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Embedding sustainability into business strategies

The role of CEO values in MNCs

International business

Bachelor's thesis

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Abstract

The thesis examines how CEO values can influence the embedding of sustainability into business strategies in multinational corporations. The starting point is the observation that, despite growing pressure from science, regulation and stakeholders to address climate change and biosphere loss, there is still limited understanding of how CEOs' personal values shape the rules and structures that guide everyday corporate decisions. Planetary Boundaries for climate and biosphere integrity provide the broader context by highlighting that ecological limits have already been exceeded and that companies face increasing expectations to align with science-based emissions pathways and to avoid deforestation and ecosystem degradation. This thesis develops a literature-based conceptual model that links Planetary Boundaries, responsible leadership and governance mechanisms, and Circular Economy practices to explain how CEO values translate into firm-level sustainability integration and indicators.

The main research question and two sub-questions focus on the links between CEO values, sustainability-related company structures, Circular Economy practices and indicators of firm-level embeddedness in MNCs. The thesis is a literature-based conceptual study that synthesises research on Planetary Boundaries, responsible leadership and corporate governance, and Circular Economy.

The thesis suggests that CEO values shape sustainability outcomes mainly indirectly, through their influence on company structures. When CEOs take climate and biosphere risks seriously, this can be reflected in the firm's strategic priorities and decision rules. It may shape how sustainability is embedded in investment and resource-allocation choices, and in supplier and traceability requirements that support deforestation-free sourcing. These structures, in turn, influence Circular Economy choices in product and packaging design, supply and reverse flows, and the use of indicators such as greenhouse gas emissions, circularity and recycled-content percentages, repair and return rates, and deforestation-free or traceable sourcing coverage. The thesis concludes that CEO values and company structures together play a central role in determining whether Planetary Boundary-linked climate and biosphere targets remain high-level commitments or become embedded in the strategies and everyday practices of multinational corporations.

Keywords: Planetary Boundaries; CEO values; responsible leadership; corporate governance; Circular Economy; multinational corporations; sustainability strategy

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Tiivistelmä

Tutkielma tarkastelee, miten toimitusjohtajien arvot voivat vaikuttaa vastuullisuuden integroitumiseen monikansallisten yritysten liiketoimintastrategioihin. Lähtökohtana on havainto, että yrityksiin kohdistuu kasvavaa painetta ilmastonmuutoksen ja biosfäärin heikkenemisen hillitsemiseksi. Painetta tuottavat tiede, sääntely ja sidosryhmät. Silti ymmärrys siitä, miten toimitusjohtajien henkilökohtaiset arvot muovaavat arjen päätöksiä ohjaavia sääntöjä ja rakenteita, on edelleen rajallinen. Ilmaston ja biosfäärin eheyteen liittyvät planetaariset rajat tarjoavat tarkastelulle laajemman viitekehyksen. Ne korostavat, että ekologisia raja-arvoja on jo ylitetty. Samalla yrityksiltä odotetaan yhä vahvemmin tieteesen perustuville päästöpoluille asettumista. Lisäksi niiden odotetaan välttävän metsäkatoa ja ekosysteemien heikentymistä. Tässä tutkielmassa kehitetään kirjallisuuteen perustuva konseptuaalinen malli, joka yhdistää planetaariset rajat, vastuullisen johtajuuden ja hallinnointimekanismit sekä kiertotalouskäytännöt ja selittää, miten toimitusjohtajan arvot kytkeytyvät vastuullisuuden integroitumiseen yritystasolla ja sitä kuvaaviin indikaattoreihin.

Päätutkimuskysymys ja kaksi alakysymystä kohdistuvat yhteyksiin toimitusjohtajan arvojen ja vastuullisuuteen liittyvien yritysrakenteiden välillä. Lisäksi tarkastelussa ovat kiertotalouskäytännöt sekä firmatasolla vastuullisuuden juurtumista kuvaavat indikaattorit. Tutkielma on kirjallisuuteen pohjautuva konseptuaalinen tutkimus. Se kokoaa yhteen planetaarisia rajoja, vastuullista johtajuutta ja yrityshallintoa sekä kiertotaloutta käsittelevää tutkimusta. Tutkielma ehdottaa, että toimitusjohtajan arvot muovaavat vastuullisuustuloksia pääasiassa epäsuorasti yrityksen strategisten painotusten ja päätössääntöjen kautta. Kun toimitusjohtaja suhtautuu vakavasti ilmasto- ja biosfääririskeihin, tämä voi näkyä siinä, miten vastuullisuus kytkeytyy investointi- ja resurssienkohdentamispäätöksiin sekä toimittaja- ja jäljitettävyyksvaatimuksiin, jotka tukevat metsäkadosta vapaata hankintaa.

Nämä rakenteet vaikuttavat vuorostaan kiertotalousvalintoihin. Ne voivat ohjata esimerkiksi tuotteiden ja pakkausten suunnittelua sekä materiaalivirtojen hallintaa. Ne vaikuttavat myös siihen, mitä indikaattoreita seurataan. Tällaisia ovat esimerkiksi kasvihuonekaasupäästöt, kiertotalousaste ja kierrätysmateriaalien osuus, korjaus- ja palautusasteet sekä metsäkadosta vapaan tai jäljitettävän hankinnan kattavuus. Tutkielma päättyy siihen, että toimitusjohtajan arvot ja yritysrakenteet ovat yhdessä ratkaisevia. Ne vaikuttavat siihen, jäävätkö planetaarisiin rajoihin kytketyt ilmasto- ja biosfääritavoitteet ylätasoin sitoumuksiksi. Vai integroituvatko ne strategiaan ja arjen käytäntöihin monikansallisissa yrityksissä.

Avainsanat: planetaariset rajat; toimitusjohtajan arvot; vastuullinen johtajuus; yrityshallinto; kiertotalous; monikansalliset yritykset; vastuullisuusstrategia

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1 Introduction

Multinational corporations (MNCs) face growing pressure from regulators, investors and customers to integrate sustainability into their core business strategies rather than treat it as a separate corporate social responsibility (CSR) agenda (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014). At the same time, research on Planetary Boundaries (PB) shows that climate change and the loss of biosphere integrity are pushing the Earth system beyond safe operating limits, which raises the stakes for how companies design products, source materials, allocate capital and operate across global value chains (Rockström et al., 2009; Steffen et al., 2015). These developments intensify the need to understand how sustainability becomes embedded within everyday decisions and long-term strategic priorities in MNCs (Kolk, 2016; Husted & Allen, 2006).

For MNCs operating across multiple markets, these pressures are complex. Firms must navigate differing regulatory regimes, stakeholder expectations and supply-chain risks while still delivering financial performance (Kolk, 2016; Husted & Allen, 2006). Business decision-making takes place in an ecosystem of incentives, routines and expectations, and short-term financial targets often work against longer-term sustainability goals. Within this context, chief executive officers (CEOs) play a central role. A CEO's personal values can influence what is perceived as material, which sustainability issues are prioritised, and how trade-offs are made between short-term performance and long-term resilience (Hambrick & Mason, 1984; Waldman & Siegel, 2008). However, it is still not well understood how these values are translated into concrete sustainability-related strategic priorities in MNCs (Maak & Pless, 2006; Waldman & Siegel, 2008). This underscores the importance of examining how CEO values are reflected in sustainability-related business strategy in MNCs.

Existing research provides substantial insights into leadership and corporate sustainability. However, these fields of research have rarely been analytically connected in ways that clarify how CEO values shape sustainability-related business strategy (Waldman & Siegel, 2008; Whiteman, Walker & Perego, 2013). Research on ethical and responsible leadership develops robust normative accounts of value-based leadership but offers more limited specification of how such values become embedded in strategic priorities and organisational decision-making (Maak & Pless, 2006; Waldman & Siegel, 2008). Sustainability scholarship, in turn, has developed influential frameworks for understanding ecological limits and organisational responses, including Planetary Boundaries and the Circular Economy (Rockström et al., 2009; Steffen et al., 2015; Geissdoerfer et al., 2017).

To establish a clear conceptual vocabulary for the analysis, the following section briefly introduces and defines three relevant bodies of literature. These are Planetary Boundaries, responsible leadership and upper echelons research on CEO values, and Circular Economy (Hambrick & Mason, 1984; Maak & Pless, 2006; Rockström et al., 2009; Geissdoerfer et al., 2017).

Theoretical frameworks

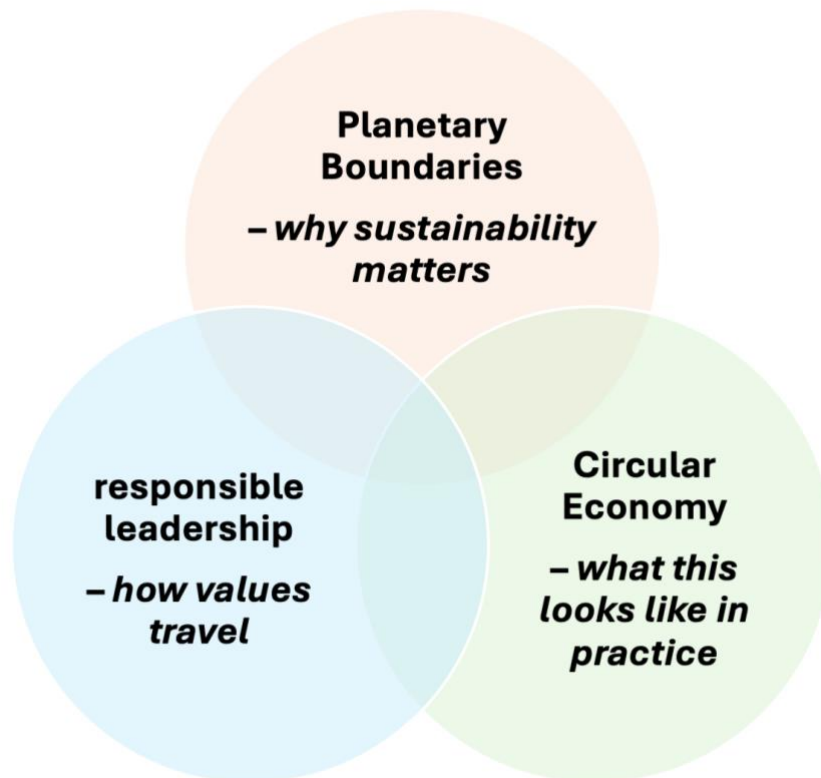


Figure 1 Theoretical framework of the thesis

This thesis draws on Planetary Boundaries as the ecological context for the study, upper echelons and responsible leadership research to conceptualise the role of CEO values, and Circular Economy literature to inform firm-level practices and indicators. The figure illustrates how these literatures relate to the research questions.

The Planetary Boundaries framework was introduced by Rockström and colleagues (2009) and further developed by Steffen and colleagues (2015). It identifies key Earth-system processes and proposes boundaries intended to define a safe operating space for humanity (Rockström et al., 2009; Steffen et al., 2015). Here, PB is presented as a scientific framework that provides background context for climate change and biosphere integrity. Research on responsible leadership emphasises the ethical, relational and stakeholder-oriented dimensions of leadership, with influential contributions by Maak and Pless (2006). The upper echelons perspective, formulated by Hambrick and Mason (1984), proposes that organisational outcomes can reflect top executives' values and

cognitive frames. In this section, these literatures provide conceptual language for defining CEO values and for describing their potential relevance to sustainability-related strategic priorities (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008). Circular Economy research has developed as a sustainability-oriented approach to value creation that aims to reduce waste and keep products and materials in use for longer. A widely cited synthesis of CE definitions and its relationship to sustainability is provided by Geissdoerfer and colleagues (2017). CE is introduced here as a conceptual framework that is discussed later in relation to firm-level practices and indicators (Geissdoerfer et al., 2017).

1.1 Research questions

This thesis is a literature-based conceptual study that examines how CEO values may influence the embedding of sustainability into business strategies in multinational corporations. The conceptual scope is limited to multinational corporations (MNCs), understood here as firms that own or control value-creating activities in more than one country. This focus is justified by the scale of MNC impacts and by the complexity of strategic decision-making across diverse institutional environments and global value chains (Kolk, 2016; Husted & Allen, 2006). In such settings, sustainability-related strategic priorities must be coordinated across markets and supply networks, which makes the role of top leadership particularly consequential.

The ecological scope of the thesis is anchored in Planetary Boundaries related to climate change and biosphere integrity. These two boundaries are selected because they represent interlinked risks that have been widely recognised as central to the current sustainability agenda and are increasingly reflected in corporate target-setting and stakeholder expectations (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013). The thesis does not aim to provide a comprehensive review of all Planetary Boundaries or all dimensions of corporate responsibility. Instead, it concentrates on the climate- and nature-related aspects that are most directly connected to the research problem and to sustainability-related strategy in MNCs.

The main research question asks:

How can CEO values influence the embedding of sustainability into business strategies in multinational corporations?

To make this question more concrete, the thesis addresses two sub-questions:

SQ1: How are CEO values reflected in business strategy with regard to sustainability?

SQ2: Which indicators suggest that sustainability has been embedded at the firm level?

The first sub-question identifies a key analytical focus that the thesis seeks to clarify through the literature, focusing on the relative importance of CEO values in sustainability-oriented business strategy (cf. Alvesson & Sandberg, 2011). This focus is theoretically grounded in responsible leadership and upper echelons research, which suggest that top executives' values can shape strategic priorities and organisational outcomes (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008). The second sub-question complements this focus by directing attention to concrete indicators of firm-level embeddedness. This supports the conceptual logic of the study by linking strategic priorities to observable outcomes and measures associated with implementation, including those discussed in the Circular Economy literature (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017). Together, the sub-questions sharpen the focus of the study and support the main research question.

As a conceptual thesis, this study synthesises and integrates relevant research to develop an organised understanding of how CEO values may be reflected in sustainability-related business strategy in MNCs and how embeddedness can be assessed at the firm level. The thesis does not test hypotheses empirically or provide firm-specific case evidence. Its contribution is to clarify conceptual linkages across the selected literatures and to build a coherent basis for examining CEO values, sustainability-related strategy and indicators of embeddedness within multinational corporations.

The remainder of the thesis is structured as follows. Chapter 2 introduces the Planetary Boundaries framework, focusing on climate change and biosphere integrity as the key ecological context for multinational corporations and on how these global constraints are translated into firm-level climate and nature targets. Chapter 3 develops the leadership-based theoretical foundation by drawing on the upper echelons perspective and responsible leadership research to conceptualise CEO values in sustainability-oriented settings. Chapter 4 examines how CEO values may be reflected in sustainability-related business strategy in MNCs, focusing on strategic framing, ambition and time horizon, and long-term positioning and investment direction. Chapter 5 turns to indicators of firm-level embeddedness, defining embeddedness in the MNC context and outlining climate-, nature- and circularity-related indicator families that can be used to assess whether sustainability has moved from high-level commitments into organisational practice. Chapter 6 brings the analysis together by answering the research questions and discussing theoretical and managerial implications, as well as limitations of the study and suggestions for future research.

2 Planetary Boundaries and company-level climate and nature targets in MNCs

Climate change and biosphere integrity are strategically salient Planetary Boundaries for multinational corporations (MNCs) because they are closely linked to climate- and nature-related risks across global value chains and because corporate activities and sourcing decisions can materially affect outcomes in these domains (Whiteman, Walker & Perego, 2013; Kolk, 2016; Husted & Allen, 2006). Building on the earlier brief overview of the Planetary Boundaries framework, this section focuses on these two boundaries as the key ecological context for the thesis in the MNC setting (Rockström et al., 2009; Steffen et al., 2015).

The Planetary Boundaries (PB) framework describes biophysical limits within which human activity should remain to avoid destabilising key Earth system processes and moving the planet outside a safe operating space (Rockström et al., 2009; Steffen et al., 2015). Recent scientific updates indicate that several boundaries have been transgressed, including climate change and biosphere integrity, underscoring the urgency of action in these areas (Steffen et al., 2015; Richardson et al., 2023; Planetary Health Check, 2025).

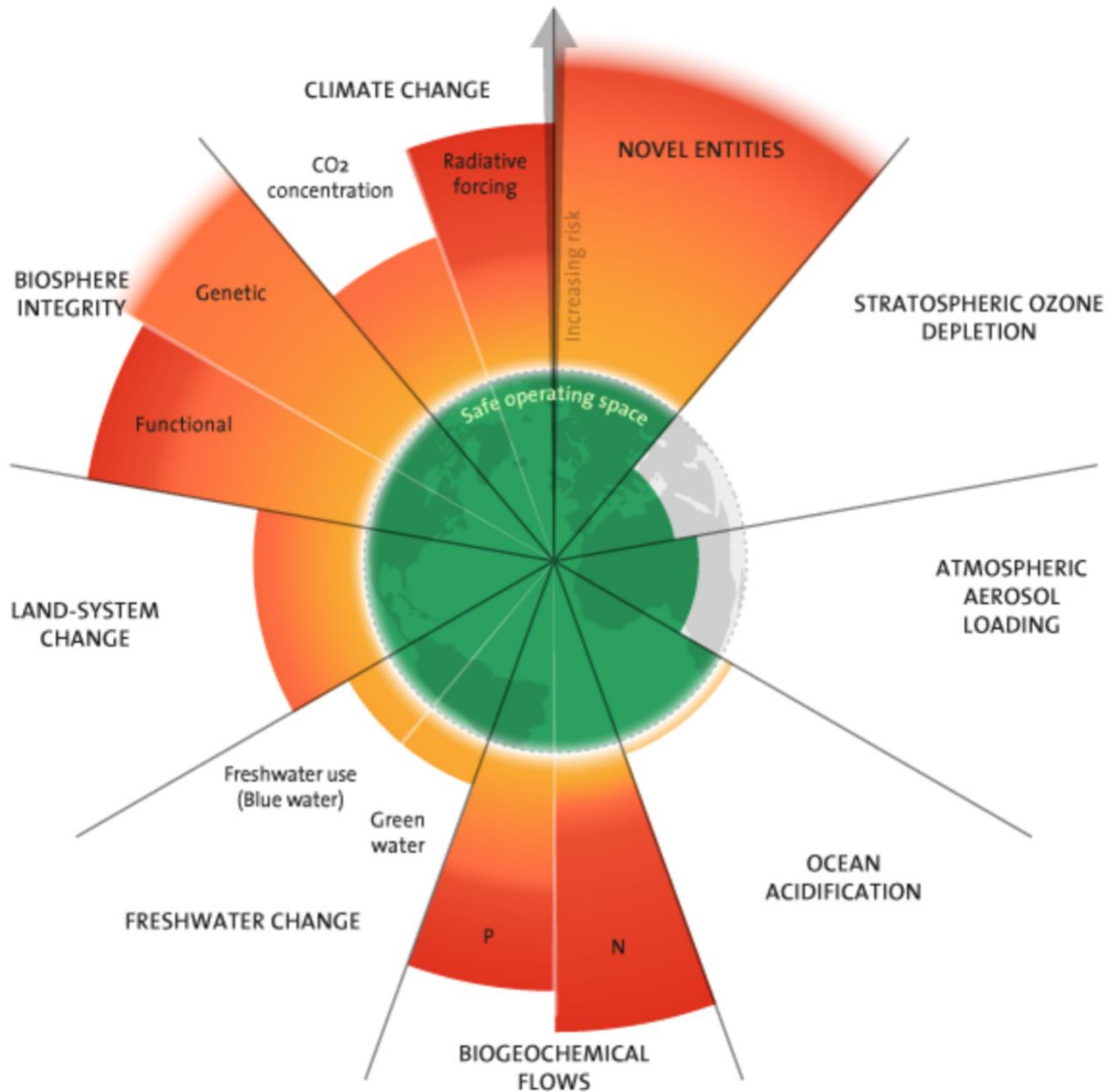


Figure 2. Planetary boundaries in 2025

The figure presents the Planetary Boundaries framework and the most recent status assessment across the nine Earth-system processes. This thesis focuses on two boundaries that are particularly relevant to multinational corporations: climate change and biosphere integrity, highlighted in the upper-left sector of the figure. Source: Stockholm Resilience Centre, Stockholm University, Planetary Boundaries webpage (2025).

The climate change boundary concerns the extent to which greenhouse-gas concentrations and radiative forcing disrupt the Earth's energy balance and increase global warming beyond conditions associated with long-term system stability (Rockström et al., 2009; Steffen et al., 2015). In corporate contexts, this boundary is reflected in the growing prominence of science-aligned

decarbonisation expectations and the adoption of company-level emissions targets (IPCC, 2021; Krabbe et al., 2015; SBTi, 2024).

The biosphere integrity boundary concerns the capacity of ecosystems to sustain life-support functions, commonly discussed through dimensions such as genetic diversity and functional integrity (Steffen et al., 2015). For companies, especially MNCs with extensive global sourcing networks, this boundary is most directly connected to land use and the management of high-risk agricultural and forest-based supply chains (Whiteman, Walker & Perego, 2013; Kolk, 2016). In this thesis, deforestation-free sourcing refers to supply-chain commitments and practices aimed at ensuring that key commodities are not linked to deforestation or conversion of natural ecosystems after an agreed cut-off date, supported by supplier requirements and traceability systems (Whiteman, Walker & Perego, 2013; TNFD, 2023).

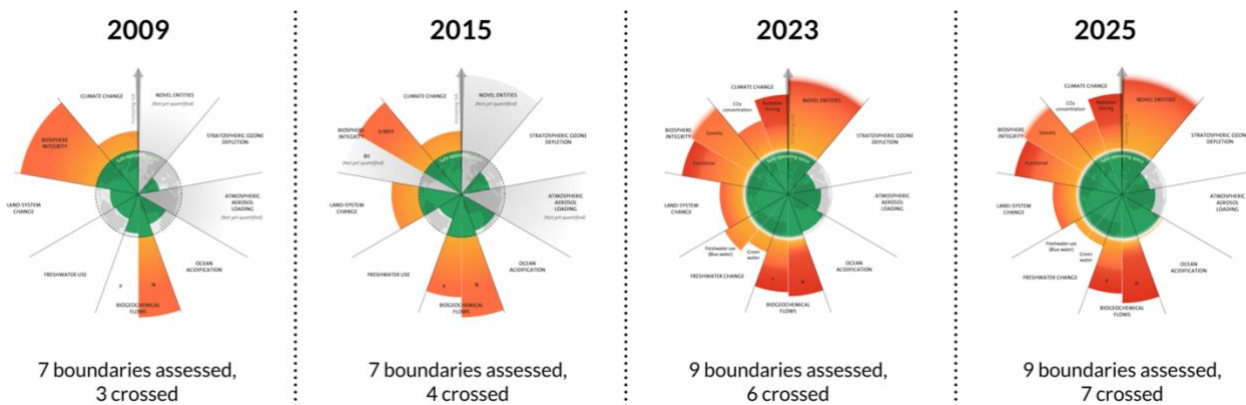


Figure 3 Evolution of the Planetary Boundaries framework 2009–2025

The figure illustrates the development of the Planetary Boundaries assessments from 2009 onwards and shows the increasing number of boundaries assessed and transgressed over time. It provides a concise visual summary of the relevance and growing urgency of the framework as a contemporary ecological context for corporate sustainability discussions. Source: Stockholm Resilience Centre, Stockholm University, Planetary Boundaries webpage; credit to Azote for Stockholm Resilience Centre (based on Rockström et al., 2009; Steffen et al., 2015; subsequent updates including 2023 and 2025 assessments). Together, the PB framework and the focus on these two boundaries clarify the ecological stakes of embedding sustainability into MNC business strategies.

2.1 Translating planetary pressures into company-level targets

Planetary Boundaries become strategically relevant for firms when global ecological constraints are translated into measurable company-level targets. In the climate domain, science-based targets have emerged as a prominent approach for connecting corporate emissions-reduction trajectories to global temperature goals (Krabbe et al., 2015; SBTi, 2024). These targets support the alignment of

corporate decarbonisation pathways with climate science and provide a basis for assessing progress at the firm level (IPCC, 2021; Krabbe et al., 2015; SBTi, 2024).

In relation to biosphere integrity, a parallel target logic can be observed in commitments to deforestation-free and increasingly traceable supply chains, particularly in commodities associated with land-use change. Such commitments specify expectations for supplier practices, land-use criteria and the transparency of high-risk sourcing networks, making biosphere-related risks more visible in organisational decision-making (Whiteman, Walker & Perego, 2013; TNFD, 2023).

Taken together, science-based emissions pathways and deforestation-free or traceable sourcing commitments illustrate how Planetary Boundary-linked risks can be translated into corporate targets. The PB framework helps clarify what climate- and nature-related outcomes firms should aim for, while company-level targets create an initial organisational translation of these biophysical constraints (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013).

However, targets alone do not explain how sustainability becomes embedded in the business strategies and everyday priorities of MNCs. This observation leads directly to the core focus of the thesis: examining how CEO values may be reflected in sustainability-related business strategy (SQ1) and how embeddedness can be assessed through firm-level indicators (SQ2). The next chapter therefore turns to leadership research to examine how CEO values may shape sustainability-oriented strategic priorities in multinational corporations (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008).

3 CEO values and leadership perspectives in MNC sustainability

This chapter provides the leadership-based theoretical foundation for addressing the first sub-question of the thesis: How are CEO values reflected in business strategy with regard to sustainability? The chapter draws on the upper echelons perspective and responsible leadership research to clarify why CEO values are a theoretically defensible lens for understanding sustainability-related strategic prioritisation in multinational corporations (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008). Recent literature continues to support the relevance of this focus by linking CEO orientations and attributes to variation in corporate responsibility and sustainability outcomes (Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024).

While earlier chapters established the ecological stakes of corporate action through Planetary Boundaries, this chapter shifts to leadership theory to explain why sustainability-related strategic choices may differ across MNCs even under similar external pressures (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013). The chapter is guided by a problematising orientation that seeks to strengthen conceptual links between leadership and sustainability strategy rather than merely restate a descriptive research gap (Alvesson & Sandberg, 2011).

3.1 CEO values and the upper echelons perspective

In this thesis, CEO values refer to relatively stable, internalised beliefs and priorities that shape how a CEO interprets strategic issues, allocates attention, evaluates trade-offs and signals what is considered materially important for the firm. In sustainability contexts, such values may influence whether climate- and nature-related risks are framed as peripheral responsibilities or treated as strategic priorities with long-term implications for competitiveness and resilience (Hambrick & Mason, 1984; Waldman & Siegel, 2008).

The upper echelons perspective provides the primary theoretical basis for this conceptualisation. The theory proposes that organisational outcomes can reflect the values and cognitive frames of top executives, implying that strategy is shaped not only by external pressures and firm resources but also by how senior leaders interpret complex environments and prioritise competing demands (Hambrick & Mason, 1984). This logic is particularly relevant in multinational corporations, where strategic decision-making is dispersed across multiple institutional contexts and global value chains, amplifying the importance of sensemaking and prioritisation at the top of the organisation (Husted & Allen, 2006; Kolk, 2016).

Empirical research further supports this expectation. For example, studies have linked CEO ideological orientations to corporate social responsibility patterns, suggesting that executive-level preferences and value-based interpretations can be associated with variation in responsibility-related strategic choices (Chin, Hambrick & Treviño, 2013). Similarly, research on CEO attributes and sustainable performance indicates that leadership-related characteristics remain a meaningful explanatory factor in understanding differences in corporate sustainability outcomes (Shahab et al., 2020). Recent review-based evidence also consolidates this line of reasoning by highlighting the continued relevance of CEO-level influences in corporate environmental and sustainability research (Mahran, 2024).

Taken together, the upper echelons perspective and contemporary empirical findings offer a robust theoretical rationale for examining CEO values as one potential factor reflected in sustainability-related business strategy in MNCs (Hambrick & Mason, 1984; Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024).

3.2 Responsible leadership and sustainability-oriented strategy

While the upper echelons perspective emphasises how executives' values and interpretations may be reflected in strategic outcomes, responsible leadership research offers a complementary normative and relational lens. Responsible leadership highlights the ethical and stakeholder-oriented foundations of leadership and positions leaders as actors who navigate responsibilities that extend beyond shareholder value, particularly when corporate decisions have broad societal and environmental consequences (Maak & Pless, 2006).

In sustainability contexts, responsible leadership scholarship has been used to explain why some leaders adopt stronger responsibility orientations and why values may shape how environmental and social issues are prioritised within corporate purpose and strategic direction (Maak & Pless, 2006; Waldman & Siegel, 2008). This perspective therefore provides conceptual language for understanding how CEOs may interpret climate- and nature-related responsibilities as integral to long-term organisational resilience rather than as separate or peripheral CSR themes.

For multinational corporations, this framing is especially relevant because sustainability-related strategy is shaped within complex stakeholder ecosystems and varying regulatory expectations across regions and supply networks (Husted & Allen, 2006; Kolk, 2016). Responsible leadership thus complements the upper echelons lens by reinforcing the conceptual view that CEO values can

matter for sustainability-oriented strategic priorities while interacting with broader organisational and institutional pressures.

This chapter establishes the leadership-based theoretical foundation for examining how CEO values may be reflected in sustainability-related business strategy in multinational corporations (SQ1). The upper echelons perspective suggests that strategic outcomes can reflect executive-level values and interpretations, providing a clear rationale for focusing on CEOs in sustainability-related strategic prioritisation (Hambrick & Mason, 1984). Responsible leadership research complements this by emphasising the stakeholder-oriented and value-based dimensions of leadership in contexts where decisions have significant societal and ecological consequences (Maak & Pless, 2006; Waldman & Siegel, 2008). Recent empirical and review-based studies further support the contemporary relevance of this focus by linking CEO orientations and attributes to CSR and sustainability outcomes (Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024). Together, these literatures justify examining CEO values as one plausible explanatory lens for understanding variation in sustainability-related strategic priorities in MNCs. The next chapter builds on this foundation to examine how CEO values may be reflected in business strategy with regard to sustainability, while the subsequent analysis of indicators will address how firm-level embeddedness can be assessed (SQ2).

4 CEO values in sustainability-related business strategy in MNCs

In the context of multinational corporations, “being reflected in business strategy” regarding sustainability refers to the extent to which climate- and nature-related considerations shape the firm’s core strategic direction rather than remaining confined to separate CSR activities. This includes how sustainability is framed as strategically material to value creation and risk management, how it is positioned within long-term competitive priorities, and how short-term performance pressures are balanced with longer-term resilience across global value chains (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014; Kolk, 2016; Husted & Allen, 2006).

The literature suggests that CEO values can be reflected in sustainability-related business strategy through differences in strategic prioritisation, ambition and temporal orientation towards long-term versus short-term priorities (Hambrick & Mason, 1984; Chin, Hambrick & Treviño, 2013; Bansal, 2005; Mahran, 2024). Upper echelons research proposes that strategic outcomes can partly reflect top executives’ values and interpretations, especially in complex organisational environments, while responsible leadership research emphasises the role of value-based stakeholder orientation in shaping responsibility-related strategic direction (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008). More recent research continues to connect CEO orientations and attributes to CSR and sustainability outcomes, reinforcing the relevance of examining CEO values as a plausible source of variation in how sustainability is integrated into MNC strategy (Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024).

4.1 Dimensions of how CEO values may be reflected in sustainability-related business strategy

In the MNC context, prior research suggests that the strategic reflection of CEO values may become visible first in how sustainability is framed as a core strategic issue rather than a peripheral responsibility. When CEOs place higher value on climate- and nature-related responsibilities, sustainability may be positioned as relevant to long-term competitiveness, risk management and organisational resilience, which can influence how central these issues become in overall strategic prioritisation (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014; Waldman & Siegel, 2008; Maak & Pless, 2006). This framing role is consistent with upper echelons logic, which highlights how executives’ values shape strategic attention and interpretation of complex environments (Hambrick & Mason, 1984), and with empirical work associating CEO orientations

with CSR and sustainability patterns (Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024).

A second strategic dimension concerns ambition and time horizon. Sustainability-oriented strategy often requires long-term commitment and organisational learning, which can conflict with short-term financial pressures. Literature on corporate sustainability strategy emphasises the relevance of temporal trade-offs and the importance of long-term orientation in enabling more substantive integration of environmental concerns into strategy (Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016). These insights complement leadership research by suggesting that CEO values may influence whether sustainability is pursued through incremental adaptation or framed as a longer-term strategic trajectory in MNCs (Hambrick & Mason, 1984; Chin, Hambrick & Treviño, 2013; Mahran, 2024)

4.2 Strategic positioning and investment direction

A third way in which CEO values may be reflected in sustainability-related business strategy concerns strategic positioning. In this thesis, strategic positioning refers to how an MNC seeks to compete and differentiate over the long term, including whether climate- and nature-related priorities are treated as sources of competitive advantage, risk resilience or legitimacy across markets. Recent international business and strategy research suggests that multinational enterprises can adopt different environmental strategic role orientations, implying meaningful variation in how sustainability is positioned within overall strategic direction (Sharma et al., 2025). This supports the idea that CEO values may shape whether sustainability is framed as a central strategic pillar or a more limited compliance- or reputation-oriented priority (Hambrick & Mason, 1984; Chin, Hambrick & Treviño, 2013; Mahran, 2024).

Closely linked to positioning is investment direction, understood here as the strategic emphasis placed on developing, scaling or shifting business activities in ways that support longer-term sustainability-oriented goals. Sustainability strategy research highlights that meaningful integration often requires long-term commitment and organisational learning, which can conflict with short-term financial pressures (Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016). In MNCs, this tension is amplified by global value chain responsibilities and uneven regulatory and stakeholder environments, which makes leadership-level prioritisation particularly consequential for how sustainability is integrated into the firm's strategic trajectory (Marano et al., 2024; Kolk, 2016; Husted & Allen, 2006). Together, these literatures reinforce the conceptual expectation that CEO values may be reflected in the strategic weight given to sustainability in long-term positioning and

investment priorities, without implying that such outcomes are determined by leadership values alone (Hambrick & Mason, 1984; Shahab et al., 2020; Mahran, 2024).

In summary, prior research suggests that CEO values may be reflected in sustainability-related business strategy in MNCs through differences in strategic framing, ambition and time horizon, and long-term strategic positioning and investment direction (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008). When sustainability is framed as strategically material to value creation and risk management, it is more likely to be integrated into core strategic priorities rather than treated as a separate CSR agenda (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014). Sustainability strategy research also highlights that more substantive integration often requires a longer-term temporal orientation and organisational learning, which can conflict with short-term performance pressures (Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016). In the MNC context, these tensions are shaped by complex institutional environments and global value chain responsibilities, which makes leadership-level prioritisation a plausible source of variation in strategic direction (Husted & Allen, 2006; Kolk, 2016; Marano et al., 2024). Recent CEO-focused sustainability research further supports this conceptual expectation by linking executive orientations and attributes to CSR- and sustainability-related outcomes (Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024). Together, these insights provide a coherent literature-based answer to SQ1 at the conceptual level and set the stage for examining firm-level embeddedness indicators in the next chapter.

5 Indicators of firm-level embeddedness in MNC sustainability

In this thesis, firm-level embeddedness refers to the extent to which sustainability has moved from high-level commitments into stable strategic priorities and observable organisational outcomes in multinational corporations. The concept highlights the difference between formal pledges and sustained implementation across a firm's strategy and operations. This distinction is particularly relevant in MNC contexts, where global value chains and divergent institutional environments can make sustainability integration uneven across units and markets (Kolk, 2016; Husted & Allen, 2006; Marano et al., 2024).

From the perspective of the thesis research questions, embeddedness is treated as something that can be inferred through indicators that reflect whether climate- and nature-related priorities have become part of the firm's strategic and operational "normal". The logic is consistent with the broader sustainability strategy literature, which emphasises that substantive integration tends to require long-term commitment and organisational learning, rather than short-term symbolic responses to external pressure (Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016).

5.1 Circular Economy: definition and relevance for embeddedness

A central indicator domain for firm-level embeddedness in this thesis is the Circular Economy (CE). The CE is widely defined as a sustainability-oriented approach to value creation that seeks to reduce waste, keep products and materials in use, and support regenerative resource systems. Influential syntheses describe CE as a framework that combines design, production, use-phase and end-of-life strategies to decouple value creation from virgin resource use and environmental degradation (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017). In an MNC context, CE is analytically useful because it offers a relatively concrete route for assessing whether sustainability has become embedded beyond corporate-level narratives. Company-level CE research has developed structured ways to evaluate circularity through measurable indicator sets and taxonomies that connect strategy and operational practices to outcomes (Saidani et al., 2019; De Pascale et al., 2021; de Oliveira and Oliveira, 2023; Heras-Saizarbitoria et al., 2023; Munonye et al., 2025). These measurement-oriented contributions provide a foundation for the next sections of the chapter, which outline indicator families relevant to climate, nature and circularity-based embeddedness in multinational corporations.

5.2 Indicator families for firm-level embeddedness

To assess whether sustainability has become embedded at the firm level in multinational corporations, this thesis focuses on three complementary families of indicators: climate-related indicators, nature- and biosphere-related indicators, and circularity-related indicators. The logic is that embeddedness becomes more credible when strategic priorities are accompanied by measurable trajectories and coverage-based signals that reflect implementation across operations and global value chains (Eccles, Ioannou & Serafeim, 2014; Kolk, 2016; Husted & Allen, 2006). These indicator families also align with the Planetary Boundaries focus on climate change and biosphere integrity and with the thesis's emphasis on Circular Economy metrics as visible manifestations of sustainability-oriented strategic integration (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013; Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017).

In the climate domain, firm-level embeddedness can be assessed through indicators that capture both ambition and progress relative to science-aligned decarbonisation expectations. One widely used indicator family concerns alignment with science-based emissions targets, which translate global climate goals into company-level pathways and milestones (Krabbe et al., 2015; SBTi, 2024; IPCC, 2021). While setting a target is not on its own evidence of embeddedness, the extent to which targets are operationalised through measurable implementation signals can strengthen the inference that climate priorities are integrated into strategy rather than remaining symbolic.

A second climate-related indicator family relates to trajectory credibility. Here, embeddedness can be inferred from whether firms report consistent and comparable progress over time in emissions reduction and related performance indicators that are linked to strategic priorities and resource allocation (Eccles, Ioannou & Serafeim, 2014; Krabbe et al., 2015). At the MNC level, such trajectories can also be interpreted as signals of the firm's capacity to manage climate-related risks across complex operational footprints and supply networks (Kolk, 2016). For biosphere integrity, the relevant indicators are often coverage- and compliance-oriented, reflecting the fact that biodiversity-related impacts frequently arise in land-use-intensive and commodity-linked global supply chains (Whiteman, Walker & Perego, 2013; TNFD, 2023). In this thesis, a central indicator family involves the scope and credibility of deforestation-free sourcing commitments, understood as the extent to which a firm's key commodities are verified as not linked to deforestation or ecosystem conversion after an agreed cut-off date (Whiteman, Walker & Perego, 2013; TNFD, 2023).

Another indicator family concerns traceability coverage. Traceability-based indicators typically measure the proportion of high-risk commodity volumes that can be linked to specific origins (such as farm, mill or concession), thereby providing a practical signal of whether nature-related priorities are embedded into sourcing governance and supplier management systems (TNFD, 2023). In MNC settings where supply chains are long and multi-tiered, growing traceability coverage can be interpreted as a meaningful signal of internalised strategic priority rather than a purely external-facing pledge (Kolk, 2016; Husted & Allen, 2006). Circular Economy indicators provide a complementary lens for embeddedness because they allow assessment of whether sustainability is becoming visible in product-, process- and system-level outcomes. The CE literature increasingly emphasises the importance of measurable circularity metrics and structured assessment frameworks, which track the extent to which materials and products are retained in productive use and waste and virgin resource demand are reduced (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017; Saidani et al., 2019).

At the firm level, relevant circularity indicators can include measures such as circularity rates, recycled-content percentages, and repair, return or take-back rates, which provide quantifiable signals of whether circular practices are scaling within the firm's strategy and operational model (Saidani et al., 2019; De Pascale et al., 2021). In multinational settings, such indicators can also reflect the extent to which circular priorities are integrated across geographically dispersed product portfolios and supply networks rather than remaining isolated experiments. Across these three indicator families, the core idea is that embeddedness becomes most plausible when indicators point to consistent trajectories and broad organisational coverage, rather than isolated commitments or one-off initiatives. This provides the conceptual basis for interpreting firm-level embeddedness in the MNC context before turning to a brief discussion of indicator interpretation challenges and the synthesis of SQ2.

5.3 Interpreting indicators in MNC contexts

Interpreting firm-level embeddedness indicators is particularly challenging in multinational corporations because sustainability-related impacts and implementation capacity are distributed across geographically dispersed operations and multi-tier global value chains. Differences in regulatory regimes, data availability, supplier transparency and local stakeholder expectations can produce uneven indicator coverage and comparability across business units and markets (Husted & Allen, 2006; Kolk, 2016; TNFD, 2023). In practice, this means that climate trajectories, deforestation-free commitments or circularity metrics may be robust in some regions yet

underdeveloped or poorly measurable in others, which complicates the interpretation of “firm-level” embeddedness in an MNC context (Kolk, 2016; TNFD, 2023).

Despite these limitations, the mentioned indicators remain one of the most credible ways to assess whether sustainability has become embedded beyond corporate narratives. Indicators provide measurable signals that help differentiate symbolic commitments from more substantive integration, particularly when they show consistent trajectories over time and broad coverage across the value chain (Eccles, Ioannou & Serafeim, 2014; Krabbe et al., 2015; SBTi, 2024). Similarly, traceability and deforestation-free sourcing coverage can make biosphere-related priorities assessable in ways that are otherwise difficult to observe in complex supply networks (Whiteman, Walker & Perego, 2013; TNFD, 2023). In the circular economy domain, structured measurement approaches and indicator frameworks strengthen the analytical foundation for assessing whether circular practices are scaling across the organisation (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017; Saidani et al., 2019; De Pascale et al., 2021).

5.4 Climate, nature and circularity indicators of firm-level embeddedness in MNCs

In summary, the literature suggests that firm-level embeddedness in MNCs can be assessed most plausibly through complementary indicator families that capture climate, nature and circularity outcomes and coverage (Eccles, Ioannou & Serafeim, 2014; Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017). Climate-related indicators, including science-based target alignment and credible emissions trajectories, provide measurable signals of whether climate priorities have moved beyond high-level commitments (Krabbe et al., 2015; SBTi, 2024; IPCC, 2021). Nature- and biosphere-related indicators, such as deforestation-free and traceability coverage, offer an increasingly central lens for assessing embeddedness in global commodity supply chains (Whiteman, Walker & Perego, 2013; TNFD, 2023). Circularity metrics provide additional evidence of whether sustainability-oriented priorities are visible in product- and material-level outcomes, supporting assessment of embeddedness beyond climate and land-use domains (Saidani et al., 2019; De Pascale et al., 2021). While indicator interpretation remains complex in multinational settings, consistent trajectories and broad organisational coverage strengthen the inference that sustainability has become embedded in strategy and practice (Husted & Allen, 2006; Kolk, 2016). These insights provide a literature-based foundation for addressing SQ2 and prepare the ground for the final synthesis of how CEO values and strategic priorities may relate to firm-level embeddedness in the concluding chapter.

6 Conclusion

6.1 Answers to the research questions

This thesis set out to examine how CEO values can influence the embedding of sustainability into business strategies in multinational corporations. The analysis combined three main theoretical lenses: Planetary Boundaries as the ecological context that defines the scale and urgency of climate- and biosphere-related risks (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013), upper echelons and responsible leadership research as perspectives on executive-level influence on strategic priorities (Hambrick & Mason, 1984; Maak & Pless, 2006; Waldman & Siegel, 2008), and Circular Economy and indicator frameworks as ways of assessing firm-level embeddedness through observable outcomes (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017; Saidani et al., 2019). On this basis, the thesis reached conceptual answers to the main research question and the two sub-questions.

Regarding the main research question, the thesis concludes that CEO values can influence the embedding of sustainability into business strategies in MNCs primarily indirectly and interpretively, rather than as a simple one-directional cause. Planetary Boundaries for climate change and biosphere integrity highlight that ecological risks have reached levels where firms are expected to align with science-based emissions pathways and to avoid deforestation and ecosystem degradation (Rockström et al., 2009; Steffen et al., 2015; IPCC, 2021; TNFD, 2023). Within this context, the upper echelons perspective suggests that CEOs' values and interpretations matter for how these external pressures are understood and prioritised in strategic decision-making, especially in complex multinational environments (Hambrick & Mason, 1984; Husted & Allen, 2006; Kolk, 2016). Responsible leadership research reinforces this view by emphasising that value-based, stakeholder-oriented leadership can shape how environmental and social responsibilities are framed as part of corporate purpose and long-term resilience (Maak & Pless, 2006; Waldman & Siegel, 2008).

Taken together, the literature supports a conceptual view in which CEO values influence embedding through their effects on strategic framing, ambition and time horizon, and long-term positioning and investment direction. When CEOs attach greater importance to climate- and nature-related responsibilities, sustainability is more likely to be framed as strategically material to value creation and risk management, pursued with a longer-term orientation despite short-term performance pressures, and linked to strategic positioning and investment priorities rather than confined to

separate CSR activities (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014; Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016; Chin, Hambrick & Treviño, 2013; Shahab et al., 2020; Mahran, 2024). In this sense, CEO values do not determine outcomes in isolation, but they can shape how sustainability-related risks and opportunities are interpreted and how strongly they are integrated into MNC business strategies under the constraints of institutional, market and organisational pressures (Husted & Allen, 2006; Kolk, 2016).

Regarding SQ1 (How are CEO values reflected in business strategy with regard to sustainability?) the thesis finds that CEO values are most plausibly reflected in strategy through differences in how sustainability is framed, how ambitious and long-term the orientation is, and how it is positioned within the overall strategic direction of the firm. First, CEOs who place higher value on climate- and nature-related responsibilities are more likely to frame sustainability as a core strategic issue linked to competitiveness, risk management and resilience, which can influence how central these topics become in strategic prioritisation (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014; Waldman & Siegel, 2008; Maak & Pless, 2006). Second, sustainability strategy research highlights that substantive integration often requires a long-term temporal orientation and organisational learning, suggesting that CEO values can influence whether sustainability is approached as incremental adaptation or as a longer-term strategic trajectory in MNCs (Bansal, 2005; Ortiz-de-Mandojana & Bansal, 2016; Chin, Hambrick & Treviño, 2013; Mahran, 2024). Third, CEO values can be reflected in how MNCs position themselves environmentally and in the strategic weight given to sustainability-related investments and business model development over time (Hambrick & Mason, 1984; Sharma et al., 2025; Marano et al., 2024). Across these dimensions, the reflection of CEO values remains mediated by organisational structures, stakeholder expectations and regulatory environments, but the literature supports the view that CEO-level priorities can shape the extent and direction of sustainability-related business strategy in multinational corporations.

Regarding SQ2 – Which indicators suggest that sustainability has been embedded at the firm level? – the thesis concludes that embeddedness in MNCs can be most plausibly inferred from complementary indicator families that together capture climate, nature and circularity outcomes and coverage. In the climate domain, alignment with science-based emissions targets and credible emissions-reduction trajectories provide measurable signals that high-level climate commitments are being translated into implementable pathways at the firm level (Krabbe et al., 2015; SBTi, 2024; IPCC, 2021). For biosphere integrity, deforestation-free commitments and traceability coverage in high-risk commodity supply chains offer increasingly central indicators of whether nature-related

priorities have been embedded into sourcing governance, beyond general policy statements (Whiteman, Walker & Perego, 2013; TNFD, 2023). In the Circular Economy domain, indicators such as circularity rates, recycled-content percentages, and repair, return or take-back rates provide a quantitative lens on whether sustainability is becoming visible in product- and material-level outcomes across the organisation (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017; Saidani et al., 2019; De Pascale et al., 2021). The thesis therefore suggests that firm-level embeddedness is best interpreted not through single metrics, but through patterns of indicators that show consistent trajectories and broad internal and value-chain coverage in these domains, while recognising the limitations of indicator comparability and data availability in complex MNC settings (Husted & Allen, 2006; Kolk, 2016). Conceptually, CEO values and sustainability-related strategic priorities provide a leadership-based explanation for why some firms move further in this direction than others, while climate, nature and circularity indicators provide observable signals of the degree to which sustainability has become embedded at the firm level.

6.2 Theoretical and managerial implications

From a theoretical perspective, the thesis contributes to leadership and corporate sustainability literatures by tightening the conceptual links between ecological context, executive values and firm-level indicators. Planetary Boundaries research has largely been discussed at the global or macro level, while leadership studies have typically focused on ethical or responsible leadership without specifying how ecological limits translate into strategic priorities and measurable outcomes at the firm level (Rockström et al., 2009; Steffen et al., 2015; Maak & Pless, 2006; Waldman & Siegel, 2008). By combining Planetary Boundaries with upper echelons and responsible leadership perspectives, the thesis problematises the relative neglect of ecological constraints in leadership debates and suggests that CEO values should be analysed explicitly in relation to scientifically defined climate- and biosphere-related risks (Alvesson & Sandberg, 2011; Whiteman, Walker & Perego, 2013).

The thesis also adds to Circular Economy and indicator-focused sustainability research by positioning CE and related metrics as one practical lens on embeddedness, rather than as a stand-alone paradigm (Geissdoerfer et al., 2017; Kirchherr, Reike & Hekkert, 2017; Saidani et al., 2019). Conceptually, this helps bridge a gap between leadership-oriented work that emphasises values and sensemaking, and measurement-oriented work that develops firm-level indicator sets. The proposed combination of climate, nature and circularity indicator families links CEO values and sustainability-oriented business strategy to observable outcomes in a way that respects the

complexity of multinational operations while still allowing for comparative assessment (Eccles, Ioannou & Serafeim, 2014; Husted & Allen, 2006; Kolk, 2016). In this sense, the thesis suggests that future theoretical work on sustainability leadership in MNCs should more systematically integrate ecological boundary perspectives and indicator-based embeddedness discussions into analyses of executive influence.

From a managerial perspective, the thesis implies that CEO values matter most when they are translated into strategic choices and indicator systems that are robust enough to guide action across global value chains. For MNC leaders, treating climate- and nature-related risks as strategically material means more than adopting high-level ambitions: it involves framing sustainability as part of long-term competitiveness and resilience, committing to credible decarbonisation and nature-related trajectories, and ensuring that Circular Economy practices are scaled and measured rather than piloted in isolation (Porter & Kramer, 2006; Eccles, Ioannou & Serafeim, 2014; Krabbe et al., 2015; SBTi, 2024; TNFD, 2023). The indicator families discussed in the thesis underscore that embeddedness becomes more plausible when climate targets, deforestation-free and traceability commitments, and circularity metrics show consistent progress and broad coverage, rather than remaining limited to a small subset of activities (Whiteman, Walker & Perego, 2013; Saidani et al., 2019; De Pascale et al., 2021).

For boards and top management teams, the analysis highlights a practical alignment challenge: leadership values, strategic priorities and indicators need to reinforce each other if sustainability is to become genuinely embedded. CEO and board-level discussions about Planetary Boundaries, climate transition risks and biosphere integrity are unlikely to change outcomes unless they are accompanied by strategic decisions about where to compete, what to grow or exit, and which indicators are used to hold the organisation accountable over time (Hambrick & Mason, 1984; Maak & Pless, 2006; Kolk, 2016; Marano et al., 2024). The thesis therefore suggests that MNC leaders who seek to strengthen sustainability embeddedness should pay attention not only to their own values and narratives, but also to the design of strategy processes, target-setting practices and indicator systems that make these values visible in everyday decisions.

6.3 Limitations and suggestions for future research

Like any conceptual, literature-based thesis, this study has several limitations that need to be acknowledged. First, the analysis is based on an interpretive synthesis of existing research rather than on primary empirical data. This means that the proposed links between CEO values, sustainability-related business strategy and indicators of embeddedness remain theoretical

propositions rather than empirically tested relationships (Hambrick & Mason, 1984; Eccles, Ioannou & Serafeim, 2014; Geissdoerfer et al., 2017). The thesis integrates literatures from sustainability strategy, leadership, Planetary Boundaries and the Circular Economy, but it cannot claim to have captured all relevant contributions in these broad and rapidly evolving fields (Rockström et al., 2009; Steffen et al., 2015; Maak & Pless, 2006; Waldman & Siegel, 2008). As a result, both the selection of sources and the emphasis placed on mechanisms inevitably reflect delimitations of scope.

Second, the thesis is explicitly limited to multinational corporations and to two Planetary Boundaries, climate change and biosphere integrity, as its ecological focus (Rockström et al., 2009; Steffen et al., 2015; Whiteman, Walker & Perego, 2013). This choice was motivated by analytical relevance and feasibility in a bachelor thesis, but it narrows the generalisability of the conclusions. The dynamics of CEO influence and embeddedness indicators may differ in smaller firms, state-owned enterprises or organisations operating primarily in domestic markets (Kolk, 2016). Similarly, other Planetary Boundaries and environmental domains, such as freshwater use, biogeochemical flows or chemical pollution, may pose additional strategic challenges that are not captured by the present focus on climate, nature and circularity (Steffen et al., 2015).

Third, the thesis treats CEO values as an analytically central concept but does not operationalise or measure values directly. In practice, values are difficult to observe and to distinguish from related constructs such as personality traits, beliefs or ideological orientations, especially in large, publicly traded multinational corporations (Hambrick & Mason, 1984; Chin, Hambrick & Treviño, 2013; Shahab et al., 2020). The reliance on leadership and upper echelons literature helps justify the focus on CEO-level influence, but it also means that the thesis cannot fully disentangle the effects of CEO values from those of broader top management teams, boards or organisational cultures (Maak & Pless, 2006; Waldman & Siegel, 2008). Similarly, the indicator families proposed for assessing embeddedness are subject to data availability, methodological choices and evolving reporting standards, which may limit comparability across firms, sectors and time periods (Eccles, Ioannou & Serafeim, 2014; TNFD, 2023; SBTi, 2024).

These limitations open several avenues for future research. One promising direction would be to design quantitative studies that link CEO characteristics or value proxies, such as prior career experiences, public statements or ownership stakes, to climate, nature and circularity indicators at the firm level (Eccles, Ioannou & Serafeim, 2014; Chin, Hambrick & Treviño, 2013; Shahab et al., 2020). Such research could test whether the conceptual pathways proposed in this thesis are

reflected in systematic patterns across larger samples of multinational corporations. Another direction would be comparative case studies of multinational firms that differ in their sustainability-related strategic ambition and indicator performance, to explore how CEO values, board dynamics and organisational processes interact in shaping embeddedness over time (Kolk, 2016; Marano et al., 2024).

A third avenue would be to deepen the qualitative understanding of CEO sensemaking in the context of Planetary Boundaries. In-depth interviews or longitudinal studies could examine how CEOs interpret climate-related and biosphere-related risks, how they view their own responsibilities in relation to these risks, and how these interpretations are translated, or fail to translate, into strategic priorities, governance arrangements and indicator systems (Whiteman, Walker & Perego, 2013; Mahran, 2024). Finally, future research could broaden the ecological scope by integrating additional Planetary Boundaries and by exploring how different combinations of environmental pressures influence the way multinational corporations conceptualise sustainability and embeddedness (Steffen et al., 2015). Such work would further refine the theoretical and practical understanding of how CEO values and corporate structures together shape the role of business in operating within the Earth's safe operating space.

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Appendices

Explanation of the use of AI

This appendix provides a transparent account of my use of generative AI during the preparation of this thesis, in line with the reporting requirements of Turku School of Economics. The only AI tool used was OpenAI ChatGPT (model: GPT-5.2 Thinking). It was used between August and December 2025 during the planning, writing, editing, and finalisation of the thesis.

I used AI to support the literature-search process when responding to supervisor comments indicating that certain sections required additional references. In those cases, AI was used to suggest relevant keywords, search terms, and potential research streams connected to the specific claim or topic in question. I then conducted the actual searches myself through library databases, accessed the publications independently, and read the sources before deciding whether they were suitable. Only references that genuinely supported the specific statements made in the thesis were included.

I also used AI to support the formatting and consistency of references and in-text citations. This support was limited to helping align entries with the required referencing style and improving consistency in presentation. I remained fully responsible for the accuracy of all bibliographic details and verified them against the original sources.

In addition, I used AI as language support for text that I had written myself. The tool was used to polish phrasing, improve readability, and strengthen academic tone while preserving my intended meaning. Where appropriate, I used it to simplify overly long sentences and to identify language-level issues such as awkward wording or punctuation.

Finally, I used AI for translation support only at the level of individual words and short phrases (Finnish ↔ English), particularly when selecting academically appropriate equivalents for key terms and headings. I critically assessed all suggestions and adopted only those that matched my own thinking and accurately reflected what I intended to say. I did not input confidential material, personal data, or other non-public content into the AI interface.