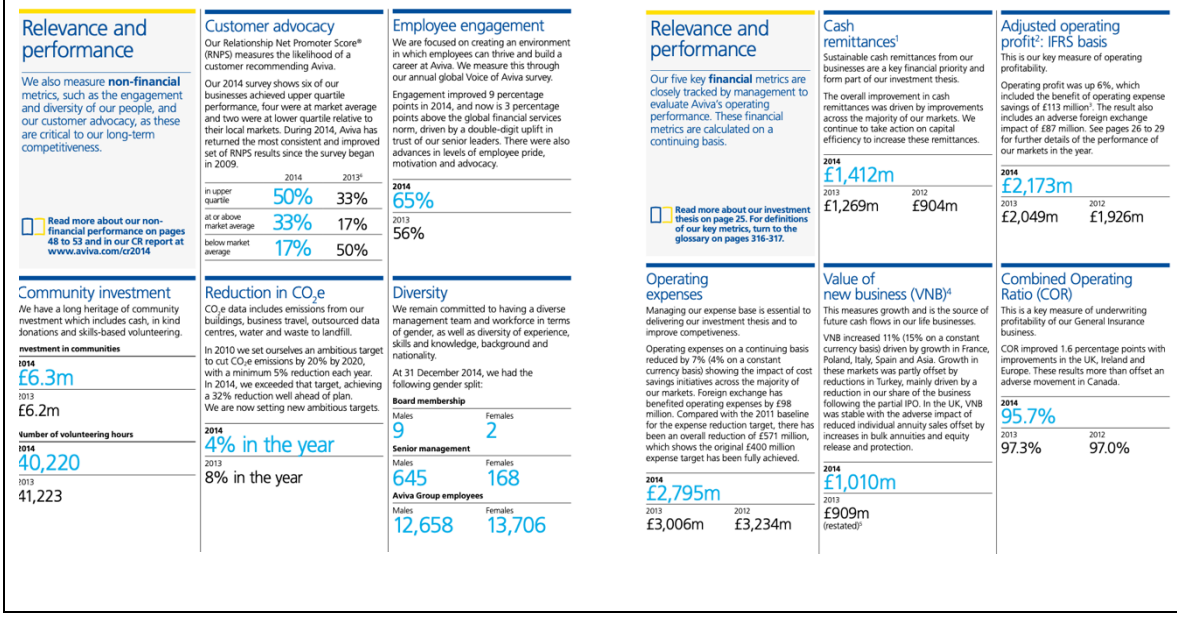


STRATEGIC PLAN AWARD SCORECARD

		Weighting	Measure	Targets: Threshold	Targets: Stretch	Commentary
1	Grow General Tool and advance our clusters	50%	**Increase in EBITDA** Measured at constant currency plan rates	$820m	$1,150m	Aligns with our ambition to deliver a US rental growth of two times market rate, together with continued strong margin and RoI performance
2	Amplify Specialty					
3	Advance technology	15%	**Operational improvement** Improvement in 'cap factor' (pure rental revenue / average original equipment cost) in North America	4.0% by FY24	6.0% by FY24	Reflects ambition to exceed our cap factor performance over the last five years
		15%	**Customer: 'Deliver the Perfect Rental'** Targeting a reduction in dispute resolution time over the three-year period ending 30 April 2024	6.0% reduction	12.0% reduction	Targets set ahead of past performance, to underpin our focus on customer retention, relationships and response times
4	Lead with ESG	10%	**Environment: reduce carbon intensity** Aligned directly to our '35x30' goal	11.0% reduction	15.0% reduction	Reflects ESG's critical role to unlocking structural benefits across the Group Targets are aligned with our long-term goal of a 35% reduction by 2030
		10%	**Employee: engagement in 2023/24** Maintaining our excellent level of engagement in the US, and expecting other geographies to match it	75%	85%	Our ambition is to set a benchmark for our market, recognising the criticality of an engaged and enthusiastic workforce to Ashtead's continue success
5	Dynamic capital allocation	A consistent application of our capital allocation policy to optimise deployment for the benefit of all stakeholders. Sunbelt 3.0 underpins our focus on value creation for our people, our customers, our communities and our investors				

Financially oriented performance measures can negatively impact long-term sustainability (Section 2.3). In contrast to Figure 4.3 above, Figure 4.4 below centres on financial performance. It highlights five performance measures for financial capital and four measures for all other capitals, underscoring the emphasis on financial metrics.

Figure 4.3: The lack of a balanced multi-capital approach for performance measurement



Relevance and performance

We also measure **non-financial** metrics, such as the engagement and diversity of our people, and our customer advocacy, as these are critical to our long-term competitiveness.

Read more about our non-financial performance on pages 48 to 53 and in our CR report at www.aviva.com/cr2014

Customer advocacy

Our Relationship Net Promoter Score® (RNPS) measures the likelihood of a customer recommending Aviva.

Our 2014 survey shows six of our businesses achieved upper quartile performance, four were at market average and two were at lower quartile relative to their local markets. During 2014, Aviva has returned the most consistent and improved set of RNPS results since the survey began in 2009.

	2014	2013
in upper quartile	50%	33%
at or above market average	33%	17%
below market average	17%	50%

Employee engagement

We are focused on creating an environment in which employees can thrive and build a career at Aviva. We measure this through our annual global Voice of Aviva survey.

Engagement improved 9 percentage points in 2014, and now is 3 percentage points above the global financial services norm, driven by a double-digit uplift in trust of our senior leaders. There were also advances in levels of employee pride, motivation and advocacy.

2014 65%
2013 56%

Community investment

We have a long heritage of community investment which includes cash, in kind donations and skills-based volunteering.

Investment in communities
2014 £6.3m
2013 £6.2m

Number of volunteering hours
2014 40,220
2013 41,223

Reduction in CO_2e

CO_2e data includes emissions from our buildings, business travel, outsourced data centres, water and waste to landfill.

In 2010 we set ourselves an ambitious target to cut CO_2e emissions by 20% by 2020, with a minimum 5% reduction each year. In 2014, we exceeded that target, achieving a 32% reduction well ahead of plan. We are now setting new ambitious targets.

2014 4% in the year
2013 8% in the year

Diversity

We remain committed to having a diverse management team and workforce in terms of gender, as well as diversity of experience, skills and knowledge, background and nationality.

At 31 December 2014, we had the following gender split:

Board membership: Males 9, Females 2
Senior management: Males 645, Females 168
Aviva Group employees: Males 12,658, Females 13,706

Relevance and performance

Our five key **financial** metrics are closely tracked by management to evaluate Aviva's operating performance. These financial metrics are calculated on a continuing basis.

Read more about our investment thesis on page 25. For definitions of our key metrics, turn to the glossary on pages 316-317.

Cash remittances[1]

Sustainable cash remittances from our businesses are a key financial priority and form part of our investment thesis.

The overall improvement in cash remittances was driven by improvements across the majority of our markets. We continue to take action on capital efficiency to increase these remittances.

2014 £1,412m
2013 £1,269m
2012 £904m

Adjusted operating profit[2]: IFRS basis

This is our key measure of operating profitability.

Operating profit was up 6%, which included the benefit of operating expense savings of £113 million[3]. The result also includes an adverse foreign exchange impact of £87 million. See pages 26 to 29 for further details of the performance of our markets in the year.

2014 £2,173m
2013 £2,049m
2012 £1,926m

Operating expenses

Managing our expense base is essential to delivering our investment thesis and to improve competiveness.

Operating expenses on a continuing basis reduced by 7% (4% on a constant currency basis) showing the impact of cost savings initiatives across the majority of our markets. Foreign exchange has benefited operating expenses by £98 million. Compared with the 2011 baseline for the expense reduction target, there has been an overall reduction of £571 million, which shows the original £400 million expense target has been fully achieved.

2014 £2,795m
2013 £3,006m
2012 £3,234m

Value of new business (VNB)[4]

This measures growth and is the source of future cash flows in our life businesses.

VNB increased 11% (15% on a constant currency basis) driven by growth in France, Poland, Italy, Spain and Asia. Growth in these markets was partly offset by reductions in Turkey, mainly driven by a reduction in our share of the business following the partial IPO. In the UK, VNB was stable with the adverse impact of reduced individual annuity sales offset by increases in bulk annuities and equity release and protection.

2014 £1,010m
2013 £909m (restated)[5]

Combined Operating Ratio (COR)

This is a key measure of underwriting profitability of our General Insurance business.

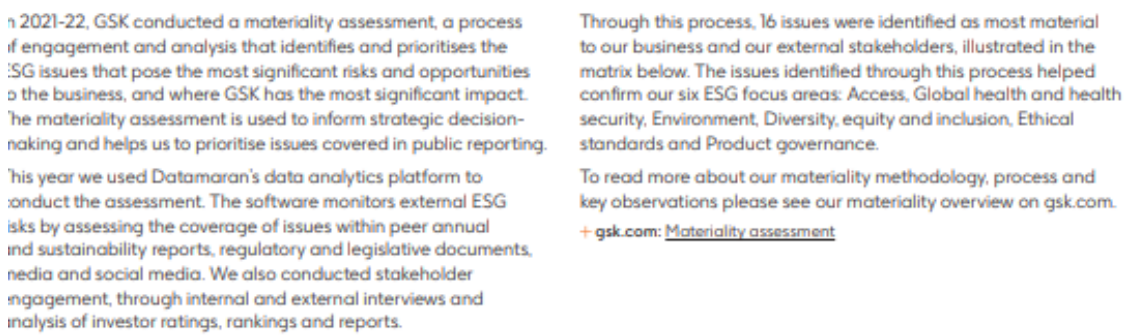
COR improved 1.6 percentage points with improvements in the UK, Ireland and Europe. These results more than offset an adverse movement in Canada.

2014 95.7%
2013 97.3%
2012 97.0%

Principle 5: Integrated external communication

Extra-financial reports have adopted technological and digital innovations, becoming more interactive by connecting various sections and reports through innovative hyperlinks and links. This approach minimises redundancy and promotes the concept of interconnectedness and interdependencies. Some extra-financial reports, however, were deficient in information, requiring users to consult other lengthy documents, like governance reports, to find necessary details. In contrast, certain organisations effectively summarised information within their extra-financial reports while providing links to additional resources. GSK's extra-financial report exemplifies this practice well (Figure 5.1).

Figure 5.1: GSK's use of hyperlinks to reinforce interconnectedness within their report



n 2021-22, GSK conducted a materiality assessment, a process
f engagement and analysis that identifies and prioritises the
SG issues that pose the most significant risks and opportunities
o the business, and where GSK has the most significant impact.
he materiality assessment is used to inform strategic decision-
naking and helps us to prioritise issues covered in public reporting.

his year we used Datamaran's data analytics platform to
onduct the assessment. The software monitors external ESG
isks by assessing the coverage of issues within peer annual
nd sustainability reports, regulatory and legislative documents,
nedia and social media. We also conducted stakeholder
ngagement, through internal and external interviews and
nalysis of investor ratings, rankings and reports.

Through this process, 16 issues were identified as most material to our business and our external stakeholders, illustrated in the matrix below. The issues identified through this process helped confirm our six ESG focus areas: Access, Global health and health security, Environment, Diversity, equity and inclusion, Ethical standards and Product governance.

To read more about our materiality methodology, process and key observations please see our materiality overview on gsk.com.

+ gsk.com: Materiality assessment

Conversely, some reports are excessively lengthy, with Barclays PLC being an example at 544 pages, highlighting the report's substantial size. This information overload does not benefit stakeholders and may suggest that management lacks adequate management control systems (MCS) (Section 2.3) to gather data which are useful for decision-making. Such an overload of information can obscure issues or reflect a lack of comprehension regarding the key themes (P1). There is potential for ongoing improvements across the principles to more effectively embody integrated thinking. Notably, the concept of integrated thinking is absent from any of the extra-financial reports in the sample, and its application was not addressed, indicating that the concept remains underdeveloped in practice in the UK.

Principle 6: Systems and management

The data collection and validation process for greenhouse gas (GHG) emissions at British American Tobacco (BATS) exemplifies best practices in management control systems, aligning with Principle 6. BAT's approach to Scope 1 and 2 emissions through its internal Environmental, Health, and Safety (EHS) reporting system reflects a system for gathering accurate emissions data. The rigorous data collection framework enables BAT to monitor and

validate its carbon footprint effectively, supporting informed decision-making and efficient resource use across multiple capitals.

Figure 6.1: BATS use of MIS to inform their GHG emissions disclosures and decision-making

Data collection & validation

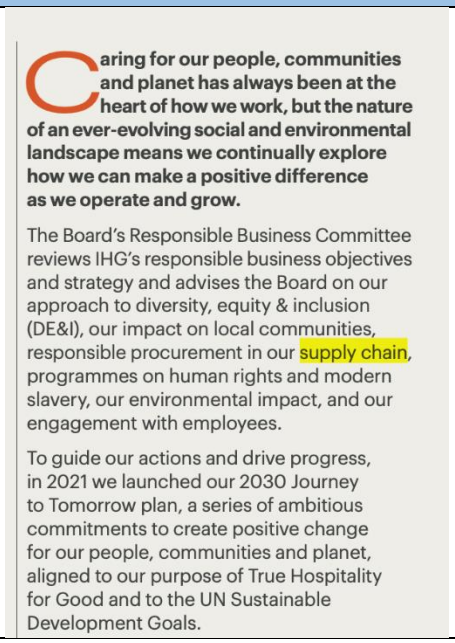
GHG emissions data for Scope 1 & 2 is collected within our internal EHS reporting system; it includes 180 reporting units located across 90 countries.

BAT's Scope 3 GHG emissions reporting process aligns with the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. We report emissions where the Group has operational control and include CO_2, CH_4 and N_2O within our CO_2e emission reporting.

A full breakdown of our GHG emissions is presented below.

The approach to supply chain management illustrated by IHG's Responsible Business Committee aligns well with Principle 6, showcasing best practices in integrating multi-capital management for sustainability and long-term value creation. By examining and addressing various elements within the supply chain—such as responsible procurement, human rights, environmental impact, and employee engagement—IHG strengthens its ability to manage different capitals effectively. The integrated supply chain strategy used by IHG contributes to a more resilient, ethically sound, and sustainable business model that aligns with IHG's broader goals and the UN Sustainable Development Goals.

Figure 6.2: IHG's multi-capital supply chain management



Caring for our people, communities and planet has always been at the heart of how we work, but the nature of an ever-evolving social and environmental landscape means we continually explore how we can make a positive difference as we operate and grow.

The Board's Responsible Business Committee reviews IHG's responsible business objectives and strategy and advises the Board on our approach to diversity, equity & inclusion (DE&I), our impact on local communities, responsible procurement in our supply chain, programmes on human rights and modern slavery, our environmental impact, and our engagement with employees.

To guide our actions and drive progress, in 2021 we launched our 2030 Journey to Tomorrow plan, a series of ambitious commitments to create positive change for our people, communities and planet, aligned to our purpose of True Hospitality for Good and to the UN Sustainable Development Goals.

The BATS Group Sustainability Department, led by the Chief Sustainability Officer (CSO) and supported by subject matter experts, develops and drives the sustainability strategy, while the Group Business Functions implement the sustainability strategy across various regions. The collaboration across leadership teams and cross-functional workstreams ensures alignment on sustainability goals and enhances BAT's ability to manage multi-capitals effectively. Together, the collaboration with the CSO and the Group Business Functions highlight BAT's commitment to integrated thinking and sustainable resource management, positioning it as a model of best practice in applying Principle 6.

Figure 6.3: Cross-departmental collaboration illustrated by BATS

Principle 7: Continuous improvement

Figure 7.1 shows the organisation's focus on developing and supporting its employees, which is key to creating a strong and capable workforce. By offering training, planning for future leadership, and setting fair pay strategies, the company aims to grow talent within its teams while reducing the risk of relying on a few key people. The commitment towards employees helps to make Legal & General (LGEN) an attractive place to work. Additionally, by providing support for employees' financial well-being in response to inflation, the organisation shows it cares about its employees beyond just work, recognising the impact of wider economic issues. LGEN's focus on personal and professional well-being helps create a positive work culture where employees feel valued and able to perform at their best.

Figure 7.1: Disclosure of LGEN's commitment to employee development and wellness

We seek to ensure that key personnel dependencies do not arise, through employee training and development programmes, remuneration strategies and succession planning. Our processes include the active identification and development of talent within our workforce, and by highlighting our values and social purpose, promoting Legal & General as a great place to work. As well as investing in our people, we are also transforming how we engage and develop capabilities, with new technologies and tools to support globalisation, increase productivity and provide an exceptional employee experience.

Competition for talent remains strong with skills in areas such as technology and digital, particularly sought after across many business sectors, including those in which we operate. We also recognise the risks posed by the outlook for inflation in salary expectations across the wider employment market, and internally we have taken steps to help our employees through direct financial support and by providing advice and resources to help them manage their financial wellbeing.

meets with employees of various grades and across business divisions throughout the year, enabling visibility of workforce policies and practices across the organisation and how these align with the company's values and the group's behaviours. There is a whistleblowing hotline available for any members of the workforce who wish to raise any concern of wrongdoing in the workplace. The Board has oversight of whistleblowing and routinely receives updates on this. Additionally, employees are encouraged to share their views through the Voice survey and with the Designated Workforce Director. Further details are available on page 76 and 77. Details on the company's approach to investing in and rewarding its workforce can be found on page 120.

Figure 7.2 presents an employee engagement framework that involves gathering input at different levels of the organisation, from senior leaders to frontline employees. This structure allows the company to understand various viewpoints on work policies, safety, and inclusion, helping it to create a more supportive and open workplace. Regular reviews and the use of employee feedback for operational development and decision-making show the organisation's commitment to listening to its employees and responding to their needs. Using feedback loops and employees' perspectives builds a sense of belonging and ensures that employees feel heard, which can strengthen loyalty and improve overall engagement. Using their inputs also ensures that the organisation's decisions are considered from all perspectives, leading to better decisions being made and ensuring they are inclusive of the entire culture of their entity, again supporting employee engagement and inclusivity.

Figure 7.2: A comprehensive disclosure detailed the involvement of employees within business decisions

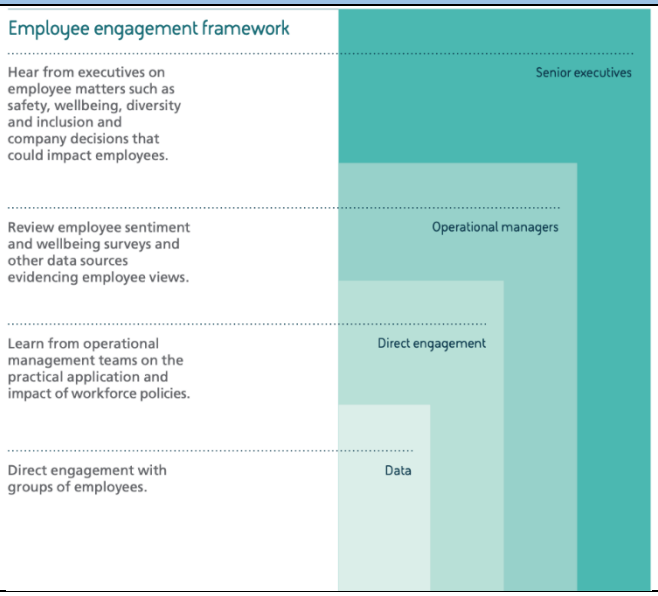


Figure 7.3 highlights the organisation's efforts to improve its HR practices but also reveals a lack of detail on how feedback loops work. While setting up an 'Employee Experience' team and appointing a Chief Operating Officer to focus on HR are positive steps, the organisation does not provide much information about how it gathers and uses employee feedback. The lack of transparency makes it hard for stakeholders to understand how their input helps shape company policies and processes. As Bui and De Villiers (2017) suggest, clear systems for gathering and acting on feedback are essential for tracking and improving performance. More open disclosures would help show how feedback is used to make meaningful changes within organisations.

Figure 7.3: An illustration showing the underdevelopment of feedback loops being used effectively across the sample

Our HR organisation has evolved with the establishment of an 'Employee Experience' team, responsible for analysing insights from employee feedback and translating these into actions for our HR teams and line leaders. We have also introduced a Chief Operating Officer role in the HR organisation who is focused on ensuring key business priorities are implemented consistently across the business.

During the year, we commenced a process of HR policy modernisation which has included establishing and agreeing a standard approach for developing HR policies, provisions, process and guidance. This approach is designed to enable our HR strategy and support our desired employee value proposition and employee experience, while ensuring robust controls for our key people risks and enabling greater HR process efficiencies.

Principle 8: Integrated intelligence

Barclays' fintech innovation strategy exemplifies the use of integrated intelligence to drive sustainability and multi-capital value. Through initiatives like the Rise Start-Up Academy and the Female Innovators Lab Fund, Barclays integrates data-driven insights from multiple capitals to support technology startups aligned with their climate strategy and societal goals. Their approach reflects integrated thinking by using technology to enhance decision-making, balancing financial returns with social and environmental contributions, and demonstrating how fintech can be a vehicle for both growth and responsible resource allocation.

Figure 8.1: The use of AI to drive value creation within Barclays

Barclays' open financial technology (fintech) innovation strategy is focused on sourcing ideas, technology and talent outside the bank and supporting its adoption and dissemination within Barclays. Our wider programme of fintech initiatives includes, among other things, support for fintechs in-line with Barclays' Climate Strategy and societal goals.

Strategic initiatives

Initiative	Goal
Rise Start-Up Academy	750 founders supported by the end of 2025
Rise Growth Academy	50 fintechs supported by the end of 2025
Female Innovators Lab Fund	Deploy $30m capital into female fintechs
FinTech Venture Studio	6 new ventures launched by the end of 2027

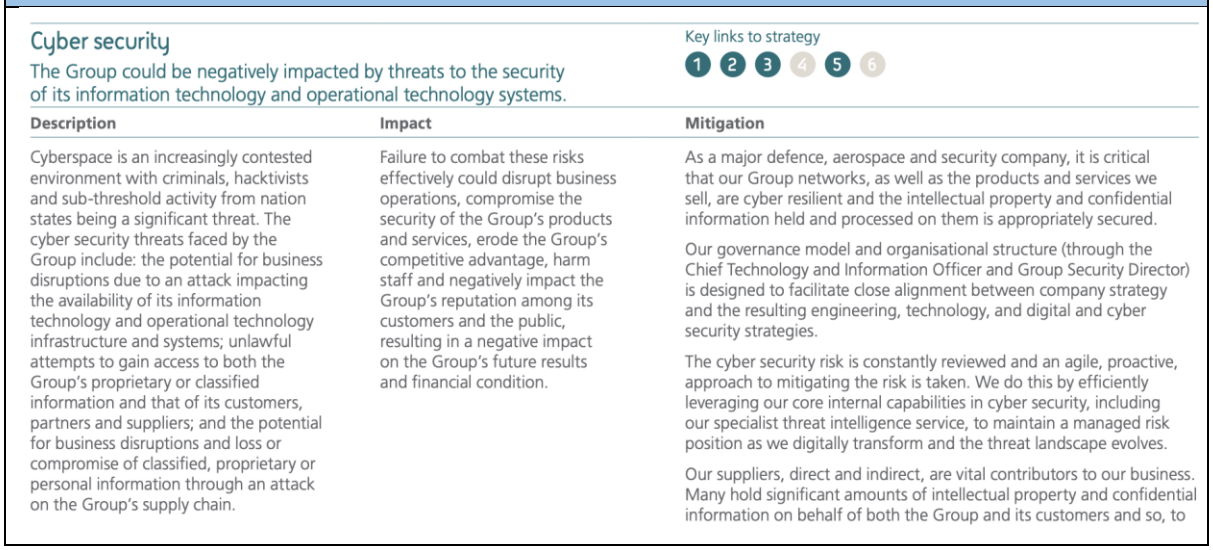
BAE Systems' Innovation and Technology Committee provides a best-practice example of integrated intelligence oversight that supports integrated thinking. This committee ensures that technological advancements, especially those concerning AI and zero-emission technologies, are aligned with the company's broader sustainability and revenue goals. By overseeing initiatives that encourage innovation while monitoring risks related to emerging technologies, BAE's committee exemplifies the governance framework necessary to manage multiple capitals. Oversight by the committee informs decision-making across departments, allowing BAE to implement integrated intelligence within its governance structure to advance both operational performance and sustainability outcomes.

Figure 8.2: The introduction of committees within governance structure for effective use of technology

Innovation and Technology Committee – is responsible for overseeing efforts by the executive team to stimulate and maintain an innovative culture, which facilitates the Group's ability to make technological advancements through the introduction of low or zero emission technologies for existing or new products and services. Additionally, the Committee oversees the Group's progress in identifying potential longer-term revenue opportunities in these technologies, in accordance with the Group's strategy.

The cybersecurity strategy employed by Bae Systems highlights a proactive approach to managing risks associated with integrated intelligence. Given the potential for cyber threats to disrupt business operations and compromise data, Bae Systems' strong cybersecurity framework includes continuous risk assessments, digital transformation initiatives, and supplier engagement. Their risk management framework aligns with integrated thinking principles by addressing the risks that could destroy stakeholder trust. Through real-time monitoring, Bae Systems mitigates the risks of over-reliance on automated systems and ensures transparency in data management.

Figure 8.3: The risk management process used by Bae Systems to mitigate risks regarding integrated intelligence



Cyber security

The Group could be negatively impacted by threats to the security of its information technology and operational technology systems.

Key links to strategy

1 2 3 4 5 6

Description	Impact	Mitigation
Cyberspace is an increasingly contested environment with criminals, hacktivists and sub-threshold activity from nation states being a significant threat. The cyber security threats faced by the Group include: the potential for business disruptions due to an attack impacting the availability of its information technology and operational technology infrastructure and systems; unlawful attempts to gain access to both the Group's proprietary or classified information and that of its customers, partners and suppliers; and the potential for business disruptions and loss or compromise of classified, proprietary or personal information through an attack on the Group's supply chain.	Failure to combat these risks effectively could disrupt business operations, compromise the security of the Group's products and services, erode the Group's competitive advantage, harm staff and negatively impact the Group's reputation among its customers and the public, resulting in a negative impact on the Group's future results and financial condition.	As a major defence, aerospace and security company, it is critical that our Group networks, as well as the products and services we sell, are cyber resilient and the intellectual property and confidential information held and processed on them is appropriately secured. Our governance model and organisational structure (through the Chief Technology and Information Officer and Group Security Director) is designed to facilitate close alignment between company strategy and the resulting engineering, technology, and digital and cyber security strategies. The cyber security risk is constantly reviewed and an agile, proactive, approach to mitigating the risk is taken. We do this by efficiently leveraging our core internal capabilities in cyber security, including our specialist threat intelligence service, to maintain a managed risk position as we digitally transform and the threat landscape evolves. Our suppliers, direct and indirect, are vital contributors to our business. Many hold significant amounts of intellectual property and confidential information on behalf of both the Group and its customers and so, to

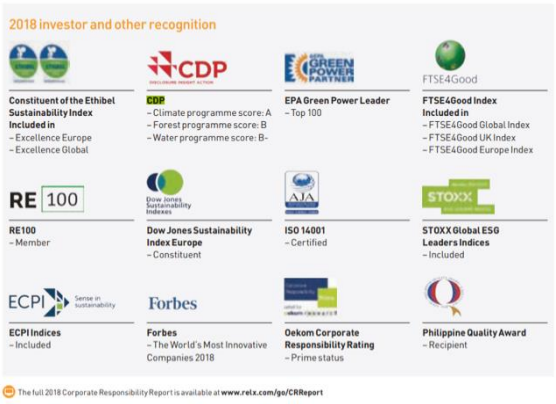
Principle 9: Multi-capitals and boundary-setting

Scores for Principle 9, which focuses on boundary-setting and the inclusion of multi-capitals in reporting, were uniformly low across all entities examined. This lack of variance indicates that no entity has emerged as a leader or underperformer in boundary-setting or multi-capital accounting, making best and worst practice comparisons ineffective. There is a critical gap in the current application of integrated thinking related to boundary-setting and multi-capital accounting. The consistently poor performance suggests a widespread challenge in establishing comprehensive boundaries and accounting for the full impact of multi-capitals. Entities may face inefficient decision-making and resource use without effective boundary-setting due to unclear operational and sustainability scopes.

Principle 10: External sources of evidence

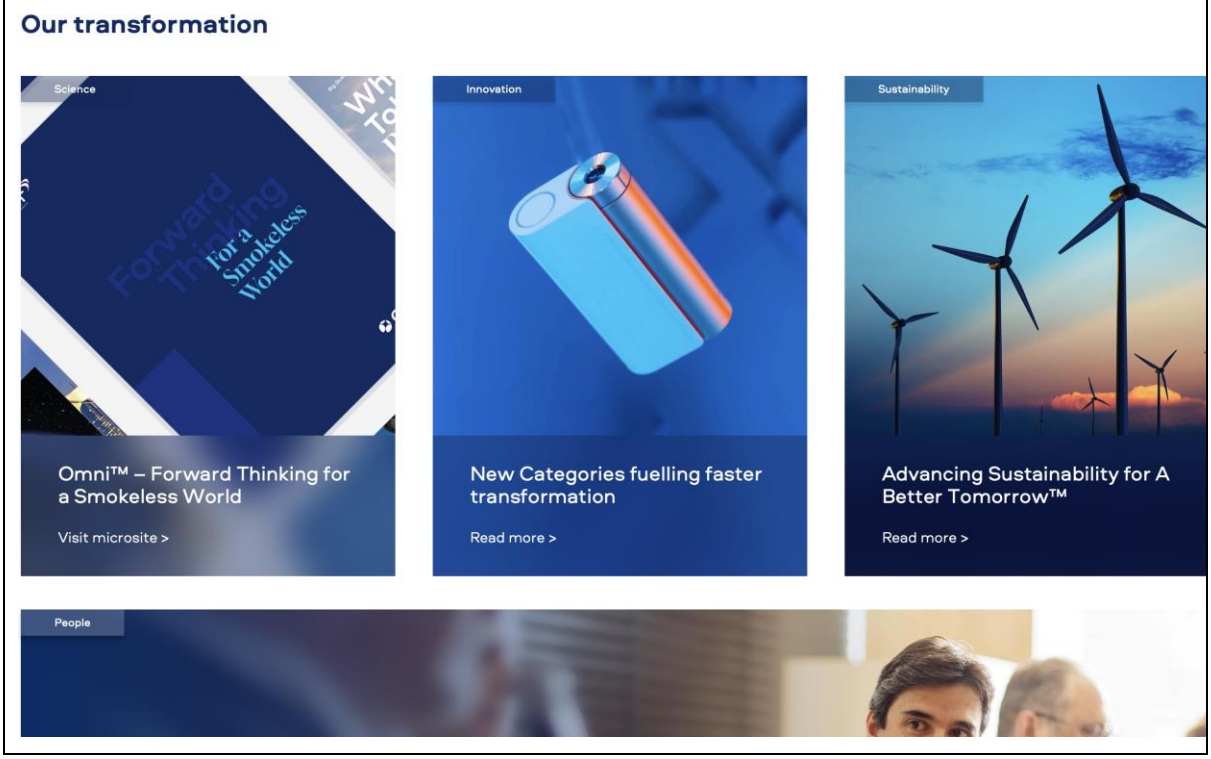
RELX's extra-financial reports highlight integrated thinking awards, emphasising the company's commitment to sustainable practices and integrated thinking. By disclosing these accolades, RELX demonstrates its dedication to multi-capital approaches, reflecting a high standard in managing ESG factors. The sustainability awards validate RELX's efforts in integrating sustainability into its core operations, showcasing RELX's leadership in responsible business practices and strengthening its public image as an innovator in integrated thinking.

Figure 10.1: Integrated thinking awards won by RELX in their drive to an integrated thinking ethos



British American Tobacco's (BATS) webpage highlights the company's transformation efforts related to intellectual capital, ESG practices, and human capital, using external sources to reinforce integrated thinking. By showcasing intellectual capital advancements, BATS underlines its commitment to innovation and knowledge development, which is essential for sustaining long-term value. In terms of ESG practices, BATS demonstrates transparency and accountability by outlining initiatives related to environmental impact and social responsibility. The transparency and accountability shown align with evolving stakeholder expectations for responsible business conduct. Additionally, by emphasising human capital improvements, such as employee development and well-being, BATS reveals its dedication to nurturing talent and fostering a supportive workplace culture. Its holistic representation on its webpage allows BATS to communicate its integrated thinking ethos externally, showcasing its progress across multi-capitals and strengthening its public image as a forward-thinking, responsible organisation.

Figure 10.2: The use of webpages to further validate BATS considerations over multi-capitals



External news articles are an indication that integrated thinking practices are not being fostered throughout the entity. Shell PLC's being accused of greenwashing is an indication that their management disclosures are being used to obtain stakeholder trust and confidence, but they are not a true reflection of their actual operations and attempts to implement integrated thinking practices (Section 2.3).

Figure 10.3: News articles as an external sources of evidence for integrated thinking

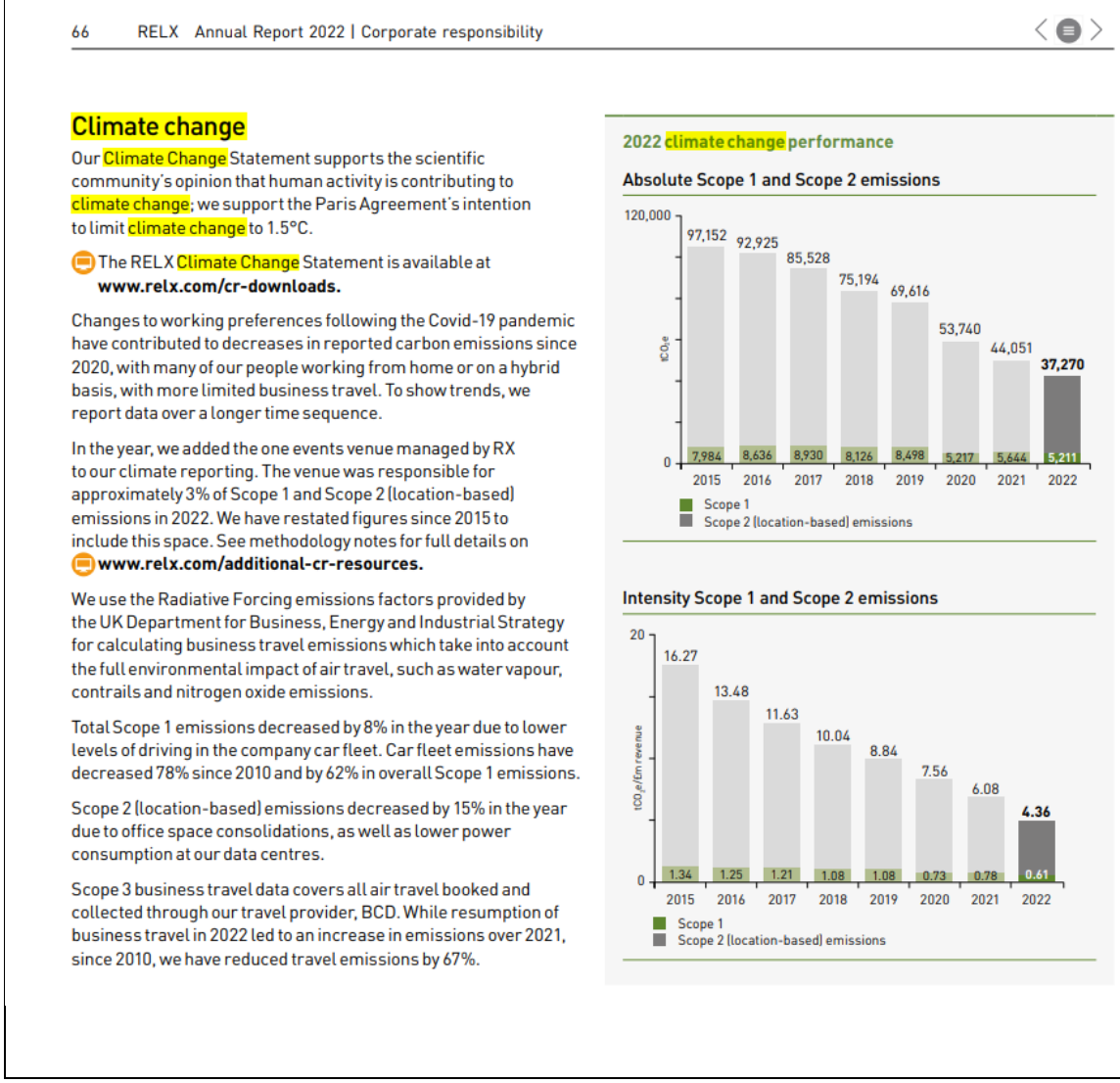
Shell and BP among oil firms accused of greenwashing over renewable energy

Greenpeace analysed the annual reports of the British fossil fuel giants for 2022, alongside 10 other European companies

The disclosure of carbon emissions by RELX exemplifies best practices aligned with Principle 10. Carbon disclosure showcases RELX's dedication to environmental, social, and governance (ESG) issues, which is crucial for stakeholders who prioritise sustainability in their assessment of corporate responsibility. By publicly reporting its carbon footprint, RELX not

only meets stakeholder expectations but also reinforces its accountability and transparency, illustrating a strong commitment to integrated thinking and sustainable practices.

Figure 10.4: CO2 emissions and the approach to reduce them disclosed in RELX's extra-financial report.



66 RELX Annual Report 2022 | Corporate responsibility

Climate change

Our Climate Change Statement supports the scientific community's opinion that human activity is contributing to climate change; we support the Paris Agreement's intention to limit climate change to 1.5°C.

The RELX Climate Change Statement is available at **www.relx.com/cr-downloads.**

Changes to working preferences following the Covid-19 pandemic have contributed to decreases in reported carbon emissions since 2020, with many of our people working from home or on a hybrid basis, with more limited business travel. To show trends, we report data over a longer time sequence.

In the year, we added the one events venue managed by RX to our climate reporting. The venue was responsible for approximately 3% of Scope 1 and Scope 2 (location-based) emissions in 2022. We have restated figures since 2015 to include this space. See methodology notes for full details on **www.relx.com/additional-cr-resources.**

We use the Radiative Forcing emissions factors provided by the UK Department for Business, Energy and Industrial Strategy for calculating business travel emissions which take into account the full environmental impact of air travel, such as water vapour, contrails and nitrogen oxide emissions.

Total Scope 1 emissions decreased by 8% in the year due to lower levels of driving in the company car fleet. Car fleet emissions have decreased 78% since 2010 and by 62% in overall Scope 1 emissions.

Scope 2 (location-based) emissions decreased by 15% in the year due to office space consolidations, as well as lower power consumption at our data centres.

Scope 3 business travel data covers all air travel booked and collected through our travel provider, BCD. While resumption of business travel in 2022 led to an increase in emissions over 2021, since 2010, we have reduced travel emissions by 67%.

2022 climate change performance

Absolute Scope 1 and Scope 2 emissions

Intensity Scope 1 and Scope 2 emissions

Appendix 6: List of sub-indicators part of the integrated thinking schematic

Table 10 below illustrates the sub-indicators per principles of integrated thinking. The sub-indicators under P1 - P5 have been obtained from the Maroun et al. (2023) study. P6 - P10 were interpretively developed by the researchers based on prior literature, corporate governance standards and sustainability-related guidelines and standards (Section 2.3). These sub-indicators were presented at a research workshop and conference and refined.

Integrated awareness and understanding
Q2.1 There is a clear mission and vision statement which explains what the organisation does. The explanation of the business includes:
The firm culture and values
Ownership structure
Operating structure
Principle Markets
Competitive landscape
Value chain position
Quantitative measures such as firm size, number of employees etc.
Q2.2 Chairman and CEO statements explain how PESTLE factors are considered
The nature of the external environment includes:
Macro- and micro- economics
Market conditions
Technology
Politics
Regulatory
Environmental
Social issues
Stakeholder context
Emerging ethical issues
Q3.1 Formal methods, systems and processes to identify stakeholders and determine their expectations and information needs
Q3.2 Tracks changes in expectations and pre-empts developments in the stakeholder environment which could affect the value creation process
Q3.3 Explains how stakeholders' legitimate needs are understood
Q3.4 Stakeholders' expectations factored into specific risk assessments, business processes and performance review
Q3.5 Contractual or legal duties to stakeholders outlined
Q3.6 Ethical duties to stakeholders outlined
Q3.7 Active engagement with stakeholders takes place and is discussed
Q3.8 The quality/standing of stakeholder relationships are explicated
Q4.1 Clear explanation of risks and opportunities relevant for the value creation process.
Analysis of risks and opportunities includes:
Internal and external sources of risks/opportunities
Magnitude of possible risks
Likelihood of occurrence/non-occurrence
Time frames
Any ethical implications
Up- and down-side of risks and opportunities dealt with

Q4.2 Risks and opportunities resulting from stakeholder relations acknowledged
Q4.3 Risk mitigation policies
Risk analysis is multi-dimensional and deals with the following:
Manufactured
Natural
Social and relationship
Intellectual
Human
Financial
Q4.4 There is external assurance on risk identification and management
Q4.5 There is internal assurance on risk identification and management
Q5.1 Explanation of how materiality is defined
Q5.2 Materiality determination process is outlined and includes:
How relevant issues are identified
How the impact of facts or circumstances is assessed
How issues are prioritised
Positive and negative facts/circumstances
Qualitative and quantitative characterises of facts and circumstances
Financial capital
Manufactured capital
Natural Capital
Social and relationship capital
Intellectual capital
Human capital
Materiality is not defined
Q5.3 Stakeholders co-opted in materiality determination process
Q5.4 Materiality assessed in the context of the organisation's strategy, risks and opportunities
Q5.5 Materiality assessment incorporates the impact of facts/circumstances, the likelihood of occurrence and the time frame
Q5.6 Materiality includes a prioritisation/ranking of issues
Q5.7 Prioritisation of issues in materiality assessment consistent with risk assessment
Q5.8 For material matters the following is performed:
An analysis of their impact on the strategy, risks and business models
Planned managerial actions
Results of actions taken to date
Use of internal controls and other mitigation strategies
An explanation of significant uncertainty, use of estimates and application of judgement
Sensitivity analysis provided where applicable
Q6.1 Business model identifies outputs AND outcomes
Q6.2 Positive and negative outcomes are discussed

Q6.3 Focus areas for ensuring that the business model does t result in outputs or outcomes which are inconsistent with being a good corporate citizen
Q6.4 Business model focuses of short term and long term issues
Q6.5 Strategy statement which explains the value creation proposition
Q6.6 Strategy distinguishes between value creation over the short-, medium- and long-term
Q6.7 The strategy discusses capitals used for the value creation process:
Manufactured
Natural
Social and relationship
Intellectual
Human
Financial
Q6.8 Explanation of changes to strategy in response to changes in the external environment which are clearly documented
Q6.9 Explanation of changes to strategy in response to changes in the business model which are clearly documented
Q6.10 Strategy references the management of stakeholders' legitimate expectations
Q6.11 Policies and plans for achieving strategic objectives are outlined
Q6.12 Actions taken to achieve strategic objectives identified
Q6.13 TCWG continuously assess strategy and respond to any negative consequences
Q6.14 How the organisation applies ethical standards as part of its operations (e.g. recruitment of employees, selection of suppliers, production processes)
Q6.15 An analysis of anticipated changes over time is provided including:
Changes to the business model
Changes in the external environment
Changes to material stakeholder relationships
Technological changes
Availability of financial and other capitals to manage changes
Q6.16 The integrated report includes forecasts of performance measures
Q6.17 The report defines integrated thinking
Q6.18 Explanation of how integrated thinking is applied
Q6.19 Explanation of the benefits of integrated thinking
Integrated leadership commitment and capability
Q7.1 The Chairperson's statement addresses:
Financial capital
Manufactured capital
Natural capital
Social and relationship capital
Intellectual capital
Human capital
Q7.2 The CEO's statement addresses:

Financial capital
Manufactured capital
Natural capital
Social and relationship capital
Intellectual capital
Human capital
Q7.3 The governing body is responsible for:
Providing strategic direction
Approving material policies and plans
Overseeing and monitoring the implementation of policies and plans
Driving a culture of ethics and accountability
Managing the risks and opportunities associated with technological changes
Managing legal and ethical implications of technological advances
Ensuring continuity in the context of rapid technological change
Ensuring compliance with laws and regulations
Q8.1 Structure of the governing body: Number and size of different committees complies with King IV
Q8.2 Structure of the governing body: Diversity in terms of skills, gender and race complies King IV
Q8.3 Report explains how the structure of the governing body supports value creation process
Q8.4 How committees and delegated authorities allow TCWG to discharge their duties
Q9.1 Monitoring and strategic-related functions are explained for the following bodies/committees:
The board of directors
The audit committee
The risk committee
The social and environmental committee
Remuneration committee
Q9.2 The processes used to identify risks and monitor operations are explained
Q9.3 Specific actions taken as part of the risk management and monitoring process
Q9.4 Steps taken by the governing body to promote innovation
Q9.5 Steps taken by the governing body to promote multi-capital management
Q9.6 An explanation of how remuneration policies are used to promote value creation
Q9.7 Performance of the governing body is evaluated and disclosed
Q9.8 Governing body's performance evaluated using financial and n-financial indicators
Q9.9 Strategy refers explicitly to the following capitals:
Financial
Manufactured
Natural
Social and relationship

Intellectual
Human
Q10.1 Explanation of how ethical standards are incorporated in governance practices, monitoring systems and business operations.
Q11.1 Reference to the use of the codes of best practice including:
GRI
King IV
Sarbanes Oxley Act
ISO
Industry practices
Sustainable Development Goals
TCFD
Inclusion Capitalism
Future-Fit
Impact Institute
FCLTGlobal
United Nations Global Combat
Impact Management Project
World Resources Institute
Forum for the Future
wbcsd
The B Team
AccountAbility
GHG Protocol
Task Force for Climate Related financial disclosures
Task Force on Nature Related financial disclosures
Paris Agreement
UN Principles for Responsibility Investment
CDP
Climate Disclosure Standards Board
EU n-financial Reporting Directive
European Sustainability Reporting Standards
ISSB: IFRS new standard
JSE Sustainability Disclosure Guidance
Accounting for Sustainability
Capitals Coalition
Integrated structures
Q12.1 TCWG acknowledge their responsibility to ensure the integrity of the integrated report
Q12.2 TCWG acknowledge that they have applied their collective mind to the preparation and presentation of the integrated report
Q12.3 TCWG provide an opinion or conclusion about whether the integrated report is presented in accordance with the IIRC framework

Q12.4 If the IR is t prepared in accordance with the IIRC framework an explanation of steps being taken to address this is provided
Q12.5 The boundary or scope of the integrated report is illustrated in terms of:
The reporting entities covered
Risks, opportunities and outcomes of the entities covered by the report
Interested stakeholders
Application of different reporting guidelines and/or methods used to compile the IR
boundary provided
Q12.6 Practical limitations on the scope of reporting are outlined (e.g. availability of data, legal restrictions)
Q12.7 Use of reporting frameworks or guidelines (e.g. GRI, ISO)
Q12.8 Reporting policies and procedures are in place to support IR
Q12.9 A system of internal controls is in place to support the integrity of information used for managerial decision making and reporting to stakeholders
Q12.10 Report includes a table of contents
Q12.13 Specifies if any material information has been omitted
Q12.14 Explains the omissions and steps taken to acquire the information in the future
Q13.1 Both positive and negative outcomes are discussed
Q13.2 There is a statement that the board accepts responsibility for the integrity of the integrated reports
Q13.3 There is a statement that restrictions are applied to preserve competitive advantage disclosed
Q13.4 Main sections in report consistent with those in prior period
Q13.5 Changes to report layout, format and content flagged and supported by appropriate reconciliations.
Q13.6 Specific committee mentioned that are accountable for sustainability issues
Q14.1 An explanation of the business model is provided
Q14.2 The business model includes details on:
Inputs, activities and processes
Outputs of the business model
Outcomes of the business model - internal
Outcomes of the business model - external
The relevance of stakeholders for the business model
The relevance of financial capital
The relevance of manufactured capital
The relevance of natural capital
The relevance of social and relationship capital
The relevance of intellectual capital
The relevance of human capital
How risks and opportunities affect the business model
The links between KPIs and the business model

Incorporation of innovation in the business model and how the model is adapted for changes to the external environment
Strategic positioning e.g. cost leadership, differentiation
Q14.3 Where the business is complex, the business model is disaggregated
Q15.1 Formal stakeholder engagement process defined
Q15.2 Methods for how stakeholders can contact the company are provided
Q15.3 Evidence that the company meets with stakeholders included in the report
Q15.4 Evidence of how the company addresses stakeholder needs
Q16.1 The report includes an explanation of how the accounting system has been upgraded to manage integrated reporting
Q16.2 The report includes an explanation of how IT forms apart of Integrated reporting
Q16.3 The report includes an explanation of how internal decision making considers:
Financial capital
Manufactured capital
Natural capital
Social and relationship
Intellectual
Human
Integrated organisational performance management
Q17.1 The report includes an explanation of how KPIs are identified and measured
Q17.2 KPIs deal with different dimensions/elements including:
Financial
Manufactured
Natural
Social and relationship
Intellectual
Human
Q17.3 The entity's performance is evaluated against the KPIs
Q17.4 The report includes a longitudinal analysis over time of key performance indicators
Financial capital
Other capitals
Q18.1 The report includes an explanation of how the entity evaluates performance against strategic objectives
Q18.2 Performance evaluated against prior periods
Q18.3 Performance evaluated against planned objectives
Q18.4 Performance evaluated in detail (it is t just a number exercise)
Q18.5 The relevance of laws and regulations on performance is explained
Q18.6 The relevance of stakeholder relationships for performance is explained
Q18.7 Positive and negative performance indicators are discussed
Q19.1 Organisation accepts responsibility for poor performance

Q19.2 Organisation distances itself from negative outcomes and avoids accountability
Q19.3 Organisation avoids, denies or refuses accountability for negative outcome
Q19.4 Ethical implications taken into account when evaluating performance
Q19.5 Organisation explains how it plans to improve performance or achieve targets
Q20.1 There is a reference to combined assurance model
Q20.2 The report explains how their combined assurance model functions
Q20.3 Mechanisms to ensure report reliability are discussed including:
Specific internal controls
Stakeholder review and engagement
Internal audit engagements
External assurance engagements - limited assurance
External assurance engagements - reasonable assurance
Q20.4 Errors and restatements are clearly marked
Q20.5 Limitations and subjectivity of specific estimates, disclosures or assessments provided
Q20.6 Explanation of steps taken to ensure completeness of information reported
Q20.7 Cost-benefit limitations flagged
Q21.1 The company includes sustainability and value creation as a part of their brand image
External communication
Q22.1 Which of the following reports are available online
Integrated Report
Sustainability Report
Annual Report
Corporate Governance Report
Other ESG Reports
BEE Compliance Report
Systems and management
Q23.1 Management information systems have been implemented to address:
Natural capital
Financial Capital
Social and relationship capital
Manufactured capital
Human capital
Intellectual capital
Q23.2 The organisation discloses the extent to which assurance services cover the systems processes and controls required to support accurate, complete, and reliable reporting.
Q23.3 Management discloses how MIS is used to collect, evaluate and analyse data related to:
Natural capital

Financial Capital
social and relationship capital
Manufactured capital
Human capital
Intellectual capital
Q23.4 Organisation examines how the following are integrated into supply chain management
Natural Capital
Financial Capital
Social and relationship capital
Manufactured capital
Human capital
Intellectual capital
Q23.5 The entity has disclosed how their management information system has been disclosed over time
Q23.6 Changes in the methods used by the entity to collect data has been disclosed.
Q23.7 There is evidence of management actively engaging with different groups in the business to reshare information.
Q23.8 There is evidence that the finance division is involved in the integrated reporting process for:
Natural capital
Financial capital
Social and relationship capital
Manufactured capital
Human capital
Intellectual capital
Q23.9 There is evidence of the use of management information systems in the entity's business model
Q23.10 There is evidence of the use of management information systems in the entity's risk response.
Q23.11 Outcomes and conclusions of cross-functional working groups is disclosed as well as relevant meetings
Continuous improvement
Q24.1 There is evidence of different levels of employees in the entity included in the strategic decisions.
Q24.2 There is evidence of the following within the organisation:
Investment in training employees
Knowledge sharing initiatives
Retreats for employees
Communication policies
Ethics hotline
Regular updates on ESG matters
Q24.3 The organisation discloses the results of post-implementation reviews relating to:
Natural capital

Financial capital
Social and relationship capital
Manufactured capital
Human capital
Intellectual capital
Q24.4 The organisation has established feedback loops that enable continuous improvement.
Q24.5 The organisation has employed a Chief Value Officer to manage their multi-capital considerations.
Q24.6 The organisation discloses the results of post-implementation reviews relating to multi-capital impacts
Integrated intelligence
Q25.1 The use of AI for decision-making, and the kwledge, experience, and organisational environment of decision-makers is disclosed.
Q25.2 AI is incorporated into the following:
Natural capital
Financial capital
Social and relationship capital
Manufactured Capital
Human Capital
Intellectual capital
Multi timeframe analysis
KPI
IT operations
Q25.3 The impacts of AI on key metrics is disclosed.
Q25.4 The entity discloses the types of AI used and its functionality which includes:
Self-developed innovations
Collaborations
External technologies
Q25.5 The organisation has disclosed how integrated intelligence has changed the way of working.
Q25.6 There is a designated IT committee that is charged with managing:
Managing Artificial Intelligence
Integrated intelligence
Management information systems
IT committee
Q25.7 The risks of integrated intelligence are disclosed
Q25.8 The strategic steps for integrated intelligence are disclosed.
Q25.9 The risk mitigation response for integrated intelligence is disclosed.
Boundary-setting and accounting for multi-capitals
Q26.1 The organisation establishes an accounting system for multi- capitals
Q26.2 Accounts are developed which assess direct and indirect impacts on:
Natural Capital

Social and relationship capital
Intellectual capital
Human Capital
Financial capital
Manufactured capital
Q26.3 The organisation discloses events, type and unit and related journal entries affecting:
Natural Capital
Social and relationship capital
Intellectual capital
Human Capital
Financial capital
Manufactured capital
Q26.4 A "statement of multi-capital position" is developed which assesses total impacts on:
Natural Capital
Social and relationship capital
Intellectual capital
Human Capital
Financial capital
Manufactured capital
Q26.5 A "statement of multi-capital performance" is developed which assesses:
Natural Capital
Social and relationship capital
Intellectual capital
Human Capital
Financial capital
Manufactured capital
Q26.6 The organisation distinguishes between the direct and indirect impacts on:
Natural Capital
Social and relationship capital
Intellectual capital
Human Capital
Financial capital
Manufactured capital
Q26.7 Establishing a team responsible for managing multi-capitals
Q27.1 The organisation discloses the approach to define boundaries.
Q27.2 The organisation discloses the impact of boundaries on:
Natural Capital
Social and relationship capital
Intellectual capital
Human Capital
Financial capital

Manufactured capital
Q27.3 The organisation clearly sets both, and differentiates between, organisational and value chain boundaries.
Q27.4 The organisation establishes a team responsible for managing inventory quality
Q27.5 The organisation develops a quality management plan and performs quality checks including institutionalising formal feedback loops to the quality management team for each quality check undertaken
External sources of evidence
Q28.1 The organisation discloses external awards for sustainability and other extra financial matters:
Integrated reporting awards
CDP
MSCI ranking
FTSE4Good ESG index series
Other ESG rankings
Q28.2 There are external news articles relating to the organisation's impact on multi-capitals in the year of assessment:
Positive
Negative
Q28.3 The company's webpage includes specific disclosures related to: circular economy; ESG initiatives; climate change; dealing with adverse current matters
Circular economy
ESG initiatives
Climate change
Dealings with adverse social media publicity
Other
Q28.4 There is evidence of the company's carbon footprint impact
Q28.5 There is evidence of the company's response to their carbon footprint.

8: Acknowledgements

I would like to express my appreciation to my supervisor, Dusan Ecim, for his invaluable guidance, constructive feedback, and encouragement throughout this project. His support and insights were essential to shaping this research report. The detailed reviews, continuous availability and recommendations have always ensured the highest quality of this research. The mentorship provided enhanced my interest in integrated thinking, encouraging me to continually further my knowledge and interest in the process of completing the dissertation.

I am also grateful to my second supervisor, Professor Warren Maroun, for his profound expertise and commitment to this research. His thorough reviews and encouragement to uphold the highest standards have greatly enhanced the quality and depth of this study.

I also extend my gratitude to Dannielle Cerbone and Professor Kurt Sartorius for their valuable feedback in the proposal Q&A. The feedback they provided was a key factor in enhancing the quality of my research report.

9: References

Adams, C. (2017). *Understanding integrated reporting: The concise guide to integrated thinking and the future of corporate reporting*. Routledge.

Afolabi, H., Ram, R., & Rimmel, G. (2022). Harmonization of sustainability reporting regulation: Analysis of a contested arena. *Sustainability*, *14*(9), 5517.

Alrazi, B., De Villiers, C., & Van Staden, C. J. (2015). A comprehensive literature review on, and the construction of a framework for, environmental legitimacy, accountability and proactivity. *Journal of cleaner production*, *102*, 44-57.

Athanasakou, V., Boshanna, A., Kochetova, N., & Voulgaris, G. (2024). Strategy and business model disclosures in annual reports: The role of legal regime. *The British Accounting Review*, *56*(3), 101190.

Atkins, J., & Maroun, W. (2015). Integrated reporting in South Africa in 2012: Perspectives from South African institutional investors. *Meditari Accountancy Research*, *23*(2), 197-221.

Barth, M. E., Cahan, S. F., Chen, L., & Venter, E. R. (2017). The economic consequences associated with integrated report quality: Capital market and real effects. *Accounting, Organizations and Society*, *62*, 43-64.

Bui, B., & De Villiers, C. (2017). Management control systems to support sustainability and integrated reporting. *Sustainability accounting and integrated reporting*, 121-148.

Busco, C., Grana, F., & Quattrone, P. (2017). Integrated thinking.

CDP. (2020). THE TIME TO GREEN FINANCE DISCLOSURE INSIGHT ACTION CDP Financial Services Disclosure Report 2020. 46. https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/741/original/CDP-Financial-Services-Disclosure-Report-2020.pdf?1619537981

Cho, C. H., Laine, M., Roberts, R. W., & Rodrigue, M. (2015). Organized hypocrisy, organizational façades, and sustainability reporting. *Accounting, Organizations and Society*, *40*, 78-94.

De Villiers, C., Hsiao, P.-C. K., & Maroun, W. (2020). *The Routledge handbook of integrated reporting*. Routledge London.

De Villiers, C., La Torre, M., & Molinari, M. (2022). The Global Reporting Initiative's (GRI) past, present and future: critical reflections and a research agenda on sustainability reporting (standard-setting). *Pacific accounting review*, *34*(5), 728-747.

Dimes, R., & de Villiers, C. (2023). Hallmarks of integrated thinking. *The British Accounting Review*, 101281.

Dimes, R., De Villiers, C., & Chen, L. (2023). How integrated thinking can be detected in management disclosures in annual reports: Insights from a large-scale text-analysis approach. *Journal of Management Accounting Research*, *35*(3), 75-99. https://doi.org/https://doi.org/10.2308/JMAR-2022-082

Dumay, J., Bernardi, C., Guthrie, J., & Demartini, P. (2016, 2016). Integrated reporting: A structured literature review. Accounting forum,

Dumay, J., & Dai, T. (2017). Integrated thinking as a cultural control? *Meditari Accountancy Research*, *25*(4), 574-604.

Dumay, J., Frost, G., & Beck, C. (2015). Material legitimacy: Blending organisational and stakeholder concerns through non-financial information disclosures. *Journal of Accounting & Organizational Change*, *11*(1), 2-23.

EU. (2014). Non-financial Reporting Directive. In.

EU. (2023). EUROPEAN SUSTAINABILITY REPORTING STANDARDS (ESRS). In.
EY. (2020). *Excellence in Integrated Reporting 2020*. https://integratedreportingsa.org/ircsa/wp-content/uploads/2020/09/EY-Excellence-in-Integrated-reporting-2020-Report.pdf
Farooq, M. B., & Maroun, W. (2017). Why organizations voluntarily report–institutional theory and institutional work. In *Sustainability accounting and integrated reporting* (pp. 36-48). Routledge.
Feng, T., Cummings, L., & Tweedie, D. (2017). Exploring integrated thinking in integrated reporting–an exploratory study in Australia. *Journal of Intellectual Capital*, *18*(2), 330-353.
Fiechter, P., Hitz, J. M., & Lehmann, N. (2022). Real effects of a widespread CSR reporting mandate: Evidence from the European Union's CSR Directive. *Journal of Accounting Research*, *60*(4), 1499-1549.
Flower, J. (2015). The international integrated reporting council: a story of failure. *Critical perspectives on accounting*, *27*, 1-17.
Forrest, W., Li, S., Tamburro, I., & Van Kuiken, S. (2022). How effective boards approach technology governance. *McKinsey Digital*. https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/how-effective-boards-approach-technology-governance
FRC. (2018). UK Corporate Governance Code. In.
FSB. (2023). Recommendations of the Taskforce on Nature-related Financial Disclosures. In.
Gaia, S., & John Jones, M. (2017). UK local councils reporting of biodiversity values: a stakeholder perspective. *Accounting, Auditing & Accountability Journal*, *30*(7), 1614-1638.
Gray, R. (2006). Social, environmental and sustainability reporting and organisational value creation? Whose value? Whose creation? *Accounting, Auditing & Accountability Journal*, *19*(6), 793-819.
Guthrie, J., Manes-Rossi, F., & Orelli, R. L. (2017). Integrated reporting and integrated thinking in Italian public sector organisations. *Meditari Accountancy Research*, *25*(4), 553-573.
Hassan, A., Adhikariparajuli, M., Fletcher, M., & Elamer, A. (2019). Integrated reporting in UK higher education institutions. *Sustainability Accounting, Management and Policy Journal*, *10*(5), 844-876.
IFAC. (2015). Creating value with integrated thinking: The Role of Professional Accountants. In.
IFAC. (2020). In.
IIRC. (2021). International <IR> Framework. In: IAASB.
ISSB. (2023). IFRS® Sustainability Disclosure Standard. In.
Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. Sage publications.
Malafronte, I., & Pereira, J. (2021). Integrated thinking: measuring the unobservable. *Meditari Accountancy Research*, *29*(4), 805-822.
Malola, A., & Maroun, W. (2019). The measurement and potential drivers of integrated report quality: Evidence from a pioneer in integrated reporting. *South African Journal of Accounting Research*, *33*(2), 114-144. https://doi.org/10.1080/10291954.2019.1647937
Maroun, W. (2019). Does external assurance contribute to higher quality integrated reports? *Journal of Accounting and Public Policy*, *38*(4), 106670. https://doi.org/https://doi.org/10.1016/j.jaccpubpol.2019.06.002
Maroun, W., & Atkins, J. (2018, 2018). The emancipatory potential of extinction accounting: Exploring current practice in integrated reports. Accounting Forum,
Maroun, W., & Ecim, D. (2024). Biodiversity reporting by United Kingdom (UK)-listed companies: A review of extent, content and readability of disclosures. *Business Strategy and the Environment*.
Maroun, W., Ecim, D., & Cerbone, D. (2023). Refining integrated thinking. *Sustainability Accounting, Management and Policy Journal*, *14*(7), 1-25.
McGuigan, N., Haustein, E., Kern, T., & Lorson, P. (2021). Thinking through the integration of corporate reporting: Exploring the interplay between integrative and integrated thinking. *Meditari Accountancy Research*, *29*(4), 775-804.
McNally, M.-A., Cerbone, D., & Maroun, W. (2017). Exploring the challenges of preparing an integrated report. *Meditari Accountancy Research*, *25*(4), 481-504.

Myeza, L., Ecim, D., & Maroun, W. (2023). The role of integrated thinking in corporate governance during the COVID-19 crisis: perspectives from South Africa. *Journal of Public Budgeting, Accounting & Financial Management Accounting Research*, *35*(6), 52-77. https://doi.org/https://doi.org/10.1108/JPBAFM-08-2022-0133

Oliver, J., Vesty, G., & Brooks, A. (2016). Conceptualising integrated thinking in practice. *Managerial Auditing Journal*, *31*(2), 228-248.

Prinsloo, A., & Maroun, W. (2021). An exploratory study on the components and quality of combined assurance in an integrated or a sustainability reporting setting. *Sustainability Accounting, Management and Policy Journal*, *12*(1), 1-29. https://doi.org/10.1108/sampj-05-2019-0205

Raynovich, R. S. (2023, 2023). The Top Five Real Risks Of AI to Your Business. *Forbes*. https://www.forbes.com/sites/rscottraynovich/2023/06/22/the-top-five-real-risks-of-ai-to-your-business/

Rinaldi, L. (2020). Integrated thinking for stakeholder engagement: A processing model for judgments and choice in situations of cognitive complexity. In *The Routledge handbook of integrated reporting* (pp. 280-292). Routledge.

Rivera-Arrubla, Y. A., & Zorio-Grima, A. (2016). Integrated reporting, connectivity, and social media. *Psychology & Marketing*, *33*(12), 1159-1165.

Solomon, J., & Maroun, W. (2012). Integrated reporting: the influence of King III on social, ethical and environmental reporting.

Stacchezzini, R., & Lai, A. (2020). Integrated reporting preparers: mode of cognition, stakeholder salience and integrated thinking in action. In *The Routledge handbook of integrated reporting* (pp. 269-279). Routledge.

Stubbs, W., & Higgins, C. (2014). Integrated reporting and internal mechanisms of change. *Accounting, Auditing & Accountability Journal*, *27*(7), 1068-1089.

Subbarao, A., & Zeghal, D. (1997). Human resources information disclosure in annual reports: an international comparison. *Journal of Human Resource Costing & Accounting*, *2*(2), 53-73.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, *20*(3), 571-610.

Summerhays, K., & de Villiers, C. (2012). Oil company annual report disclosure responses to the 2010 Gulf of Mexico oil spill. *Journal of the Asia-Pacific Centre for Environmental Accountability*, *18*(2), 103-130.

Thornton, G. (2023). AI oversight: Bridging technology and governance. https://www.grantthornton.com/insights/articles/audit/2023/bridging-technology-and-governance

Tweedie, D., & Martinov-Bennie, N. (2015). Entitlements and time: Integrated reporting's double-edged agenda. *Social and Environmental Accountability Journal*, *35*(1), 49-61. https://doi.org/https://doi.org/10.1080/0969160X.2015.1007466

Velte, P., & Stawinoga, M. (2017). Integrated reporting: The current state of empirical research, limitations and future research implications. *Journal of Management Control*, *28*, 275-320.

Vitolla, F., Raimo, N., Marrone, A., & Rubino, M. (2020). The role of board of directors in intellectual capital disclosure after the advent of integrated reporting. *Corporate Social Responsibility and Environmental Management*, *27*(5), 2188-2200.

VRF. (2022). Integrated Thinking Principles Value creation through organizational resilience. In.

Zhou, S., Simnett, R., & Green, W. (2017). Does integrated reporting matter to the capital market? *Abacus*, *53*(1), 94-132.

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Faculty of Commerce, Law and Management

Candidate's Declaration

Name of Candidate:	Keegan Jordaan
Person Number:	2323425
Degree:	MCom Accountancy
Supervisor / Co-Supervisor:	Warren Maroun & Dusan Ecim
School:	Accountancy
Title of Thesis/Dissertation/ Research Report:	Evaluating integrated thinking in management disclosures in annual reports: Evidence from the United Kingdom (UK) listed organisations

Candidate's Declaration:

i. I hereby submit my PhD Thesis/Masters dissertation for examination (circle applicable).

ii. I confirm that my signed declaration in terms of Rule G9.7 is included in each copy of the thesis/ dissertation.

iii. I have checked all copies of my thesis/ dissertation and declare that no pages are missing or poorly reproduced.

iv. I hereby submit a CD/USB containing a PDF version of my submission for examination and ____1_____ bound copies.

Candidate's Signature: _____Keegan Jordaan_____ **Date:** ___20/02/2025_____