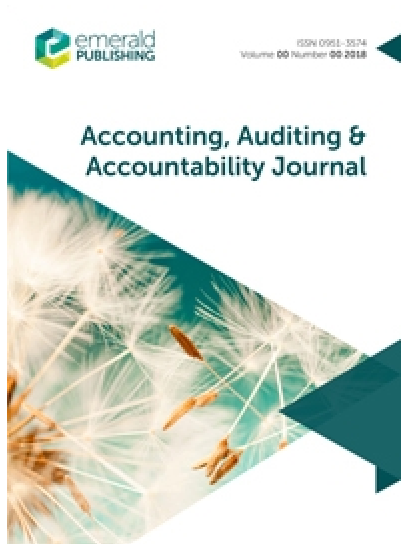

Understanding reporting boundaries in annual reports: a conceptual framework

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Understanding reporting boundaries in annual reports: a conceptual framework

Abstract

Purpose: The purpose of this paper is to enhance conceptual understanding of reporting boundaries in corporate annual reports by developing a conceptual framework of the rules and principles, referred to here as dimensions, underlying boundaries**.** Nine contemporary regulations/guidelines are compared in terms of the boundary dimensions identified to illustrate similarities and differences in boundary concepts.

Design/methodology/approach: To develop a conceptual framework of reporting boundary dimensions, academic and industry literature were analysed to identify boundary dimensions. Thereafter, nine contemporary regulations/guidelines were compared in terms of these dimensions. A qualitative approach was taken including document analysis and content analysis.

Findings: Ten key boundary dimensions were identified through analysis of academic and industry literature. Each dimension represents a continuum along which regulations/guidelines can position themselves. Taken together, the ten dimensions provide a comprehensive description of the chosen boundary concept.

Originality/value: The paper contributes to accounting theory by providing a holistic conceptual framework of dimensions relating to reporting boundaries, thus answering calls for more conceptual development of the boundary construct. The conceptual framework and comparison of contemporary regulations/guidelines adds to scarce literature considering financial and non-financial boundaries simultaneously, which is relevant for annual reports. From a practical perspective, the paper brings renewed visibility to boundaries with implications for preparers, users, standard setters and auditors of annual reports.

Key words: boundary setting, reporting boundary, corporate reporting, narrative reporting, non-financial, corporate social responsibility, sustainability reporting

1. Introduction

The concept of 'boundaries' is important in multiple contexts to denote what is included and what is not included; for example, in map drawing, distinguishing academic disciplines (Girella, 2018) and in differentiating the 'firm' or 'organization' from the environment (Santos & Eisenhardt, 2005). This paper focuses on reporting boundaries in corporate annual reports, where 'reporting boundary' is defined here as "the basis for determining which entities, transactions, activities and impacts are reported on". The annual report is an interesting setting as it potentially houses boundary conceptualizations representing tensions between logics or hybrid logics (Edgley, Jones, & Atkins, 2015), clashes between frames (Tregidga, Milne, & Kearins, 2014), and colliding frames of reference (Ascui & Lovell, 2011), emerging from the application of multifarious financial and non-financial reporting regulations, guidelines, and approaches.

Understanding reporting boundaries is particularly poignant with the increasingly wider notion of 'corporate performance' (ICAS, 2016) and demand from capital providers and others for information beyond traditional financial reporting (Blackrock, 2018, 2020), reflected in the expansion of narrative sections of the annual report. Narrative reporting refers here to the 'front half' of annual reports i.e. all sections except the audited financial statements (with notes) and auditors' report, and notwithstanding the name, includes narrative, quantitative, financial and non-financial information (Rowbottom & Lymer, 2010). Non-financial reporting has various definitions, referring here to sustainability, governance and intellectual capital (intangibles) information. Annual reports increasingly include sustainability information, as indicated in the KPMG Sustainability Reporting survey (2020, p. 17) which shows that 61 percent of the largest 100 companies across 52 countries and 76 percent of the world's largest 250 companies engage in this practice.

Various annual report sections may be influenced by regulations and guidelines with different objectives and explicit or implicit boundary constructs. For example, the financial statements may be governed by the International Financial Reporting Standards (IFRS), while the sustainability information in the Management Commentary or separate sustainability sections may be based on guidelines from the Global Reporting Initiative (GRI) Standards, Taskforce on Climate Related Financial Disclosure (TCFD), The Value Reporting Foundation (formed by the merger of the Sustainability Accounting Standards Board (SASB) and International Integrated Reporting Council (IIRC)), IFRS Management Commentary Practice Statement Exposure Draft (IASB, 2021) and the Non-Financial Reporting Directive (NFRD) (for specified EU companies). Given that these sections occur in one report, users may make assumptions about a single consistent reporting boundary, which may not be the case (Archel, Fernández, & Larrinaga, 2008).

The purpose of this paper is to enhance conceptual understanding of reporting boundaries in corporate annual reports by developing a conceptual framework of the rules and principles, referred to here as dimensions, underlying boundaries**.** The motivation for the paper is three-fold. Firstly, prior literature indicates that there is currently a mixture of boundaries employed in annual reports for different pieces of information (Girella, 2018; Ringham & Miles, 2018). Second, the issue of boundaries is pertinent to standard setters contemplating the development of global sustainability reporting standards, such as the IFRS Foundation Trustees, as well as the merging of major voluntary standard setters, such as the IIRC and SASB into the Value Reporting Foundation (VRF, 2021). Cognisance of such dimensions assists in ensuring internal consistency within merged regimes. Finally, this paper is motivated by the current lack of visibility of inherent boundary dimensions (Girella, 2018; Ringham & Miles, 2018), which can affect the interpretation and usefulness of annual report information.

Some suggest that financial and non-financial reporting boundaries should align to ensure consistency, perhaps as in Integrated Reporting (Pesci & Andrei, 2011), while others suggest that financial and sustainability reporting serve different purposes and audiences and hence their boundaries necessarily differ (Archel et al., 2008). While many voluntary (e.g. GRI Sustainability Reporting Standards) and mandatory (e.g. the EU NFRD and IFRS) reporting guidelines have developed boundary setting guidance, some are vague and there remains inconsistencies between guidelines (Girella, 2018; Ringham & Miles, 2018). Further, in practice, sustainability reporting boundaries have been found to be applied inconsistently with a 'boundary gap', where the boundary applied in reality differs from the stated boundary (Ringham & Miles, 2018). Further confounding issues include the shifting of boundaries over time and the transplantation of terms and concepts across disciplines (Girella, 2018; Girella, Tizzano, & Ferrari, 2019). The practice of cross-referencing (e.g. in the Strategic Report and Management Commentary) may also potentially lead to confusion about reporting boundaries.

Surprisingly, to date there is scarce theoretical and empirical academic literature focusing holistically on reporting boundaries (Girella, 2018; Miles & Ringham, 2019); prior literature has tended to consider aspects of financial and sustainability reporting boundaries in silos. Industry literature and guidelines informing financial and sustainability reporting again typically operate independently. Some attempts have been made to understand the interrelationships between various non-financial reporting guidelines, such as the work of the Corporate Reporting Dialogue (CRD, 2016).

To develop the conceptual framework of reporting boundary dimensions, the following research questions are addressed:

RQ1: How does academic and industry literature conceptualize reporting boundaries and what are the key boundary dimensions considered?

RQ2: How do contemporary regulations/guidelines compare in terms of their boundary dimensions?

The paper contributes to accounting theory by providing a holistic conceptual framework of dimensions relating to reporting boundaries, thus answering calls for more conceptual development of the boundary construct (Antonini, Beck, & Larrinaga, 2020; Ringham & Miles, 2018). The conceptual framework and comparison of contemporary regulations/guidelines adds to limited literature on reporting boundaries, in particular literature considering financial and non-financial boundaries simultaneously, such as Girella (2018), which is relevant for annual reports which include both financial and non-financial information. From a practical perspective, the paper brings renewed visibility (Girella, 2018) to boundary decisions and implications for preparers, users, standard setters and auditors. Awareness of reporting boundary dimensions and differences between and within regulations/guidelines may assist in addressing calls for increased consistency and the boundary setting in the development of a global set of non-financial reporting standards (Blackrock, 2018, 2020). The study also draws attention to the importance of clarifying reporting boundaries and their dimensions for the multiple standard setters involved in the expansion of the concept of 'corporate performance' and the jurisdictional challenge (Edwards, Birkin, & Woodward, 1999) and power wars involved in being the relevant and accepted standard setters governing sections of the corporate annual report. It is also a timely reminder that careful consideration of reporting boundaries is important since "in communicating reality, you *construct* reality" (Hines, 1988, p. 257).

2. Method

To develop a conceptual framework of reporting boundary dimensions, a qualitative approach was taken including document analysis (Bowen, 2009) and content analysis (Bengtsson, 2016; Duriau, Reger, & Pfarrer, 2016). Academic and industry literature was analysed to identify boundary dimensions. The intent is that the dimensions together indicate "the basis for determining which entities, transactions, activities and impacts are reported on" (referring to the reporting boundary definition used in this paper). It is noted that some literature was not focused on boundary dimensions explicitly, yet reported empirical results or concepts that were interpreted by the author of the current paper as relevant boundary dimensions. Thereafter, nine key contemporary regulations/guidelines were compared in terms of the dimensions identified.

2.1 Documents analysed

The documents analysed to develop the conceptual framework included theoretical and empirical academic literature and industry literature relevant to corporate reporting boundaries. The documents compared comprise a range of current regulations/guidelines potentially informing annual report content under IFRS jurisdiction. The regulations/guidelines analysed do not purport to be exhaustive, but include commonly referred to documents in the literature and industry documents (e.g. KPMG (2020)) and a wide enough range of approaches to enable key boundary dimensions to be illustrated. Regulations/guidelines related to IFRS jurisdictions were chosen as the results will be relevant to multiple countries. An extended analysis incorporating US GAAP could be explored in future research.

The nine regulations/guidelines analysed were:

- IFRS: *Conceptual Framework for Financial Reporting* (IFRS-CF) (IASB, 2018),
- IFRS: Practice Statement Exposure Draft ED/2021/6 *Management Commentary* (IFRS-MC-ED) (IASB, 2021),
- IFRS Foundation: *Consultation Paper on Sustainability Reporting* (IFRS Foundation, 2020) and IFRS Foundation Exposure Draft *Proposed Targeted Amendments to the IFRS Foundation Constitution to Accommodate an International Sustainability Standards Board to Set IFRS Sustainability Standards* (IFRS Foundation, 2021),
- Taskforce on Climate-related Financial Disclosures (TCFD): *Final Report: Recommendations of the Task Force on Climate related Financial Disclosures* (TCFD, 2017),
- Financial Reporting Council (FRC): *Guidance on the Strategic Report* (FRC, 2018),
- Sustainability Accounting Standards Board (SASB): *Proposed changes to the SASB conceptual framework & rules of procedure. Bases for conclusions & invitation to comment on exposure drafts* (SASB-CF-ED) (SASB, 2020),
- International Integrated Reporting Council (IIRC): *International <IR> Framework* (IIRC, 2021),
- EU Commission: *Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting* (i.e. proposal for amending the NFRD) (EU Commission, 2021), and
- Global Sustainability Standards Board (GSSB): *GRI Universal Standards: GRI 101, GRI 102, and GRI 103 – Exposure draft* (GRI-ED) (GRI, 2020a).

It is noted that GRI has historically been the most commonly referred to sustainability reporting guideline of large, global companies, with 67 percent of the largest 100 companies across 52 countries and 73 percent of the world's largest 250 companies who engage in sustainability reporting, referring to the GRI (KPMG, 2020). Apparent from the documents above is the state of flux and current revisions being undertaken. This paper analyses the most recent document versions to reflect the latest thinking by the respective organizations.

2.2 Documentary analysis

As mentioned, the objective of the documentary analysis was to identify boundary dimensions arising from academic and industry literature. When comparing the regulations/guidelines in terms of the dimensions it is noted that the dimensions are not necessarily dichotomous (either/or) but instead represent a continuum along which companies and regulations/guidelines position themselves. Some regulations/guidelines may be vague (Ringham & Miles, 2018) and inconsistent in their boundary descriptions; hence interpretation and sensemaking of the boundary conceptualizations was needed (O'Donoghue, 2007). Ringham and Miles (2018) found that with the exception of GRI and the UN Global Compact, all guidelines published before 2010 failed to discuss the concept of boundary, either assuming a financial reporting boundary, or not considering the issue significant for consistency and credibility of reporting. In contrast, post 2011, they found that guidelines addressed boundary definitions or discussed issues relevant to boundary setting.

Interpretation was also needed because of the transplantation (Girella, 2018) of the same terms but with different meanings in the regulations/guidelines. Literature highlights that many terms used in the various reporting regulations/guidelines are the same and yet have different meanings, such as 'materiality' (Girella, 2018). Biondi, Dumay, and Monciardini (2020, p. 13) caution that such differences in meaning need to be clarified, for example the IIRC and EU NFRD "attach quite different meanings to the same words – words such as non-financial information, sustainability and materiality".

For each dimension identified, the relevant literature that led to the identification of the dimension is discussed in the findings in relation to research question 1. To increase the validity and reliability (de Villiers, Dumay, & Maroun, 2019) of the categorisations of the dimensions in contemporary reporting regulations/guidelines for research question 2, detailed references are provided in Appendix Table AI to the statements in the documents that led to the categorisations. In addition to reading the regulations/guidelines multiple times, search words were also used to locate quotes to illustrate categorisations. For example, to identify the extent of 'investor versus wider stakeholder focus' (one of the dimensions identified), the search words "stakeholder" and "user" were employed. Similarly, to identify the extent to which 'direct and indirect outward impacts' (another dimension) are addressed in a document, the search phrases "supply chain", "value chain" and "emissions" were used.

3. Findings

The following section discusses the ten key boundary dimensions identified from analysis of literature. Thereafter, the nine contemporary regulations/guideline documents are compared in terms of these dimensions.

3.1 Reporting boundary dimensions

3.1.1 Reporting entity: Extent of financial versus sustainability control/influence

This fundamental boundary dimension concerns the basis for determining which entities are included in the report and answers the question 'who is the report about?' The dimension distinguishes boundaries based on the financial 'reporting entity' concept that applies group accounting rules based on IFRS definitions of 'control' and 'significant influence' (financial control/influence), from boundaries that include all activities where the reporting entity has influence/responsibility over sustainability aspects (Antonini & Larrinaga, 2017) (sustainability control/influence).

The distinction has featured in sustainability reporting literature. Many sustainability reporting studies compare boundaries in sustainability guidelines (mostly GRI due to its prevalent use among large global companies (KPMG, 2020)) to sustainability reporting practice. Prior studies' conceptualization of boundary thus bears close resemblance to the GRI version in place at the time. For example, Archel et al. (2008) consider a schema of boundaries ranging from organizational boundaries based on financial control, to extended organizational boundaries (including suppliers over which the entity has operational control), then to operational boundaries scope 1, 2 and 3 (where scope 1 includes only direct impacts, scope 2 the most important indirect impacts and scope 3 all indirect impacts). While some sustainability reporting guidelines refer to the same 'reporting entity' as in the financial statements, a boundary based on 'sustainability control' is advocated for sustainability reporting (Antonini & Larrinaga, 2017; Archel et al., 2008).

Antonini and Larrinaga (2017) analysed how companies set environmental boundaries in the sustainability reports of the FT500. Most companies defined organizational boundaries restricted to financial control (as in financial reporting) and did not specify the entities included in this boundary (as required by financial reporting), making it difficult "for a stakeholder to discern the composition of the reporting entity" (p.132). They highlight the difficulty of comparing companies with different outsourcing policies using only the financial control principle, whereas the sustainability control principle makes the reporting boundary indifferent to the business structure. For example, if reports are based on financial control, companies may choose to outsource less-sustainable activities, rather than produce in-house, to avoid reporting on these activities; whereas a boundary based on sustainability control would bring these activities into the boundary (Archel et al., 2008). Using financial control in sustainability reporting has been likened to using the incorrect consolidation principles that excluded the loss-making entities in the Enron debacle (Antonini & Larrinaga, 2017).

This distinction has also been studied by Archel et al. (2008) who analysed the GRI (2002) compliant sustainability reports of 57 companies across 19 countries as to whether an 'operational boundary' (relating to upstream and downstream influence), or an 'organizational boundary' (relating to operational and financial control and significant influence though ownership) was adopted. Their findings suggested the definition of 'reporting entity' for non-financial reporting practice was based strictly on financial control, and found a low level of disclosure on organizational boundaries.

Ringham and Miles' (2018) study relates to this dimension. They conducted a thematic analysis of 15 sustainability reporting guidelines and developed three boundary definitions. Reputation management was defined as "the narrowest conceivable reporting boundary characterised by self-laudatory, selective cherry-picked content" (p.1048). 'Ownership and control' related to the 'financial accounting' boundary and was suggested by 73.3% of the guidelines analysed where it was defined as "an organizational boundary based on significant influence and direct impact derived from ownership and control" (p.1049). Finally, an 'accountability' boundary was defined as "one which widens the reporting remit through time, stakeholder responsibility or by acknowledging the organization's indirect impacts through the value chain" (p.1049). Using these definitions, they analysed the boundary disclosure related to 22 GRI sustainability indicators of 35 airline companies' sustainability reports, finding the average boundary selected in practice across all 22 indicators was based on a narrow focus and cherry-picked content i.e. reputation management. The use of the accountability boundary definition was limited. Boundaries varied from issue to issue yet "there was limited evidence that this was predicated from an adoption of an aspect boundary approach, but instead was driven by the practicalities of measurement or through regulatory pressures e.g. GHG disclosure, or addressing requirements of the Modern Slavery Act" (p.1058). They also found a "'boundary gap' between the boundary that companies report they adopt and the boundary adopted in practice, which could be misleading" (p.1057) and call for stronger advice for corporations to specify the boundaries used in sustainability reporting and that boundary disclosure should be a requirement of companies claiming to report in accordance with guidelines.

The fundamental concept of the 'reporting entity' has also been explored from the financial accounting perspective (Llewellyn, 1994; Moonitz, 1942; Power, 2018), where the 'reporting entity' "constructs boundaries and frames permeability in terms of what counts, is accounted for, as being inside and outside of the organization" (Power, 2018, p. 2). The reporting entity concept is also intertwined with the theories of the firm or organization (Girella, 2018). Power (2018) differentiated the 'proprietary' view of the accounting entity (where the entity is an instrument of its owners to increase their personal wealth), the 'pure entity' concept (where the entity is an actor and more discrete in itself) and the 'social entity' concept (including the role of the entity in satisfying the many demands of society and stakeholders), suggesting that hybrids of these entity concepts can occur. Girella (2018) explained the history of financial reporting boundaries according to the proprietary, then entity, and enterprise/institutional theory view of the 'firm', suggesting that these perspectives have been overtaken by the group financial reporting (consolidated accounts) reflecting a neo-classical view of the firm, as illustrated in the seminal work of Moonitz (1942) that theoretically discussed the 'entity approach' to consolidated financial statements. Llewellyn (1994) focussed on the financial boundaries of the organization and the ways in which financial accounting establishes "thresholds" to manage uncertainty on the boundary between the organization and society, while management accounting reduces internal uncertainties forming "binding structures" (p.4).

3.1.2 Target users: Extent of investor (and other capital providers) versus wider stakeholder focus

This boundary dimension relates to the target users of the report, distinguishing between a focus on the information needs of investors (and other capital providers) compared to a wider stakeholder focus. While this distinction is mentioned in prior academic literature (Girella, 2018), it is not a primary focus. There is more discussion about this dimension in the industry literature (FRC, 2020). Relevant to the 'wider stakeholder' focus are the theories used to explain sustainability reporting content and voluntary reporting in general. For example, Legitimacy theory (O'Donovan, 2002; Suchman, 1995) where companies voluntarily report on content (which defines the boundary) that seeks to meet the needs of society in general, and Stakeholder theory (Deegan & Blomquist, 2006; Freeman, 1984; Mitchell, Agle, & Wood, 1997; Stieb, 2009) where content is driven by the information needs of the organization's stakeholders.

3.1.3 Materiality: extent of financial versus enviro-socio-econo materiality

This dimension concerns whether financial materiality thresholds are used, where materiality is defined according to financial reporting versus whether information can be material based on financial or enviro-socio-econo thresholds. The distinction was initially highlighted by the EU Commissions' *Guidelines on Non-financial Reporting: Supplement on Reporting Climate-related Information* published in June 2019, where the concept of "double materiality perspective" refers to where materiality can either arise from financial materiality "in the broad sense of affecting the value of the company" as well as "impact" of the company's activities which indicates "environmental and social materiality" (EU Commission, 2019, p. 5). The Supplement went on to explain the difference between the TCFD and the NFRD materiality perspectives as follows:

> "the materiality perspective of the EU Directive covers both financial materiality and environmental and social materiality, whereas the TCFD has a financial materiality perspective only" (2019, p. 4).

The concepts of single and double materiality have subsequently been addressed in recent academic literature (Adams et al., 2021) and in recent proposals for regulations/guidelines. For example, the distinction is acknowledged by The IFRS Foundation Discussion paper where reference is made to the terms "single and double materiality" (IFRS Foundation, 2020, p. 13). The proposed revision of the NFRD (EU Commission, 2021, p. 2) again highlights the 'double materiality' concept:

> "The NFRD introduced a requirement for companies to report both on how sustainability issues affect their performance, position and development (the 'outside-in' perspective), and on their impact on people and the environment (the 'inside-out' perspective). This is often known as 'double materiality'."

A recent publication by the AASB-AUASB (2018) suggests that applying the financial materiality definition and the principles in IFRS Materiality Practice Statement 2 (IASB, 2017) would result in some climate-related risks, currently being disclosed in Director's reports and corporate governance statements, being brought into the ambit of financial materiality and hence reflected within the financial statements. They suggest that "qualitative external factors such as the industry in which the entity operates, and investor expectations may make [climate-related and other emerging risks] 'material' and warrant disclosures when preparing financial statements, regardless of their numerical impact" and that "entities can no longer treat climate-related risks as merely a matter of corporate social responsibility and should consider them also in the context of their financial statements" (p.3). The AASB-AUASB publication has boundary implications because it suggests bringing into the ambit of the financial statements section disclosures that were previously not included (instead included in narrative reporting), thereby widening the traditional financial reporting boundary (with consequent audit implications since the level of audit assurance on financial statements may differ from narrative sections).

A growing area of literature explores the materiality concept in the context of non-financial assurance. Canning, O'Dwyer, and Georgakopoulos (2019) examined how concepts relevant to financial audits are transferred to assurance on sustainability reports, such as materiality. Edgley et al. (2015) investigated the conceptualisation and operationalisation of materiality by accounting and non-accounting assurors of sustainability reporting, suggesting that the materiality concept as used in sustainability assurance includes a new stakeholder logic and reflects a hybrid of influences from the ISAE3000 and AccountAbility guidelines. Findings suggest that even auditors appeared to be 'cherry picking' from diverse auditing guidelines; they call for consistent guidelines on non-financial audit materiality.

3.1.4 Boundary description: extent of entity-wide versus topic boundary definition

This dimension concerns whether the boundary concepts (such as materiality) are determined, applied and disclosed for the reporting entity as a whole (entity-wide) as opposed to being applied at the topic level. This dimension was identified based on the evolution of GRI boundary rules over time, where they moved from an entity-wide boundary concept (as in financial reporting) to a topic-specific concept, explained as follows:

> "The concept of 'Boundary' has *evolved* significantly since the first version of the GRI Guidelines. …The *topic Boundary* now requests a *description of 'where the impacts occur' for each material topic*, and *'the organization's involvement with the impacts"* (GRI, 2019) (italics added for emphasis).

Interestingly, earlier boundary conceptualizations by the GRI appear to be more aligned with financial reporting boundaries and used similar terms (such as 'control' and 'double counting'). For example, prior GRI guidelines (e.g. 3 series and The Boundary Protocol) discussed which entities to include in a sustainability report, with a focus on reporting impacts over which the entity had 'control' or 'significant influence' (GRI, 2015). The GRI-ED reflects a renewed focus on clarifying the relationships between financial and sustainability reporting, by requiring disclosure of the differences between the entities included in the financial and sustainability reporting and the sustainability consolidation process (GRI, 2020a, p. 40). Further, the GRI-ED removes the term 'topic boundary' and "now requires the organization to report, for each material topic, whether it is involved with the negative impacts through its own activities or as a result of its business relationships" (GRI, 2020b, p. 12). This appears to be a clarification rather than a change in reporting boundary, where the GRI wants disclosure to distinguish whether involvement with negative impacts occurs through the organization's own activities or through business relationships.

As mentioned, sustainability reporting literature often follows the prevailing GRI boundary descriptions at the time. Thus while many earlier sustainability reporting studies focus on entity level boundary definitions based on prior GRI versions, Ringham and Miles (2018) and Miles and Ringham (2019) adopt the topic boundary approach as in the latest GRI Standards.

Miles and Ringham (2019) developed a theoretical model where sustainability reporting boundaries were classified into 'reputation management', 'ownership and control', 'accountability' and 'stakeholder engagement' categories. They investigated the boundaries related to 49 GRI topics in the standalone sustainability reports for the FTSE100, finding that topic boundaries fell mostly into the 'reputation management' category. The 'ownership and control' boundary, was used by the most progressive reporters, while 'accountability' boundaries were scarce and 'stakeholder engagement' boundaries were not found at all. They found no support for Stakeholder theory, limited support for Agency theory, and support for Legitimacy theory only in relation to impression management; concluding that Impression Management theory is strongest in predicting sustainability reporting content. They conclude that Impression Management, Risk Management and Reputation Management needs to be included in the usual Legitimacy and Stakeholder theoretical explanations of voluntary information.

Miles and Ringham (2019) found that most companies chose to define the boundary organization-wide, whereas GRI Standards required the boundary for each material topic to be disclosed. They observed the effect of legislation in widening reporting boundaries, such as the influence of the UK Modern Slavery Act (2015), and the Strategic Report and Directors' Report requirement of improved carbon disclosure.

Another related implication of this dimension is the concept of completeness. In an entity-wide boundary definition (as in financial statements) the boundary rules apply to all entities in the 'reporting entity'. For example, in group financial statements, completeness implies that the assets of the parent and subsidiaries will be included. Whereas, in the topic boundary definition, the boundary of the topic may not include all the entities in the financial reporting entity. For example, if slave labour is a concern at one subsidiary, then a topic boundary would then report on this topic in relation to this subsidiary, not on slave labour across the whole group. Moreover, a topic boundary may include additional entities not included in the financial reporting entity (such as suppliers or customers), thus extend beyond the financial reporting entity for certain topics.

3.1.5 Impact: extent of outward versus inward impact

This dimension relates to whether the boundary includes reporting on outward impacts of the reporting entity on society, environment and economy versus the inward impact of the society, environment and economy on the entity. Outward impacts refer to where an organization's activities affect society (e.g. cause problems with drinking water for the community), the environment (e.g. cause carbon emissions) or the economy (e.g. contribute to government taxes). Inward impacts refer to where society (customers boycott an organization's product), the environment (rising sea levels render an operational site inoperable) or the economy (a downturn in the economy reduced the demand for the organization's product) affects the organization.

This dimension was identified in academic and industry literature relating to single and double materiality. While related to materiality, it is itself a less complex dimension. An important concept related to this dimension is what is referred to here as 'circular outward-inward impact' on the entity, describing the effect on the entity (inward) of the entity's outward impact. To illustrate: an outward impact may be the amount of carbon emissions of the reporting entity contributing to climate change, whereas an inward impact may be the financial effect on the entity of supply stoppages due to flooding or fires at supplier operations related to climate change. A circular outward-inward impact is lost revenue (inward impact) due to reputation losses resulting from unfavourable carbon emission performance of the company (outward impact). This concept is identified in many regulations/guidelines where there is interest in outward impacts of a company only if they have an effect on the company i.e. circular outward-inward impacts (e.g. the <IR>Framework (IIRC, 2021)).

Recently, outward impacts have been conceptualised as externalities as explained by Unerman, Bebbington, and O'Dwyer (2018, p. 498), highlighting that such outward impacts are not within the traditional financial accounting boundary, yet should be brought within the boundary to provide a "representationally faithful portrayal of an entity's performance and position":

> "Much of this sustainability reporting encompasses issues that are not captured in, or are external to, the financial dimensions of transactions and events as communicated in financial reporting. These externalities comprise social, environmental and broader economic *impacts arising from the activities of an entity that are borne by others and do not feedback directly into short-term financial consequences for the entity.* They are, therefore, outside the remit of financial reporting, although they may have longer term financial consequences for the entity (Hopwood et al. 2010). […] for financial reporting

to provide a representationally faithful portrayal of an entity's performance and position, *additional information needs to be provided about material externalities that are not reflected in financial reporting's market derived financial data*".

3.1.6 Outward impact: extent of direct versus indirect outward impacts

Where outward impacts are included in the boundary, this dimension distinguishes between outward impacts *of the reporting entity* on society, environment and economy (direct outward impacts) and the outward impacts of the supply chain and other entities related to the reporting entity (indirect outward impacts). For example, greenhouse gas emissions[1] caused by the generation of electricity is a direct outward impact of electric utility entities, but an indirect impact of a company using the electricity (Archel et al., 2008). Indirect impact can arise from upstream activities (e.g. generated by suppliers) and downstream (e.g. generated by customers).

Prior literature has found limited disclosure of indirect outward impacts. For example, Antonini and Larrinaga's (2017) study of environmental boundary setting in the sustainability reports of the FT500 found most indirect sustainability impacts remained undisclosed in environmental indicators and there were cases of misleading disclosure within sustainability reports where companies classify direct impacts as indirect impacts. Similarly, Miles and Ringham (2019) found limited reporting of indirect impacts, such as scope 3 carbon emissions, despite the environmental importance, in their analysis of boundaries related to 49 GRI topics in the standalone sustainability reports for the FTSE100.

This dimension concerns the extent of supply chain focus for setting boundaries. Antonini et al. (2020) studied boundaries in the supply chain context by investigating the subpolitical role and characteristics of sustainability reporting boundaries and how setting sustainability reporting boundaries affects the definition and distribution of social risks along the supply chain, especially in relation to working conditions and human rights.

3.1.7 Time: extent of historic versus future focus

This dimension concerns the extent to which historic versus prospective information is included in the reporting boundary. Related to this dimension is decades of academic interest in fair-value accounting versus historic cost accounting (Georgiou & Jack, 2011; Hayoun, 2019; Laux & Leuz, 2009), where it has been argued that the use of fair values expanded the financial reporting boundary from completed transactions to also include partially completed transactions (Walton, 2006), which includes a future focus.

Industry literature has also focused on the extent of forward-looking versus historic information in corporate reports. For example, PWC (2016a) conducted a review of the Strategic Reports of 52 companies from the FTSE 350, finding that while many companies are providing more forward-looking information, a significant number don't look beyond the next year in their reporting. They suggested that management reluctance may be based on assuming investors are only interested in short-term returns and that they may be penalised by the market if forward-looking targets aren't met. PWC (2016b) further discuss how some managers and directors may fear that forward-looking information requirements may force them to disclose competitively-sensitive information and may expose them to the threat of litigation.

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[1] "Scope 1 refers to all *direct* GHG emissions. Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat, or steam. Scope 3 refers to other indirect emissions not covered in Scope 2 that *occur in the value chain of the reporting company*" (italics added) (TCFD, 2017, p. 63).

3.1.8 Performance: extent of financial versus sustainability focus

This dimension communicates the extent to which the boundary includes information about an entity's financial or sustainability performance. It is concerned with the notion of what 'corporate performance' means and reflects a possible expansion from the traditional financial performance concept to include non-financial performance (ICAS, 2016). The relationships between financial and non-financial performance concepts has been discussed in both academic (Callen, Gavious, & Segal, 2010; Girella, 2018) and industry (Bayne, Wee, & Tarca, 2019) literature. Following the logic of 'circular outward-inward impact' in section 3.1.5, this current dimension could include 'circular sustainability-financial performance', referring here to where sustainability performance of the entity affects the financial performance of the entity.

3.1.9 Value: extent of entity versus wider stakeholder value focus

This dimension captures the boundary implications of reports communicating information related to entity value versus those focusing on value for a wider set of stakeholders, even to the extent of representing accountability of organizations towards sustainable development. These concepts were identified in the sustainability reporting literature where there is a focus on whether the purpose of sustainability reporting is related to accountability and sustainable development, or more narrowly focused on value for shareholders (Antonini & Larrinaga, 2017). The difficulty in translating planetary boundaries to the boundaries for reporting by companies has been highlighted (Antonini & Larrinaga, 2017; Miles & Ringham, 2019). Other literature shows that the use of sustainability reporting boundaries in practice often reflects reputation management rather than accountability intentions (Miles & Ringham, 2019).

3.1.10 Purpose of report / disclosure

While this boundary dimension is likely to overlap with other dimensions, it is needed for a complete boundary description. The importance of the purpose and objectives of corporate reports has been highlighted in a recent FRC discussion paper on the future of corporate reporting (FRC, 2020). A network of interconnected reports is proposed, centred around a stakeholder-neutral Business Report (similar to a concise Strategic Report) as well as the full Financial Statements and a Public Interest Report. Related to this dimension, the FRC suggest that the reports should be objective-driven where "the objective of an individual network report should drive its content" (FRC, 2020, p. 4).

3.2 Comparative analysis

Table I summarises the categorisations of the nine contemporary regulations/guidelines in terms of the boundary dimensions identified. Appendix Table AI provides illustrative quotes from the documents to support the dimension conclusions reached in Table I. Italics are added for emphasis in quotes. It is acknowledged that a certain amount of generalisation may be required in providing a categorisation. However, such overall generalisations assist in conceptualising the key boundary dimensions relating to each document.

[please insert Table I about here]

3.2.1 Reporting entity: Extent of financial versus sustainability control/influence

As seen in Table I (Column 1) (and Appendix Table AI item 1) many regulations/guidelines refer (explicitly or implicitly) to the same reporting entity as used in financial reporting and are categorised as 'financial' control/influence (IFRS-CF, IFRS-MC-ED, IFRS-Foundation, TCFD, SASB). Some regulations/guidelines are categorised as 'beyond financial' control/influence because they consider entities beyond the financial reporting entity for inclusion within their reporting boundary. For example, this extended boundary is illustrated by the <IR> Framework:

> "Determining the boundary for an integrated report has two aspects: The *financial reporting entity* (i.e. the boundary used for financial reporting purposes) [financial]" and "Risks, opportunities and outcomes *attributable to or associated with other entities/stakeholders beyond the financial reporting entity that have a significant effect on the ability of the financial reporting entity to create value*" [beyond financial] (IIRC, 2021, p. 31).

Thus, the <IR> reporting entity extends to inclusion of "risks, opportunities and outcomes" of entities beyond the financial reporting entity, but only if they have a "significant effect on the ability of the financial reporting entity to create value". This proviso limits the extent to which the boundary is based on sustainability control/influence and is hence categorised as 'beyond financial'.

With the Strategic-Report-Guidance we need to differentiate between the guidelines for public-interest entities (PIEs)[2] and non-PIEs. For non-PIEs, the entity is based on financial control/influence. For PIEs, a 'beyond financial' categorisation is suggested by:

> "The entity should *look beyond its own operations* and consider how *risks and impacts arising from business relationships,* products and services, *affect its principal risks*" (FRC, 2018, p. 46).

In contrast, the NFRD-Proposal and GRI-ED are classified as 'sustainability control/influence'. The inclusion of entities beyond the financial reporting entity is indicated in the NFRD-Proposal as follows:

> "Where appropriate, the information […] shall contain information about the *undertaking's value chain*, including the undertaking's own operations, products and services, its *business relationships and its supply chain*" (EU Commission, 2021, p. 48).

The GRI-ED articulates 'sustainability control/influence':

> "When identifying its material topics and related impacts, the *organization should consider the impacts of additional entities with which it has business relationships, that are not included in the list reported*" (GRI, 2020a, p. 40).

As mentioned, a significant change in the GRI-ED are disclosures relating to the relationship between financial and sustainability reporting. This includes the requirement to disclose the list of entities included in sustainability reporting as well as the differences between the entities

[2] A PIE is defined as: "A traded, banking or insurance company with more than 500 employees" (FRC, 2018, p. 67).

included in sustainability reporting and financial reporting (GRI, 2020a, p. 40). A further important revision requires an explanation of the approach to consolidating group sustainability information (such as whether adjustments are made for minority interests), similar to that required in financial accounting. The GRI-ED further recommends aligning sustainability reporting with financial reporting, such as the reporting period and the same group of entities (GRI, 2020a, p. 24). This comparative disclosure requirement between the entities included in financial and sustainability reporting by the GRI shows their cognisance of the distinct 'entity' concepts and could be very useful in enabling preparers and users to better interpret information in the narrative section of the annual reports based on GRI Standards (as is common practice (KPMG, 2020)).

3.2.2 Target users: Extent of investor (and other capital providers) versus wider stakeholder focus

As shown in Table I (column 2) (and Appendix Table AI item 2), all regulations/guidelines (except for the NFRD-Proposal and GRI-ED) reflect the primary users as investors (and other providers of capital), whereas the NFRD-Proposal and GRI-ED have a wider stakeholder focus. An example of 'investor' focus is the <IR> Framework which states:

> "The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates, preserves or erodes value over time" (IIRC, 2021, p. 11).

In relation to Stakeholder Theory, it is interesting that the <IR> Framework explicitly states that while the report should explain the relationships with stakeholders, this "does not mean that an integrated report should attempt to satisfy the information needs of all stakeholders" (IIRC, 2021, p. 28), clarifying the primary focus on investors and other capital providers.

The 'wider stakeholder' focus is shown in the NFRD-Proposal:

> "The primary users of sustainability information disclosed in companies' annual reports are investors and non-governmental organizations, social partners *and other stakeholders*" (EU Commission, 2021, p. 3).

Similarly the GRI-ED states:

> "The GRI Sustainability Reporting Standards (GRI Standards) enable an organization to publicly disclose its most significant impacts and how it manages these impacts, in accordance with a globally-accepted standard. This allows *information users* to make informed assessments and decisions about the organization" (GRI, 2020a, p. 4).

It is interesting that while the intention of the NFRD is to meet the needs of wider stakeholders, it has been incorporated into the Strategic Report which targets investors, which may thus limit the intended 'wider stakeholder' focus.

3.2.3 Materiality: extent of financial versus enviro-socio-enviro materiality

As seen in Table I (column 3) (and Appendix Table AI item 3), most regulations/guidelines refer to financial materiality thresholds which is called 'single materiality'. The exceptions are the NFRD-Proposal which employs the 'double materiality' concept which includes both financial and enviro-socio-econo thresholds:

> "… shall include in the management report *information necessary to understand the undertaking's impacts on sustainability matters, and information necessary to understand how sustainability matters affect the undertaking's development, performance and position*" (EU Commission, 2021, p. 47).

The GRI-ED only refers to enviro-socio-econo thresholds (not financial), as follows:

> 'Material topic' is a "topic that reflects the organization's *most significant impacts on the economy, environment, and people, including impacts on human rights*" (GRI, 2020a, p. 103).

The emphasis of GRI-ED on enviro-socio-econo thresholds (and not financial) is clarified:

> "An organization may want to report on its impacts outward as well as the financially material risks, opportunities, and impacts it faces as a result of these outward impacts, in an *annual report or an integrated report*, for example. When doing so, *it is important for the organization to report on all its material topics identified using the GRI Standards*, in order to report in accordance with the GRI Standards. The material topics identified using the GRI Standards need to be prioritized in their own right and *cannot be deprioritized on the basis that they are not financially material"* (GRI, 2020a, p. 9).

Interestingly, the GRI-ED removes prior reference to stakeholders from the definition of 'material topic' as:

> "engagement with relevant stakeholders forms part of identifying an organization's impacts, and so informs the process of identifying material topics. However, 'influence on the assessments and decisions of stakeholders' is no longer a standalone factor that determines whether a topic is material" (GRI, 2020b, p. 5).

This change was to avoid biases in material topics arising from stakeholder selection and has implications for the commonly used 'materiality matrix' to identify material topics in the future as an impact may be material even if not identified by stakeholders consulted (GRI, 2020b, p. 5).

It is noted that while the IFRS-Foundation consultation paper suggests an initial single materiality focus, referring to a 'gradualist approach' (IFRS Foundation, 2020, p. 14), the subsequent ED made no mention of the word 'materiality'. This suggests that we will need to see whether the proposed Sustainability Standards Board adopt a single or double materiality principle. Another observation is that while the NFRD employs a 'double materiality' perspective, it is included in the Strategic Report which articulates a single, financial materiality perspective, making no explicit mention of double materiality.

3.2.4 Boundary description: extent of entity-wide versus topic boundary definition

As seen in Table I column 4 (and Appendix Table AI item 4), all regulations/guidelines suggest entity-wide boundary definitions (such as materiality application) except for the GRI-ED which focuses on 'material topics'. For example, the GRI-ED describes boundary concepts, such as materiality, at the topic level:

> The GRI Standards "have been developed to help an organization prepare and report information that *focuses on its material topics*. Material topics are topics that reflect the organization's most significant impacts on the economy, environment, and people, including impacts on human rights" (GRI, 2020a, p. 4).

This boundary dimension is not to be confused by the specification of 'topics', 'areas of content' or 'elements' by some regulations/guidelines. For example, the IFRS-MC-ED refers to 'areas of content'. It is the overall boundary description which focuses entity-wide or on topics that is the differentiator. This dimension emphasises the potentially diverse notions of 'completeness' between the regulations/guidelines. At the one extreme is the financial reporting version of completeness that records all relevant information relating to all the entities in the group. On the other extreme is the GRI notion of completeness where all material topics are included. Such topics may not necessarily include all group entities (e.g. perhaps the water usage in a constrained water environment at a particular subsidiary is a material topic, but not for other group companies) and may include entities not in the group (for example, the water usage of a key supplier relating to the reporting entity's product in a water constrained environment).

3.2.5 Impact: extent of outward versus inward impact

As seen in Table I (column 5) (and Appendix Table AI item 5) there is variety within this dimension. At the one extreme are those documents which are interpreted to focus on inward impacts only (IFRS-CF) or inward impacts as well as select outward impacts (TCFD and Strategic-Report-Guidance for quoted companies). For example, the latter both specifically require disclosure of carbon emissions, which is an outward impact of the entity, representing the only mention of outward impacts disclosure required.

At the other extreme is the GRI-ED which only requires outward impact as indicated by:

> "In the GRI Standards, impact refers to the effect *an organization* has or could have *on the economy, environment, or people, including on human rights*, as a result of *its activities or business relationships*" (GRI, 2020a, p. 8).

The new definition of 'stakeholder' further shows GRI's emphasis on outward impact, where a stakeholder is defined as an "individual or group that has an interest that is, or could be, affected by the organization's activities and decisions". The revised definition excludes the prior second part relating to "entity or individual whose actions can reasonably be expected to affect the ability of the organization to successfully implement its strategies and achieve its objectives" (GRI, 2020b, p. 5).

Between these two extremes is the category of 'Inward impact and circular outward-inward impact' (IFRS-MC-ED, IFRS-Foundation, SASB-CF-ED, and <IR> Framework). This category is thus mainly focused on the inward impacts on the reporting entity, but articulates that they include outward impacts of an entity only if the outward impacts result in inward impacts on the reporting entity (circular outward-inward impact). For example, the IFRS-MC-ED:

> "The information about the entity's business model shall enable investors and creditors to understand:…(c) the environmental and social *impacts of the entity's activities if those impacts have affected or could affect the entity's ability to create value and generate cash flows"* (IASB, 2021, pp. 36-37).

The <IR> Framework also includes a circular outward-inward impact explanation as follows:

> "The ability of an organization to create value for itself enables financial returns to the providers of financial capital. This is interrelated with the value the organization creates for *stakeholders and society at large* through a wide range of *activities, interactions and relationships*. *When these are material to the organization's ability*

> *to create value for itself, they are included in the integrated report*" (IIRC, 2021, p. 6).

A further categorisation is those regulations/guidelines that include in the boundary both inward and outward impacts (Strategic-Report-Guidance for PIEs and NFRD-Proposal). For example, the NFRD-ED reflects both outward and inward impacts as indicated by:

> "shall include in the management report *information necessary to understand the undertaking's impacts on sustainability matters* [outward impact], *and information necessary to understand how sustainability matters affect the undertaking's development, performance and position* [inward impact]" (EU Commission, 2021, p. 47).

Similarly, the Strategic-Report-Guidance for PIEs includes the following (resulting from the incorporation of the NFRD provisions into the Strategic Report), showing both inward and outward impacts within the reporting boundary:

> "The strategic report must contain information, *to the extent necessary for an understanding of the company's development, performance and position* [inward impact] *and the impact of its activity* [outward impact], relating to, as a minimum: (a) environmental matters (including the impact of the company's business on the environment); (b) the company's employees; (c) social matters; (d) respect for human rights; and (e) anti-corruption and anti-bribery matters" (FRC, 2018, p. 72).

3.2.6 Outward impact: extent of direct versus indirect outward impacts

This categorisation relates only to those regulations/guidelines that include outward impacts in their boundary, thus all except IFRS-CF. As seen in Table I (column 6) (and Appendix Table AI item 6), the GRI-ED, NFRD-Proposal and Strategic-Report-Guidance for PIEs extend reporting to include indirect outward impacts along the supply chain. For example:

> NFRD-Proposal: "Reported sustainability information should […] contain information about the *undertaking's whole value chain*, including its own operations, its products and services, its *business relationships, and its supply chain, as appropriate*" (EU Commission, 2021, p. 32).

> GRI-ED: "The organization should consider actual and potential impacts it *causes or contributes to through its own activities* [direct outward impacts], as well as those that are *directly linked to its operations, products, or services by its business relationships*" [indirect outward impacts] (GRI, 2020a, p. 85).

The GRI-ED explains indirect impacts in detail, such as what "causes or contributes to" impacts through activities that are "directly linked to its operations, products, or services by its business relationships" (GRI, 2020a, p. 86). This highlights their emphasis on including indirect outward impacts.

The IFRS-Foundation provides no details in this regard. The IFRS-MC-ED shows limited indirect aspects. The select outward impacts of the TCFD (carbon emissions) includes scope 3 emissions which is indirect. The Strategic-Report-Guidance for quoted companies' carbon emissions does not refer to scope 3 emissions. Both SASB-CF-ED and the <IR> Framework include indirect aspects in their circular outward-inward impacts. For example, the <IR> Framework states:

> "Identifying and describing outcomes, particularly external outcomes, requires an organization to consider the capitals more broadly than those that are owned or controlled by the organization. For example, it may require disclosure of the effects on capitals *up and down the value chain* (e.g. carbon emissions caused by products the organization manufactures and labour practices of key suppliers)" (IIRC, 2021, p. 43).

3.2.7 Time: extent of historic versus future focus

As observed in Table I (column 7) (and Appendix Table AI item 7), all regulations/guidelines mention both historic and future focus, except for IFRS-Foundation documents which do not provide details.

3.2.8 Performance: extent of financial versus sustainability focus

As seen in Table I (column 8) (and Appendix Table AI item 8), all regulations/guidelines except GRI include financial performance in their boundary. The GRI-ED focuses solely on the sustainability performance as indicated by:

> "overview of *performance* against goals and targets for the organization's *material topics* for contributing to *sustainable* development during the reporting period" (GRI, 2020a, p. 59).

The IFRS-CF and IFRS-MC-ED articulate a focus on financial performance only. For example, IFRS-MC-ED states:

> "An entity's management commentary shall provide information that: (a) enhances investors and creditors' understanding of the entity's *financial performance and financial position* reported in its financial statements; and (b) provides insight into *factors that could affect the entity's ability to create value and generate cash flows* across all time horizons, including in the long term" (IASB, 2021, p. 23).

The TCFD is primarily focused on financial performance, yet explicitly includes carbon emission disclosure, representing select environmental performance. The NFRD-Proposal and Strategic-Report-Guideline for PIEs explicitly include both financial and sustainability performance aspects. For example, the NFRD-Proposal states:

> " … shall include in the management report *information necessary to understand the undertaking's impacts on sustainability matters* [sustainability performance], *and information necessary to understand how sustainability matters affect the undertaking's development, performance and position* [financial performance]" (EU Commission, 2021, p. 47).

Some documents include sustainability performance to the extent it affects financial performance, referred to here as circular Sustainability-Financial performance (Strategic-Report-Guidance for Non-PIEs, SASB-CF-ED and <IR> Framework). For example, SASB-CF-ED states disclosures of metrics relating to environmental and social issues if they are relevant to enterprise value creation:

> "Sustainability accounting also includes identifying metrics that can be used to set targets and measure performance on the environmental, social, and human capital issues *most relevant to long-term enterprise value creation*" (SASB, 2020, p. 23).

3.2.9 Value: extent of entity versus wider stakeholder value focus

As summarised in Table I (column 9) (and Appendix Table AI item 9), most regulations/guidelines focus on entity value i.e. value for shareholders. For example, the IFRS-MC-ED states:

> "'value' *refers to the value an entity creates for itself and hence for its investors and creditors.* The term does *not* refer to the value an entity's activities might create or erode for other parties - for example, customers, suppliers, employees or society in general" (IASB, 2021, p. 26).

Another example is from the Strategic-Report-Guidance:

> "The section 172 duty is consistent with the principle of *enlightened shareholder value*; recognising that *companies are run for the benefit of shareholders*, but that the long-term success of a business is dependent on maintaining relationships with stakeholders and considering the external impact of the company's activities" (FRC, 2018, p. 58).

In contrast, the NFRD-Proposal and GRI-ED reflect a wider stakeholder value focus, as indicated for example by:

> GRI-ED: "Through their activities and business relationships, organizations impact the economy, environment, and people, and in turn make negative and positive contributions to *sustainable development*" (GRI, 2020a, p. 4).

The <IR> Framework is categorised as 'entity and circular wider stakeholder – entity value' since in addition to the entity focus, it includes a focus on wider stakeholder value to the extent that it may influence entity value, as indicated by:

> "Providers of financial capital are interested in the value an organization creates for itself [Entity value focus]. They are also interested in the value an organization creates for others *when it affects the ability of the organization to create value for itself* [circular wider stakeholder – entity' value], or relates to a stated objective of the organization (e.g. an explicit social purpose) that affects their assessments" (IIRC, 2021, p. 16).

3.2.10 Purpose of report/disclosure

As shown in Appendix Table AI, the purpose of the reports/disclosures in the regulations/ guidelines are varied. Many aspects mentioned in the purpose are dimensions already mentioned, such as target users. However, the purpose adds further boundary subtleties. For example, the TCFD's focus on "understanding material risks" (TCFD, 2017, p. iii) and the Strategic-Report-Guidance reference to helping shareholders "assess how the directors have performed their duty, under section 172, to promote the success of the company and, in doing so, had regard to the matters set out in that section" (FRC, 2018, p. 4).

4. Discussion and conclusions

4.1 Conceptual framework

The conceptual framework of reporting boundary dimensions developed here is comprised of the ten boundary dimensions summarised in the top row of Table I. Each of the dimensions represents a continuum along which standard setters can position themselves. The dimensions are scalable and could be applied to a report as a whole, particular topics / content areas and key performance indicators (KPIs). Many of the boundary dimensions are interrelated and choices on one dimension have implications for other dimensions. It is submitted that if regulations/guidelines articulate their approach to each dimension, this results in a clear boundary description. While aspects of the dimensions have been considered in prior literature, they have not before been considered holistically to provide a comprehensive boundary description, as in the current study. Also, prior literature often considered financial and sustainability reporting boundaries in isolation, in contrast to the current study that considers boundary dimensions relevant to both financial and sustainability reporting.

4.2 Comparative analysis

Table 1 can be used to compare the regulations/guidelines along a particular dimension, by considering one column at a time (as in section 3.2). The table can also be used to consider the combinations of dimensions related to a particular regulation/guideline, by analysing one row at a time. Considering each row of dimensions holistically, internal consistencies within boundary descriptions can be explored. All the regulations/guidelines appear internally consistent in their boundary dimensions, except arguably the Strategic-Report-Guidance for PIEs. The internal inconsistency for PIEs appears to arise due to the inclusion of the NFRD provisions within the Strategic Report which has an investor focus. The guidelines for PIEs thus retain the investor (column 2) and entity value focus (column 9), yet include a sustainability performance concept (not circular sustainability-financial which would have been more consistent), which could be interpreted as inconsistent.

The combinations of dimensions (rows) can then be compared to understand how the various regulations/guidelines position themselves relative to each other, where they may share some similar dimensions, yet differ in others. It is suggested that the IFRS-CF can be viewed on one extreme of the dimension combinations, while the NFRD-Proposal and GRI-ED are similar to each other and represent another extreme of the combination of dimensions. The other regulations/guidelines are in the middle of these extremes. The concepts introduced in this paper called 'circular outward-inward impacts' (which refer to outward impacts of the entity that have an inward impact on the entity) and 'circular sustainability-financial performance' (where sustainability performance of the entity affects the financial performance of the entity) represent positions on those dimensions which create a bridge between the two extremes. These concepts are also a way of including non-financial aspects into traditional financial reporting, but to a more limited extent than envisaged by, for example, the GRI-ED and NFRD-Proposal.

It is interesting to consider the combinations of boundary dimensions related to various regulations/guidelines (e.g. row 7 in Table I which pertains to the <IR> Framework) in relation to the sustainability reporting boundary categorisations suggested by Ringham and Miles (2018) (reputation management, ownership and control, and accountability) based on analysis of sustainability reporting guidelines. It is noted that the purpose of their study was to conceptually develop overall boundary types and then test these empirically. This differs from the current study which is interested in identifying and unravelling the individual boundary dimensions that, taken together, communicate the reporting boundary. The current study's more granular focus on dimensions enables fine-grained comparison between different boundaries, allowing understanding of similarities and differences along each dimension, which may be useful for standard setters trying to bring congruence among standards. Ringham and Miles' categories can be thought to incorporate positions on some of the ten boundary dimensions in the current paper. For example, their 'ownership and control' boundary included financial control (dimension 1) and direct outward impacts (dimension 6), yet their paper does not explicitly explain the position on some of the other boundary dimensions.

4.3 Future boundary setting

Table I highlights the distinct boundary dimension positions of the various regulations/guidelines which may inform sections of the annual report. While a single boundary description may not be possible for the whole annual report, a series of clearly communicated boundary disclosures is important, whether for various annual report sections or for individual pieces of information (more similar to a topic boundary in the GRI-ED). Such disclosure should include a comparison of the entities included in the financial and non-financial reporting and the basis of consolidation of the financial and non-financial information (similar to that required by the GRI-ED).

The setting of boundaries and choice of corporate report to which the boundaries apply has implications for the jurisdictional power of the various standard setters (Edwards et al., 1999). As standard setters contemplate global sustainability reporting standards and mergers between standard setters (e.g. The Value Reporting Foundation formed by the merger of the SASB and IIRC), it is recommended that clarification is reached with regards to each dimension. Desired consistency and comparability arising from global sustainability reporting standards hinges on commonly agreed boundary dimensions. Tensions are particularly expected between those taking a single versus double materiality perspective and those focused on inward versus outward impact. The increasing use and clarification of the 'circular outward-inward impact' concept in guidelines (e.g. <IR> Framework and IFRS-MC-ED) offers a conceptual way of including some sustainability information together with financial information within consistent boundary dimensions. However, the operationalisation of this concept is complex as it involves estimates of the potential financial effects on the entity resulting from the outward impacts of the entity on society, environment and the economy.

As global reporting boundary setting proceeds, we are reminded that the choice of dimension positions has implications for the 'boundary' of the accounting profession and firms since in accounting "we are creating reality" (Hines, 1988, p. 254), rather than neutrally reporting on reality. Reporting boundary dimensions designate the 'fence', where:

> "The fence does not designate the organization. We do that. We designate it, by deciding what things will be part of the organization, and by deciding how big or small these things will be" and in relation to pollution: people "used to be quite unaware of it. But since they have become aware of it, and because they are beginning to see it as being the responsibility of the organization, we inevitably must do so, in time. Once the organization becomes accountable for something, we must account for it, sooner or later" (Hines, 1988, p. 257).

4.4 Contributions, limitations and areas for future research

The paper contributes a conceptual framework of ten reporting boundary dimensions. This adds to accounting theory and calls made for more conceptual development of the boundary construct (Antonini et al., 2020; Ringham & Miles, 2018). The conceptual framework and comparison of nine contemporary regulations/guidelines contributes to limited literature on reporting boundaries, in particular literature considering financial and non-financial boundaries simultaneously, such as Girella (2018). The concepts of 'circular outward-inward impact' and 'circular sustainability-financial performance' are introduced, which provides a way for traditionally financial reporting boundaries to widen to include sustainability information, but only to the extent that it impacts the reporting entity. From a practical perspective, the conceptual framework may be of use to standard setters when articulating their boundary descriptions and also when comparing to other standard setters' boundaries.

Limitations of the current study include not reviewing more regulations/guidelines, notably US GAAP, company law and listing requirements. However, the documents reviewed hopefully provided illustrations of the variety of positions on boundary dimensions. Another limitation is that identification of boundary dimensions is subjective and categorisations in Table I require interpretation. However, Appendix Table AI improves rigour by providing supporting quotes to explain categorisations.

Future studies could empirically illustrate the applicability of the conceptual framework of boundary dimensions in annual reports. The reasons behind boundary decisions and implementation choices could be explored through qualitative studies such as in depth interviews with preparers and standard-setters. Another area is further investigation of the 'boundary gap', where the boundary applied in reality differs from the stated boundary (Ringham & Miles, 2018). Studies could empirically study important concepts and practicalities related to the consolidation process for non-financial reporting in practice, such as how the procedures of preventing double counting for non-financial information compares to financial accounting consolidation principles.

Appendix

[please insert Appendix Table AI about here]

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Table I: Summary of boundary dimensions of reporting regulations/guidelines

	Guidance	(1) Reporting entity: Financial vs. sustainability control/ influence	(2) Target users: Investor vs. wider stakeholder focus	(3) Materiality: Financial vs. enviro-socio- econo	(4) Boundary description: Entity-wide vs. topic boundary	(5) Impact: Outward vs. inward	(6) Outward impact: Direct vs. indirect	(7) Time: Historic vs. future	(8) Performance: Financial vs. Sustain-ability	(9) Value: entity vs. wider stakeholder	(10) Pur-pose
1	IFRS-CF (IASB, 2018)	Financial	Investor	Financial	Entity-wide	Inward	n/a	Historic and Future	Financial	Entity	*
2	IFRS-MC-ED (IASB, 2021)	Financial	Investor	Financial	Entity-wide	Inward and circular outward-inward	Direct circular and some indirect circular	Historic and Future	Financial	Entity	*
3	IFRS-Foundation Consultation paper (IFRS Foundation, 2020) and ED (IFRS Foundation, 2021)	Financial	Investor	Financial	Entity-wide	Inward and circular outward-inward	n/a	n/a	n/a	Entity	*
4	TCFD (2017)	Financial	Investor	Financial	Entity-wide	Inward and select outward	Direct select and indirect select	Historic and Future	Financial and select enviro	Entity	*
5	Strategic-Report-Guidance (FRC, 2018)	Non-PIEs: Financial PIEs: Beyond financial	Investor	Financial	Entity-wide	Quoted co's: Inward and select outward	Quoted co's: direct select	Historic and Future	Non-PIEs: Financial and circular Sustain-ability	Entity	*

	Guidance	(1) Reporting entity: Financial vs. sustainability control/ influence	(2) Target users: Investor vs. wider stakeholder focus	(3) Materiality: Financial vs. enviro-socio- econo	(4) Boundary description: Entity-wide vs. topic boundary	(5) Impact: Outward vs. inward	(6) Outward impact: Direct vs. indirect	(7) Time: Historic vs. future	(8) Performance: Financial vs. Sustain-ability	(9) Value: entity vs. wider stakeholder	(10) Pur-pose
						PIEs: Inward and Outward	PIEs: Direct and Indirect		PIEs: Financial and Sustain-ability		
6	SASB-CF-ED (SASB, 2020)	Financial	Investor	Financial	Entity-wide	Inward and circular outward-inward	Direct circular and Indirect circular	Historic and Future	Financial and circular Sustain-ability	Entity	*
7	<IR> Framework (IIRC, 2021)	Beyond Financial	Investor	Financial	Entity-wide	Inward and circular outward-inward	Direct circular and Indirect circular	Historic and Future	Financial and circular Sustain-ability	Entity and circular wider stakeholder	*
8	NFRD-Proposal (EU Commission, 2021)	Sustainability	Wider Stakeholder	Financial and enviro-socio-econo	Entity-wide	Inward and Outward	Direct and Indirect	Historic and Future	Financial and Sustain-ability	Wider stakeholder	*
9	GRI-ED (GRI, 2020a)	Sustainability	Wider Stakeholder	Enviro-socio-econo	Topic	Outward	Direct and Indirect	Historic and Future	Sustain-ability	Wider Stakeholder	*

*Please refer to Appendix Table AI for details

Appendix: Table AI: Details of boundary dimensions of reporting regulations/guidelines

	Boundary Dimension / document	**Categorisation and select illustrative quotes (Italics added for emphasis)**
1	Reporting entity: Extent of financial versus sustainability control/influence	
1.1	IFRS-CF	'Financial control/ influence': "Sometimes one entity (parent) has *control over another entity* (subsidiary) […] provide information about the assets, liabilities, equity, income and expenses of both the parent and its subsidiaries *as a single reporting entity*" (IASB, 2018, p. 24). This 'financial' control refers to where the investor organisation "*is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee*" (IFRS10, para6).
1.2	IFRS-MC-ED	'Financial control/ influence': The document does not specifically define 'entity' but implies that it refers to the financial reporting entity as defined in the IFRS-CF e.g. "An entity's management commentary shall provide information that: (a) enhances investors and creditors' understanding of the entity's financial performance and financial position *reported in its financial statements*" (IASB, 2021, p. 23).
1.3	IFRS-Foundation Consultation paper and ED	'Financial control/ influence': Although not explicit in the documents, the financial reporting entity is implied e.g. "*Companies* are already considering how their business operations will be affected by a transition to a low-carbon global economy, which will increasingly directly affect *companies' financial reporting*" (IFRS Foundation, 2020, p. 12).
1.4	TCFD	'Financial control/ influence': The document refers to the 'organisation' defined as "the group, company, or companies, and other entities *for which consolidated financial statements are prepared*" (TCFD, 2017, p. 63).
1.5	Strategic-Report-Guidance	Non-PIEs – 'Financial control/ influence': Reference to financial reporting group: "*the strategic report must be a group strategic report relating to the entities included in the consolidation*" (FRC, 2018, p. 7). PIEs - 'Beyond financial control/ influence': "The entity should *look beyond its own operations* and consider how *risks and impacts arising from business relationships,* products and services, *affect its principal risks*" (FRC, 2018, p. 46).
1.6	SASB-CF-ED	'Financial control/ influence': "intended to be used by *public and private companies* around the world" (SASB, 2020a, p. 25); implying the financial reporting entity.
1.7	<IR>Framework	'Beyond financial control/ influence': "two aspects: The *financial reporting entity*" [financial] and "Risks, opportunities and outcomes *attributable to or associated with other entities/stakeholders beyond the financial reporting entity that have a significant effect on the ability of the financial reporting entity to create value*" [beyond financial] (IIRC, 2021, p. 31).
1.8	NFRD-Proposal	'Sustainability control/ influence': "contain information about the *undertaking's value chain*, including the undertaking's own operations, products and services, its *business relationships and its supply chain*" (EU Commission, 2021, p. 48).
1.9	GRI-ED	'Sustainability control/ influence': "impact refers to the effect an organization has or could have on the economy, environment, or people, including on human rights, *as a result of its activities or business relationships*" (GRI, 2020a, p. 8).
2	Target users: Extent of investor (and other capital providers) versus wider stakeholder focus	
2.1	IFRS-CF	'Investor focus': "objective […] to provide financial information about the reporting entity that is *useful to existing and potential investors, lenders and other creditors*" (IASB, 2018, p. 8).
2.2	IFRS-MC-ED	'Investor focus': "provide information that: (a) enhances *investors and creditors' understanding* of the entity's financial performance and financial position" (IASB, 2021, p. 23).

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
2.3	IFRS-Foundation Consultation paper and ED	'Investor focus': "*Investor focus* for enterprise value" (IFRS Foundation, 2021, p. 4).
2.4	TCFD	'Investor focus': "*Investors, lenders, and insurance underwriters* ("primary users")" (TCFD, 2017, p. 2).
2.5	Strategic-Report-Guidance	'Investor focus': "provide *shareholders* […] with information […] to assess how the directors have performed their duty to promote the success of the company for the benefit of shareholders" (FRC, 2018, p. 16).
2.6	SASB-CF-ED	'Investor focus': "*useful to investors, lenders, and other creditors* for the purpose of making investment decisions" (SASB, 2020, p. 20).
2.7	<IR>Framework	'Investor focus': "explain to *providers of financial capital* how an organization creates, preserves or erodes value" (IIRC, 2021, p. 11).
2.8	NFRD-Proposal	'Wider stakeholder focus': "The primary users […] are investors and non-governmental organisations, social partners *and other stakeholders*" (EU Commission, 2021, p. 3).
2.9	GRI-ED	'Wider stakeholder focus': "allows *information users* to make informed assessments and decisions about the organization" (GRI, 2020a, p. 4).
3	Materiality: extent of financial versus enviro-socio-econo materiality	
3.1	IFRS-CF	'Financial materiality': "Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users [] make on the basis of those reports, which provide *financial information*" (IASB, 2018, p. 26).
3.2	IFRS-MC-ED	'Financial materiality': "material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that investors and creditors make on the basis of the management commentary and of the related financial statements" (IASB, 2021, p. 23).
3.3	IFRS-Foundation Consultation paper and ED	Consultation paper - 'Financial materiality': "to commence with a double-materiality approach would substantially increase the complexity […] a gradualist approach is recommended" (IFRS Foundation, 2020, p. 14). ED: no mention of materiality.
3.4	TCFD	'Financial materiality': "determine materiality for climate-related issues *consistent with how they determine the materiality of other information included in their financial filings*" (TCFD, 2017, p. 33).
3.5	Strategic-Report-Guidance	'Financial materiality': "material if its omission or misrepresentation could reasonably be expected to influence the economic decisions shareholders take on the basis of the annual report" (FRC, 2018, p. 18).
3.6	SASB-CF-ED	'Financial materiality': "approach to *financial materiality* […] *similar to definitions traditionally used by accounting standards setters*" (SASB, 2020, p. 30).
3.7	<IR>Framework	'Financial materiality': "material if it could substantively affect the organization's ability to create value in the short, medium or long term" (IIRC, 2021, p. 53).
3.8	NFRD-Proposal	'Financial materiality' and 'Enviro-socio-econo materiality': "*information necessary to understand the undertaking's impacts on sustainability matters, and information necessary to understand how sustainability matters affect the undertaking's development, performance and position*" (EU Commission, 2021, p. 47).
3.9	GRI-ED	'Enviro-socio-econo materiality': 'Material topic' "reflects the organization's *most significant impacts on the economy, environment, and people*" (GRI, 2020a, p. 103).

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
4	Boundary definition: extent of entity-wide versus topic boundary definition	
4.1	IFRS-CF	‘Entity-wide boundary definition’: The document describes boundary concepts, such as materiality, at an entity-wide level (please see dimension 3 quotes).
4.2	IFRS-MC-ED	‘Entity-wide boundary definition’: Same as 4.1.
4.3	IFRS-Foundation Consultation paper and ED	‘Entity-wide boundary definition’: Same as 4.1.
4.4	TCFD	‘Entity-wide boundary definition’: Same as 4.1.
4.5	Strategic-Report-Guidance	‘Entity-wide boundary definition’: Same as 4.1.
4.6	SASB-CF-ED	‘Entity-wide boundary definition’: Same as 4.1.
4.7	<IR>Framework	‘Entity-wide boundary definition’: Same as 4.1.
4.8	NFRD-Proposal	‘Entity-wide boundary definition’: Same as 4.1.
4.9	GRI-ED	‘Topic boundary definition’: “*focuses on its material topics*” (GRI, 2020a, p. 4).
5	Impact: extent of outward versus inward	
5.1	IFRS-CF	‘Inward impact’: ‘Impact’ is not mentioned, inward impact focus is inferred from ‘effects’: “provide information about the *effects of transactions and other events that change a reporting entity’s economic resources and claims*” (IASB, 2018, pp. 9-10).
5.2	IFRS-MC-ED	‘Inward impact’: “factors and trends in the external environment *that have affected or could affect* the business model, strategy, resources, relationships or risks” (IASB, 2021, p. 29). ‘Circular outward-inward impact’: “material information about the *impacts of an entity’s activities on other parties* ***if*** *those impacts could affect the entity’s ability to create value for itself”* (IASB, 2021, p. 26).
5.3	IFRS-Foundation Consultation paper and ED	‘Inward impact’: “effects of relevant events […] *on the reporting entity*” (IFRS Foundation, 2020, p. 13). ‘Circular outward-inward impact’: “*there is a connection between a company’s impact on the environment and the risks and opportunities for that company*. Such disclosures are increasingly important for investors to understand a company’s long-term value creation as well as its impact on the climate” (IFRS Foundation, 2020, p. 14).
5.4	TCFD	‘Inward impact’: “to understand how climate-related risks and opportunities are likely to *impact an organization’s future financial position*” (TCFD, 2017, p. 8). Select outward impact: “Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks” (TCFD, 2017, p. 22).
5.5	Strategic-Report-Guidance	Quoted companies: - ‘inward impact’: “*to the extent necessary for an understanding of the development, performance or position* [inward impact] of the company’s business, include information about […]” (FRC, 2018, p. 71). - ‘select outward impact’: “*quantity of emissions* in tonnes of carbon dioxide equivalent from activities for which that company is responsible” (FRC, 2018, p. 86). PIEs:

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
		- 'Inward impact' and 'outward impact': "*to the extent necessary for an understanding of the company's development, performance and position* [inward impact] *and the impact of its activity* [outward impact], relating to, as a minimum […]" (FRC, 2018, p. 72).
5.6	SASB-CF-ED	'Inward impact': "*impacts that environmental, social and human capital issues have on business models, financial performance, and long-term enterprise value*" (SASB, 2020, p. 23). 'Circular outward-inward impact': "Environment. This dimension addresses *direct environmental impacts* that are *linked to a company's ability to create value* over time" (SASB, 2020, p. 25).
5.7	<IR>Framework	'Inward impact': "*an effect on the organization's ability to create value"* (IIRC, 2021, p. 30). 'Circular outward-inward impact': "value the organization creates for *stakeholders and society at large* through a wide range of *activities, interactions and relationships. When these are material to the organization's ability to create value for itself, they are included in the integrated report*" (IIRC, 2021, p. 6).
5.8	NFRD-Proposal	'Inward impact' and 'outward impact': "*information necessary to understand the undertaking's impacts on sustainability matters [outward] , and information necessary to understand how sustainability matters affect the undertaking's development, performance and position* [inward]" (EU Commission, 2021, p. 47).
5.9	GRI-ED	'Outward impact': "impact refers to the effect *an organization* has or could have *on the economy, environment, or people*" (GRI, 2020a, p. 8).
6	Outward impact: extent of direct versus indirect outward impacts	
6.1	IFRS-CF	'Not applicable': No outward impact. Also, the document does not refer to 'supply chain', 'value chain', or 'impact', which may indicate indirect impact.
6.2	IFRS-MC-ED	'Direct (circular outward-inward) impacts' and some indirect (circular outward-inward) impacts': "… matters raised by the entity's customers, suppliers, employees or other stakeholders might be key if they are fundamental to the entity's ability to create value and generate cash flows" and "The integrity of a skincare producer's supply chain is the subject of severe public concern. That concern could lead to a loss of so many customers that it could have a fundamental effect on the producer's ability to create value and generate cash flows" (IASB, 2021, p. 114).
6.3	IFRS-Foundation Consultation paper and ED	Not addressed in documents.
6.4	TCFD	For select outward impacts: 'Direct and indirect outward impact': "Disclose Scope 1, Scope 2, [direct outward impact] and, if appropriate, *Scope 3* [indirect outward impact] greenhouse gas (GHG) emissions, and the related risks" (TCFD, 2017, p. 14).
6.5	Strategic-Report-Guidance	Quoted public companies: - 'Direct outward impact': "*quantity of emissions* in tonnes of carbon dioxide equivalent from activities for which that company is responsible" (FRC, 2018, p. 86). PIEs: -'Direct and indirect outward impacts': "The entity should *look beyond its own operations* and consider how risks and impacts arising from business relationships, products and services, affect its principal risks" (FRC, 2018, p. 46).
6.6	SASB-CF-ED	'Direct (circular) outward impacts': "Environment. This dimension addresses *direct environmental impacts* that are linked to a company's ability to create value over time" (SASB, 2020, p. 25).

	Boundary Dimension / document	**Categorisation and select illustrative quotes (Italics added for emphasis)**
		Indirect (circular outward-inward) impacts: "Business Model and Innovation. […] including the *impacts of such products in the use phase and those stemming from product disposal.* Furthermore, the dimension includes the extent of a business model's integration of physical impacts of climate change on assets, availability and pricing of key resources, and impacts of supply chains (SASB, 2020, p. 27).
6.7	<IR>Framework	'Direct and indirect (circular outward-inward) impacts': "Identifying and describing outcomes, particularly external outcomes, requires an organization to consider the capitals more broadly than those that are owned or controlled by the organization. For example, it may require disclosure of the effects on capitals *up and down the value chain*" (IIRC, 2021, p. 43).
6.8	NFRD-Proposal	'Direct and indirect outward impacts': "contain information about the *undertaking's whole value chain*, including its own operations, its products and services, its *business relationships, and its supply chain*" (EU Commission, 2021, p. 32).
6.9	GRI-ED	'Direct and indirect outward impacts': "impacts it *causes or contributes to through its own activities* [direct outward impacts], as well as those that are *directly linked to its operations, products, or services by its business relationships*" [indirect outward impacts] (GRI, 2020a, p. 85).
7	Time: extent of historic versus future focus	
7.1	IFRS-CF	'Historic and future focus': "Information […] is useful in *assessing the entity's past and future ability* to generate net cash inflows" (IASB, 2018, p. 11).
7.2	IFRS-MC-ED	'Historic and future focus': " assessment of the entity's ability to create value and generate cash flows *across all time horizons, including in the long term*" (IASB, 2021, p. 26)
7.3	IFRS-Foundation Consultation paper and ED	Not addressed.
7.4	TCFD	'Historic and future focus': "*both historical and forward-looking analyses* when considering the potential financial impacts of climate change" (TCFD, 2017, p. 9).
7.5	Strategic-Report-Guidance	'Historic and future focus': "analysis of the entity's *past performance*" (FRC, 2018, p. 16) and "should have a *forward-looking* orientation" (FRC, 2018, p. 21).
7.6	SASB-CF-ED	'Historic and future focus': "making investment decisions on the basis of these users' assessments of *short-, medium-, and long-term* financial performance and enterprise value" (SASB, 2020, p. 20).
7.7	<IR>Framework	'Historic and future focus': "An integrated report should provide insight into the organization's strategy, and how it relates to the organization's ability to create value in the *short, medium and long term*" (IIRC, 2021, p. 25).
7.8	NFRD-Proposal	'Historic and future focus': "information should also take into account *short, medium and long-term time horizons*" (EU Commission, 2021, p. 32).
7.9	GRI-ED	'Historic and future focus': "includes reporting on activities that have a minimal short-term impact, but that have a reasonably foreseeable cumulative impact that can become unavoidable or irreversible in the long-term" (GRI, 2020a, p. 21).
8	Performance: extent of financial versus sustainability focus	
8.1	IFRS-CF	'Financial performance': "Information about a reporting entity's *financial performance*" (IASB, 2018, p. 11).

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
8.2	IFRS-MC-ED	'Financial performance': "understanding of the entity's *financial performance and financial position*" (IASB, 2021, p. 23)
8.3	IFRS-Foundation Consultation paper and ED	Not addressed in documents
8.4	TCFD	Financial performance: "Better disclosure of the *financial impacts of climate-related risks and opportunities on an organization* is a key goal […] understand how climate-related risks and opportunities are likely to impact an organization's *future financial position as reflected in its income statement, cash flow statement, and balance sheet* (TCFD, 2017, p. 8). Select environmental performance: "Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks" (TCFD, 2017, p. 22).
8.5	Strategic-Report-Guidance	Non-PIEs: -'financial performance' and 'circular Sustainability-Financial performance': "*to the extent necessary for an understanding of the development, performance or position* [financial performance] of the company's business, include information about: (i) environmental matters (including the impact of the company's business on the environment); (ii) the company's employees; and (iii) social, community and human rights issues, including information about any policies of the company in relation to those matters and the effectiveness of those policies"[circular Sustainability-Financial performance] (FRC, 2018, p. 71). PIEs: -'financial performance' and 'Sustainability performance': "*to the extent necessary for an understanding of the company's development, performance and position* [financial performance] *and the impact of its activity* [Sustainability performance], relating to, as a minimum […]" (FRC, 2018, p. 72).
8.6	SASB-CF-ED	Financial performance': "making investment decisions on the basis of these users' assessments of short-, medium-, and long-term *financial performance* and enterprise value" (SASB, 2020, p. 20). 'Circular Sustainability-Financial performance': "Sustainability accounting also includes identifying *metrics that can be used to set targets and measure performance on the environmental, social, and human capital issues most relevant to long-term enterprise value creation*" (SASB, 2020, p. 23).
8.7	<IR>Framework	'Financial performance' and 'circular Sustainability-Financial performance': Performance is defined as: "An organization's achievements relative to its strategic objectives, and its outcomes in terms of its effects on the capitals" (IIRC, 2021, p. 54), where Capitals are categorised "as financial, manufactured, intellectual, human, social and relationship, and natural" (IIRC, 2021, p. 53).
8.8	NFRD-Proposal	'Financial performance' and 'Sustainability performance': "*information necessary to understand the undertaking's impacts on sustainability matters* [Sustainability performance], *and information necessary to understand how sustainability matters affect the undertaking's development, performance and position* [financial performance]" (EU Commission, 2021, p. 47).
8.9	GRI-ED	'Sustainability performance': "overview of *performance* against goals and targets for the organization's *material topics* for contributing to sustainable development" (GRI, 2020a, p. 59).
9	Value: extent of entity versus wider stakeholder value focus	

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
9.1	IFRS-CF	'Entity value focus': "General purpose financial reports […] provide information to help existing and potential investors, lenders and other creditors to estimate the *value of the reporting entity*" (IASB, 2018, p. 9).
9.2	IFRS-MC-ED	'Entity value focus': "'value' *refers to the value an entity creates for itself and hence for its investors and creditors*" (IASB, 2021, p. 26).
9.3	IFRS-Foundation Consultation paper and ED	'Entity value focus': "Investor focus for *enterprise value*" (IFRS Foundation, 2021, p. 4).
9.4	TCFD	'Entity value focus': "There has also been increased focus […] on the negative impact that weak corporate governance can have on *shareholder value*, resulting in increased demand for transparency from organizations on their risks and risk management practices, including those related to climate change (TCFD, 2017, p. 1).
9.5	Strategic-Report-Guidance	'Entity value focus': "The section 172 duty is consistent with the principle of *enlightened shareholder value*; recognising that *companies are run for the benefit of shareholders*, but that the long-term success of a business is dependent on maintaining relationships with stakeholders and considering the external impact of the company's activities" (FRC, 2018, p. 58).
9.6	SASB-CF-ED	'Entity value focus': "SASB's use of the term "sustainability" refers to activities that maintain or enhance the ability of the company to *create enterprise value* over the long-term" (SASB, 2020, p. 23).
9.7	<IR>Framework	'Entity value focus' and 'circular wider stakeholder – entity' value: "Providers of financial capital are interested in the value an organization creates for itself [Entity value]. They are also interested in the value an organization creates for others *when it affects the ability of the organization to create value for itself* [circular wider stakeholder – entity' value], or relates to a stated objective of the organization […] that affects their assessments" (IIRC, 2021, p. 16).
9.8	NFRD-Proposal	'Wider stakeholder value focus': "The objective of this proposal is therefore to improve sustainability reporting […] to better harness the potential of the European single market to contribute to the transition towards a *fully sustainable and inclusive economic and financial system* in accordance with the European Green Deal and the *UN Sustainable Development Goals*" (EU Commission, 2021, p. 4).
9.9	GRI-ED	'Wider stakeholder value focus: "organizations impact the economy, environment, and people, and in turn make negative and positive contributions to *sustainable development*" (GRI, 2020a, p. 4).
10.	Purpose of report / Disclosure	
10.1	IFRS-CF	"The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity" (IASB, 2018, p. 8).
10.2	IFRS-MC-ED	"An entity's management commentary shall provide information that: (a) enhances investors and creditors' understanding of the entity's financial performance and financial position reported in its financial statements; and (b) provides insight into factors that could affect the entity's ability to create value and generate cash flows across all time horizons, including in the long term" (IASB, 2021, p. 23).
10.3	IFRS-Foundation Consultation paper and ED	"through the ISSB, to develop, in the public interest, a single set of high quality, understandable, enforceable and globally accepted sustainability standards based upon clearly articulated principles. These standards should require high quality, transparent and

	Boundary Dimension / document	Categorisation and select illustrative quotes (Italics added for emphasis)
		comparable information in corporate reports to help investors and other participants in the world's capital markets in their decision making and connect with multi-stakeholder sustainability reporting" (IFRS Foundation, 2021, p. 16).
10.4	TCFD	"to develop voluntary, consistent climate-related financial disclosures that would be useful to investors, lenders, and insurance underwriters in understanding material risks" (TCFD, 2017, p. iii).
10.5	Strategic-Report-Guidance	"to provide information for shareholders and help them to assess how the directors have performed their duty, under section 172, to promote the success of the company and, in doing so, had regard to the matters set out in that section. This includes considering the interests of other stakeholders which will have an impact on the long-term success of the entity" (FRC, 2018, p. 4).
10.6	SASB-CF-ED	"The mission of the […] (SASB) Foundation is to establish industry-specific disclosure standards across environmental, social, and governance topics that facilitate communication between companies and investors about financially material, decision-useful information" (SASB, 2020, p. 22).
10.7	<IR>Framework	"The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates, preserves or erodes value over time" (IIRC, 2021, p. 11).
10.8	NFRD-Proposal	"shall include in the management report information necessary to understand the undertaking's impacts on sustainability matters, and information necessary to understand how sustainability matters affect the undertaking's development, performance and position" (EU Commission, 2021, p. 47).
10.9	GRI-ED	"(GRI Standards) enable an organization to publicly disclose its most significant impacts and how it manages these impacts, in accordance with a globally-accepted standard. This allows information users to make informed assessments and decisions about the organization" (GRI, 2020a, p. 4).

AAAJ 01-2020-4387.R2 Author responses to Referees' comments

Dear Editor and Referees

Thank you so much for the opportunity to resubmit the paper "Understanding reporting boundaries in annual reports: a conceptual framework" with 'conditional acceptance subject to minor revisions'. The referees' comments have again been very constructive. Please see responses to the comments below.

Please note that I have included pdf documents showing the paper and tables in "track changes" as requested.

Referee 1

1.1	Thank you for the very detailed responses and for the restructured paper. The structure of sections now represents more closely your approach to the construction and application of the concepts of boundaries. There is much more rigour in the analysis, as evidenced by the Appendix.	Thank you for the positive words and thanks again for your help in explaining the approach.
1.2	As explained below, I do not think it is necessary to publish the Appendix because several of the examples are presented in the main discussion of the paper. Those examples demonstrate the validity of the evidence cited. However it is reassuring to see the work in the Appendix as evidence of rigour comparable to that we might expect from a quantitative analysis of data. You may wish to offer to share it with enquirers.	I have very carefully considered this suggestion and please see item 1.7 where I explain my proposed solution to the length of the paper.
1.3	My comments here are in three sections, all of which can be dealt with relatively readily. 1. Clarity of explanation of the two 'circular' concepts, 2. Suggestions for reducing length (at request of the editor), 3. A few detailed editing points.	Please see responses below.
1.4	**1. CLARITY OF EXPLANATION OF THE TWO 'CIRCULAR' CONCEPTS** The paper is now much clearer on the development of the contribution and on the sources used to illustrate the boundaries proposed. My final test relates to the development of the concepts of 'circular outward-inward impact' and the 'circular sustainability-financial performance' as claimed in section 4.2 for the contribution.	Thank you.
1.5	**Circular outward-inward impact** This is covered in Section 3.1.5.	I have followed your advice and include the following at the start of 3.1.5:

	It would help the reader a lot if you would say in one clear sentence at the start what you mean by 'outward'. Your second sentence says "This dimension was identified in academic and industry literature relating to single and double materiality" and I'm still wondering what that means to the reader. I quite like the wording on the page you cite from Unerman et al (2018) on page 10 of your paper. Could you draw on their wording to be even clearer about what you regard as 'outward'? If you had that explanation at the start of 3.1.5 it would help the reader a lot with a relatively simple idea that is well-known in economics. Here is their wording: These externalities comprise social, environmental and broader economic impacts arising from the activities of an entity that are borne by others and do not feedback directly into short-term financial consequences for the entity	"Outward impacts refer to where an organization's activities affect society (e.g. cause problems with drinking water for the community), the environment (e.g. cause carbon emissions) or the economy (e.g. contribute to government taxes). Inward impacts refer to where society (customers boycott an organization's product), the environment (rising sea levels render an operational site inoperable) or the economy (a downturn in the economy reduced the demand for the organization's product) affects the organization."
1.6	**Circular sustainability-financial performance** I couldn't find this precise wording in any of the subsections 3.1.1 to 3.1.10. It needs to be in one of those subsections if it is to meet your claim to contribution (page 21) as identifying the 10 boundary concepts. Using word search I found the first occurrence of this wording on page 18 where you create it from observation of the various documents. This takes us back to a discussion from an earlier stage of the review – are you creating the boundary definitions in section 3.1 or are you deriving them by induction in section 3.2? The definition eventually appears on page 20 line 45. On page 21 line 56 you claim to have 10 reporting boundary dimensions but then there is a kind of postscript on page 22 line 6 where the concept of sustainability and financial performance is introduced. Can you find some way of developing or proposing the specific concept of circular sustainability-financial performance somewhere in section 3.1 (probably 3.1.8)? Then you can develop it by subsequent illustration as you have done. What you can't do logically is create it by illustration.	Thanks for pointing out this important logic. I now include the following in section 3.1.8 to introduce the concept: "Following the logic of 'circular outward-inward impact' in section 3.1.5, this current dimension could include 'circular sustainability-financial performance', referring here to where sustainability performance of the entity affects the financial performance of the entity."
1.7	2. EDITOR'S REQUEST FOR SUGGESTIONS TO SHORTEN PAPER My first suggestion is to remove Appendix Table A1. It reassures the reviewer of the validity of the arguments presented in the paper, but it doesn't need to be published in full. The parallel is that you wouldn't put all your data files in the	I understand from the editor's letter that the entire paper (including tables and references etc.) should be 16 000 words or less. I appreciate your suggestion and considered it long and hard.

	published paper even though you might share them with the reviewer. You could offer Appendix Table A1 to interested readers who wish to ask about it. You have already used several of these examples in the body of the paper to give the reader a sense of the rigour of your work, which is sufficient to demonstrate the rigour of your work.	However, I strongly believe that the appendix table is crucial for the strength of the paper and hopefully for others to engage with if they compare my analysis with future documents. I also feel it adds strength to this qualitative study and offers quantitative readers more "evidence" for conclusions. Hence, to address the length issue, I instead heavily trimmed the appendix table (without losing the meaning). In addition, I was more concise in other areas of the paper, as seen in the track change version, and thus meet the 16 000 total word requirement.
1.8	The Introduction is rather long, somewhat repetitive and is on the verge of starting a mini literature review. In particular Page 2 paragraph starting 'the purpose of this paper' seems unnecessary in the Introduction because it repeats references used elsewehere in the Introduction and it is covered adequately in the final para of the Introduction starting 'this paper contributes'. You could also remove the paragraph starting 'Surprisingly…' because that is also covered in the final para on contribution.	Thank you for the comment. I managed to be more concise elsewhere. Following the other reviewer's previous suggestions, the intro is actually supposed to incorporate some lit review. So I didn't cut.
1.9	Also please look at page 1 lines 11-17: *The annual report is an interesting setting as it potentially houses boundary conceptualizations representing tensions between logics or hybrid logics (Edgley,Jones, & Atkins, 2015), clashes between frames (Tregidga, Milne, & Kearins, 2014), and colliding frames of reference (Ascui & Lovell, 2011), emerging from the application of multifarious financial and non-financial reporting regulations, guidelines, and approaches.* These sources and related points are not developed specifically in the paper (checked by Word Search) Suggest you delete them.	Thanks for the suggestion. I understand your point but this para follows previous suggestions from the other reviewer, so I didn't cut.
1.10	Section 3.1.1. This covers more than one page and gives extensive description of a paper by Antonini and Larrinaga (2017) and another paper by Ringham and Miles (2018). Both papers are in the public domain and the descriptions of each one could be more concise.	I have made cuts as suggested, please see the track change version of section 3.1.1.

1.11	Section 3.1.4 Miles and Ringham (2019) is described in detail (pages 9 and 10).There could be a more concise summary of their paper which is in the public domain.	I have made cuts as suggested, please see the track change version of section 3.1.4.
1.12	3. EDITING DETAILS Abstract. Could you please check the wording of the Abstract regarding Methodology. Here is what you have written: ***Design/methodology/approach:*** *To develop a conceptual framework of reporting boundary dimensions, a qualitative approach was taken including document analysis and content analysis. Prior academic and industry literature were analysed to identify boundary dimensions. Thereafter, nine contemporary regulations/guidelines were compared in terms of these dimensions.* Here is the sequence as I think it should be: ***Design/methodology/approach:*** *To develop a conceptual framework of reporting boundary dimensions, prior academic and industry literature were analysed to identify boundary dimensions. Thereafter, nine contemporary regulations/guidelines were compared in terms of these dimensions. A qualitative approach was taken including document analysis and content analysis.*	Thank you, I have amended the abstract following your suggestions.
1.13	P2. KPMG ref is page 17	Page number inserted
1.14	P4 line 13 "that were interpreted by the author". Do you mean they were interpreted by the author of the empirical work, or do you mean they are interpreted in this paper by you as the author of this paper?	Inserted "by the author of the current paper" to be clearer.
1.15	P10 line 52 IF they have an effect…. There is no need to use capital letters to shout at the reader.	Changed to lower case

Referee 2

2.1	I enjoyed reading the revised version of your paper. I am very pleased to see that you have substantially revised your arguments and that you have carefully considered the suggestions by me, the other reviewer, and the editor. Thank you for responding so positively to our comments. I like how you have restructured your paper to position how reporting boundaries are conceived in prior literature as part of your findings. Your arguments are now much better supported with evidence provided for each boundary dimension and with Table AI. Well done! I look forward to reading empirical tests of your conceptual framework.	Thank you so much for the positive comments and for your help in restructuring the paper.
2.2	I have the following suggestions on how you can further improve your paper: You may want to clarify whether the definition of 'reporting boundary' you provide on p.2, para.1 is your own.	Added: "is defined here" to indicate my own.
2.3	On your first motivation on p.2, para.4 how/why is it interesting/important that a mixture of boundaries is currently employed in annual reports? And, how does this differ/relate to your third motivation on the invisibility of boundary dimensions?	The first motivation makes the boundary dimension comparison relevant. The first is different from the third – the first is that mixed boundaries are being used, the third is that each of the mixed boundaries is not all disclosed. In the interests of paper length, I didn't add to the paper.
2.4	Re. your research questions on p.3, para.5: how do you define 'prior' academic and industry literature? Is this based on some time frame? This issue matters later for your section 3.1. For example how are EU Commission (2019; 2021) that you discuss on p.8, paras.2-5 prior literature? The same applies to GRI (2019; 2020a; 2020b) that you discuss on p.9, paras.2-4. Some of these documents are included in the nine regulations/guidelines that you analyse to answer your second research question.	I see your point. I agree that 'prior' industry literature includes the 9 documents analysed. I removed "prior" from RQ1 and throughout the document where it causes confusion.
2.5	On your contributions on p.3, p.6: you may want to clarify how your contribution on considering financial and non-financial boundaries is distinct from Girella (2018).	These are valid comments. However, given the paper length constraint I didn't add these further clarifications.
2.6	You may also want to explain further how/why knowing about reporting boundaries is important since annual reports construct reality.	Given the paper length constraint, I didn't add further clarifications.

2.7	How are the target users of annual reports discussed in the prior literature that you mention on p.7, para.4?	Given the paper length constraint, I didn't add further clarifications.
2.8	How is the discussion on 'completeness' on p.10, para.4 drawn from prior literature?	The prior lit would be industry literature, including the IFRS conceptual framework.
2.9	You may want to clarify how you develop the concept of 'circular outward-inward impact' discussed on p.10, para.5. Again, how is this drawn from prior literature?	To clarify the drawing from prior industry literature the following is added in section 3.1.5: "This concept is identified in many regulations/guidelines where there is interest in outward impacts of a company only if they have an effect on the company i.e. circular outward-inward impacts (e.g. the <IR>Framework (IIRC, 2021))."
2.10	How is the relationship between financial and non-financial performance discussed in the prior literature that you mention on p.12, para.3. Also, you may want to discuss how this dimension differs from the dimension on 'financial versus sustainability control/influence'.	These are valid points. However, I didn't add in extra explanations given the word length limitations.
2.11	You may want to clarify how the dimension of 'entity versus wider stakeholder focus' (p.12, para.4) differs from the dimension of 'extent of investor versus wider stakeholder focus'.	These are valid points. However, I didn't add in extra explanations given the word length limitations.
2.12	You may want to discuss how it is interesting that the NFRD's incorporation into the Strategic Report may limit the intended wider stakeholder focus. What does this tell us about the boundary dimension of target users and/or about boundaries more broadly?	These are valid points. However, I didn't add in extra explanations given the word length limitations.
2.13	How do we know that the removal of a reference to stakeholders in the GRI was to avoid biases in material topics arising from stakeholder selection (p.15, para.6)? Is there a reference for this?	I added in the reference to the GRI ED Explanatory memorandum that made this point.
2.14	You may want to provide more evidence/support for your discussion on completeness on p.16, para.3.	This is a valid point. However, I didn't add in extra evidence given the word length limitations.
2.15	You may want to briefly discuss what the two extremes of the continuums you mention on p.20, para.3 represent. E.g., is there a particular style of thinking/reasoning about reporting boundaries associated with these extremes?	This is a valid point. However, I didn't add in extra evidence given the word length limitations.

2.16	What are the implications of boundary dimensions constructing, rather than representing, reality (p.21, para.4)?	This is an interesting comment. However, I didn't add implications, given the word length limitations.
2.17	Some minor issues: p.5, para.5: check 'from analysis'	Left as it is
2.18	p.12, para.4: what do they mean by 'planetary boundaries'?	I didn't add due to word limit, but it refers to the moving from sustainability goals and reporting at planetary level down to company reporting
2.19	p.16, para.7: check 'mainly mainly'	Corrected, thanks.
2.20	p.21, para.5: check 'and calls'	No change made
2.21	p.22, para.2: limitations of what?	Added: "of the current study"