Improving companies' impacts on sustainable development: A nexus approach to the SDGS

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Abstract
Companies play a decisive role in achieving the Sustainable Development Goals (SDGs). However, most of the world's sustainable development challenges are interconnected and systemic in their nature. How can companies ensure that their strategies effectively contribute to sustainable development? This interdisciplinary paper draws from the social-ecological systems, corporate sustainability, and sustainability sciences literatures, in order to introduce a nexus approach to corporate sustainability. A nexus approach induces companies to assess and manage their positive and negative interactions with the SDGs—which may arise directly and indirectly—in an integrated manner. Instead of treating SDGs as isolated silos, a nexus approach aims to advance multiple SDGs simultaneously (creating “co-benefits”) while reducing the risk that contributions to one SDG undermine progress on another (avoiding “trade-offs”). Through managing the interactions between the SDGs, a nexus approach to corporate sustainability enables companies to improve their societal and environmental impacts. This nexus approach is a step towards developing a theory of sustainability management that helps companies improve their impacts on sustainable development. Such systemic corporate sustainability strategies are sorely needed to drive progress towards achieving the SDGs and to safeguard companies from “SDG-washing.”

KEYWORDS
corporate sustainability, nexus approach, resilience, social-ecological systems, sustainable development, sustainable development goals (SDGs)

1 | INTRODUCTION

Companies play a decisive role in reaching the Sustainable Development Goals (SDGs). They have unique capabilities that can advance sustainability objectives (Hajer et al., 2015; Lucci, 2012; Oetzel & Doh, 2009; Porter & Kramer, 2011; United Nations Global Compact, 2017), yet companies often also negatively impact sustainable development (Frynas, 2005; Kourula et al., 2017). This makes achieving the SDGs contingent on increasing the private sector's positive and mitigating its negative impacts (e.g., Kolk et al., 2017; Kourula et al., 2017; Mio et al., 2020; van Tulder, 2018; van Zanten & van Tulder, 2018, 2020a, 2020b, 2021; Witte & Dilyard, 2017). This critical role of companies in the SDGs is recognized by the United Nations (UN). The 2030 Agenda of Sustainable Development, the intergovernmental agreement outlining the SDGs, explicitly states: “We acknowledge the diversity of the private sector, ranging from micro-enterprises to cooperatives to multinationals. We call upon all businesses to apply their...”
creativity and innovation to solving sustainable development challenges” (UN, 2015, p. 29).

The good news is that corporate sustainability is becoming a mainstream ambition. Today, over 15,000 companies around the world signed up to the United Nations (UN) Global Compact, the “voluntary initiative based on CEO commitments to implement universal sustainability principles” (United Nations Global Compact, 2020). This is not surprising; increasing evidence indicates that corporate sustainability makes business sense. Corporate sustainability can support financial performance (e.g., Alshehhi et al., 2018), enhance legitimacy (e.g., Brønn & Vidaver-Cohen, 2009; Schaltegger & Hörisch, 2017), reduce reputational risks (e.g., Bebbington et al., 2008), improve relationships with diverse stakeholders (e.g., Freeman et al., 2004), and help identify future business opportunities (e.g., Hajer et al., 2015; Porter & Kramer, 2006, 2011). For instance, the SDGs are estimated to signal US$12 trillion in annual business opportunities (Business & Sustainable Development Commission, 2017).

But, next to serving companies’ bottom lines, do corporate sustainability strategies effectively advance sustainable development objectives? And what strategies might companies employ to improve their impacts on the SDGs?

These questions received much less attention to date. Indeed, eminent theories of corporate sustainability management appear primarily aimed at helping companies extract value from their sustainability activities. This is obviously important. Already in 1991, A. B. Carroll noted that generating profits is among the most important responsibilities of a company because all its other responsibilities depend on it (Carroll, 1991). However, it can be debated whether prominent corporate sustainability management theories effectively help companies improve their impacts on sustainable development. For example, the hugely popular “shared value” strategy induces firms to generate profits from tackling environmental or social challenges (e.g., Porter & Kramer, 2011) but has been criticized for ignoring the complex interactions between economic and social-environmental value creation (e.g., Crane et al., 2014). Stakeholder theory, in turn, calls on companies to meet the needs of a broader range of stakeholders than just their shareholders (e.g., Freeman et al., 2004), yet the theory lacks conceptual clarity as to who (and what, for example, in the case of the natural environment) counts as a stakeholder (e.g., Gibson, 2012), and how stakeholders’ interests can be balanced in a way that optimizes impacts on sustainable development (e.g., Mainardes et al., 2011).

Against this background, it is no surprise that not all sustainability strategies effectively create societal and environmental impacts (Dylick & Muff, 2016). Prior studies paint a worrying picture. Many companies find it challenging to understand how their actions impact specific sustainable development themes (Bansal et al., 2018; Sharma, 2000), how they can become an agent for change in the social-ecological systems in which they are embedded (Valente, 2010; Whitman et al., 2013; Williams et al., 2017), and how they can develop strategies that contribute to different and interlinked dimensions of sustainable development (Hahn et al., 2017; Starik & Kanashiro, 2013; Wijen, 2014). Such findings indicate that companies struggle to increase their positive societal and environmental impacts. Scholars have consequently been called upon to help advance new theories of corporate sustainability that can tackle this complexity and enable companies to better impact sustainable development (e.g., Starik & Kanashiro, 2013; van Tulder et al., 2021; Winn & Pogutz, 2013).

Concerns over whether corporate sustainability is effective in contributing to sustainable development are reflected in companies’ current engagement with the SDGs. Recent surveys suggest that most large companies supportively embraced the SDGs (e.g., PwC, 2018; United Nations Global Compact, 2020; WBCSD & DNV-GL, 2018). However, companies were found to primarily engage with SDGs that aim to “avoid harm” and are based in negative duties, rather than with SDGs that seek to “do good” and represent positive duties (van Zanten & van Tulder, 2018). Although avoiding harm—or limiting negative externalities—is necessary for sustainable development, it is insufficient for achieving the objectives that the SDGs represent. Moreover, few companies have been found to integrate the goals into their core strategy. Rather, the SDGs are primarily—and superficially—adopted by CSR or communication departments (e.g., PwC, 2018). And most companies cherry-pick relatively easy and isolated SDGs to report on (e.g., Pizzi et al., 2021), which might legitimize their contributions to society (cf., Pizzi et al., 2021) yet does little to improve companies’ future impacts (e.g., van der Waal & Thijsens, 2020). While such findings hint at “SDG-washing,” this is not necessarily comparable to greenwashing. Whereas the latter often is interpreted as normatively flawed motivations for real action, the former may signal a more strategic problem whereby managers may simply find hard to operationalize corporate strategies for the SDGs. This is called the intention-realization gap ( Mintzberg et al., 2009) and links closely to the promise-performance gap in the CSR discourse—that is, a mismatch between what is said and achieved (e.g., van de Ven, 2008). Closing this gap requires more sophisticated management models that appreciate the complexity of sustainable development, and that push for collective action and partnerships in which all societal sectors—that is, the public, private, and civil society—work together to limit negative and optimize positive impacts (van Tulder, 2018). Hence, the key question is no longer “why” companies should adopt sustainability strategies, but “how” they can make them effective in advancing SDGs (cf. van Tulder et al., 2021).

This paper aims to contribute to developing a theory of sustainability management that enables companies to improve their impacts on sustainable development, as conceptualized by the SDGs. We do so by introducing a nexus approach to corporate sustainability. A nexus approach gained prominence in the sustainable development literature for its potential to (more) efficiently generate sustainable development impacts (e.g., Bleischwitz et al., 2018; Boas et al., 2016; Liu et al., 2018; Weitz et al., 2014). A nexus approach fulfills this potential by examining and managing the interlinkages between sustainable development dimensions, rather than treating different sustainability topics like the SDGs as isolated silos. Managing the linkages between the SDGs allows for driving multiple SDGs at the same
time (“co-benefits”) while reducing the risk that contributions to one SDG undermine progress on another (“trade-offs”). Since most of the world’s sustainable development challenges are interconnected and therefore systemic in their nature (Chapin et al., 2009; Folke et al., 2016), we ground our theorizing in the social-ecological systems literature. This literature suggests that it is complex to pave desirable sustainable development pathways. Sustainable development impacts follow unpredictable, nonlinear, processes. Nevertheless, actors within social-ecological systems can contribute to sustainable development by managing the interactions between the system’s components in ways that improve the system’s resilience: its ability to adapt to, and transform with, change in order to improve human well-being and environmental sustainability (Folke et al., 2016; Reyers et al., 2018). Nexus-based corporate sustainability strategies help manage the systemic interconnectedness of sustainable development challenges and thereby improve the resilience of the systems in which companies operate.

Our theoretical and practical contributions lie in elucidating how companies influence the sustainable development pathways of social-ecological systems. Consequently, we contribute actionable insights, rooted in interdisciplinary literatures, that companies can use to chart and improve their impacts on sustainable development. These contributions are particularly timely in light of the slow progress countries are making towards achieving the SDGs (Sachs et al., 2019; UN, 2019). The trends are bleak: inequality is widening, the pace of poverty reduction is slowing, hunger is on the rise, our natural environment is deteriorating at an alarming rate, climate change threatens achievement of all SDGs (UN, 2019), and the Covid-19 pandemic that has been rampaging the world since late 2019 not only is one of the worst health crises in recent history, its consequences also have devastating economic and social costs (e.g., van Zanten & van Tulder, 2020a). Despite these trends, the SDGs have gained a lot of traction, also in the private sector. We intend this paper to help translate this momentum into positive impact.

This paper first clarifies the notions of corporate sustainability and sustainable development (Section 2). It argues that sustainable development is the objective of corporate sustainability. This raises an important question: how do sustainable development outcomes materialize? In Section 3, we introduce a social-ecological systems perspective that helps answer this question. Because sustainable development challenges share complex interactions, strategies that effectively advance sustainable development must be based in systems thinking. In Section 4, we therefore investigate how companies interact with the SDGs. Corporate interactions with these goals influence the resilience of the social-ecological systems in which companies operate. Consequently, to improve their impacts on sustainable development companies need to devise systemic corporate sustainability strategies that manage these interactions in an integrated manner. To help achieve this objective, Section 5 introduces a nexus approach to corporate sustainability. Management implications are discussed in Section 6 while Section 7 offers concluding remarks.

This paper integrates concepts and terminology from different disciplines. Table 1 provides a glossary of key terminology.

| Key terms                                      |
|------------------------------------------------|
| **Adaptive capacity:** capacity of human actors, both individuals and groups, to respond to, create, and shape variability and change in the state of the [social-ecological] system (Chapin et al., 2009, p. 341). |
| **Adaptive cycles:** cycles of [social-ecological] system disruption and renewal (Chapin et al., 2009, p. 341). |
| **Corporate sustainability:** a bundle of activities fully integrated into a firm’s overall strategy that contribute effectively to the welfare of current and future generations through protecting and enhancing the resilience of the biosphere, social equity and cohesion, and economic prosperity (Meuer et al., 2019, p. 15). |
| **Nexus approach:** examination and management of interlinkages across sustainable development areas, particularly synergies and trade-offs, in an integrated manner to focus on system efficiency, rather than improvements in isolated areas (e.g., Bleischwitz et al., 2018; Hoff, 2011). |
| **Resilience:** persistence, adaptability, and transformability of social-ecological systems (Folke, 2016), thus indicating the capacity of a social-ecological system to sustain human well-being in the face of change, both by buffering shocks but also through adapting or transforming in response to change (Biggs et al., 2015). |
| **Social-ecological systems:** complex systems that include social (e.g., culture and institutions), economic (e.g., technologies and preferences) and environmental and ecological (e.g., climate and habitat) components that interact in multiple ways, including with both positive and negative feedbacks (Grafton et al., 2019, p. 909). |
| **Sustainable Development Goals (SDGs):** 17 goals with 169 underlying targets adopted by the United Nations in 2015 that are to be achieved by 2030. Understood in this paper as a set of politically-negotiated thresholds outlining the desirable and meaningful life support zone of social-ecological systems (Leach et al., 2018). |
| **Sustainable development:** development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). |

2 | SUSTAINABLE DEVELOPMENT: THE OBJECTIVE OF CORPORATE SUSTAINABILITY

Corporate sustainability is an ambiguous concept. Many have tried to create an overarching, one-size-fits-all definition. Yet such a universal conceptualization of corporate sustainability is argued to be unreasonable, as an understanding of corporate sustainability should be matched to companies’ contexts and their strategies (van Marrewijk, 2003). A recent review of 33 definitions of corporate sustainability confirms that scholars interpret the concept in various ways. This may range from lenient—“a firm’s attempt to respond to environmental and social issues”—to stringent—“a bundle of activities fully integrated into a firm’s overall strategy that contributes effectively to the welfare of current and future generations through protecting and enhancing the resilience of the biosphere, social equity and cohesion, and economic prosperity” (Meuer et al., 2019, p. 15). The common denominator in these discussions is that corporate sustainability addresses the ways in which companies engage with, and contribute to, sustainable development (e.g., Landrum, 2017;
Sustainable development, in turn, is commonly understood as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development [WCED], 1987). The concept integrates economic, social, environmental, and intergenerational dimensions (WCED, 1987). Sustainable development is not an end state that can be achieved, but a “moving target” that is continuously changing (Gaziulusoy et al., 2013). Hence, the concept of sustainable development emphasizes that human well-being and environmental sustainability are influenced by one another, while being integrated across space and time (WCED, 1987). Yet similar to corporate sustainability, sustainable development is a contested topic. Different people have different interpretations of what sustainable development entails and what this moving target ought to be.

The SDGs help clarify the objectives of sustainable development. The SDGs specify 17 distinct goals with 169 detailed underlying targets that are the dominant part of the world’s sustainable development agenda (Pahl-Wostl, 2017; Pattberg & Widerberg, 2016; Sachs, 2015; UN, 2015). Having been unanimously adopted by all UN member states as voluntary objectives to be achieved by 2030 (Bowen et al., 2017; Stevens & Kanie, 2016), the SDGs are “soft” international law (Persson et al., 2016) that comprises a novel form of global “hybrid” governance through goal setting and stakeholder engagement (Biermann et al., 2017). These characteristics allow the SDGs to be understood as the leading global frame of sustainable development (e.g., Sachs, 2015), which also applies to the context of companies (Sachs & Sachs, 2021; van Zanten & van Tulder, 2018).

But advancing sustainable development is challenging. Most sustainable development challenges are pervasive and lack silver bullets. The complex, cross-scale, and intertemporal interconnections between the economic, social and environmental dimensions of sustainable development cause most sustainable development challenges to be systemic (Chapin et al., 2009; Folke et al., 2016; Reyers et al., 2018). This complexity challenge plagues the SDGs. Lacking quick fixes, reaching the SDGs requires fixing systems instead of fighting symptoms (Sachs et al., 2019; Waddock, 2020; Waddock et al., 2015).

However, although companies widely claim to have embraced the SDGs, their contributions may not deliver the systemic solutions that sustainable development requires. A major shortcoming is that companies appear to treat the SDGs as isolated silos instead of as an interconnected whole. For instance, to date, companies have been prioritizing SDGs focused on economic growth and industrialization, while they least prioritize SDGs focused on ecosystems, both on land and below water (PwC, 2018; WBCSD & DNV-GL, 2018). Whereas the economic activities that companies undertake indeed frequently positively contribute to growth and industrialization, these positive effects also typically coincide with negative impacts on SDGs that are focused on the natural environment or by causing pollution that harms human health (van Zanten & van Tulder, 2020b, 2021). If companies fail to account for these interactions, there is a clear risk that their corporate sustainability strategies fall short of advancing the SDGs.

Thus, in order for corporate sustainability to (more) effectively contribute to sustainable development, there is a need to better understand how sustainable development outcomes are shaped. In the next section, we argue that a social-ecological systems (SES) perspective helps create this understanding.

3 | A SOCIAL-ECOLOGICAL SYSTEMS PERSPECTIVE ON SUSTAINABLE DEVELOPMENT AND CORPORATE SUSTAINABILITY

3.1 | Advancing sustainable development is complex: A systems perspective

An SES perspective helps understand how sustainable development outcomes are achieved. An SES is an “integrated system of ecosystems and human society with reciprocal feedbacks and interdependence” (Folke et al., 2010, p. 20). As Ostrom (2009) explains, the delineation of an SES’s boundaries depends on the type of research question that is addressed. For instance, farms, forests, and factories, but also cities, countries, and the climate can be examples of SESs with different types of boundaries.

Any SES consists of different interconnected components. Whereas environmental components include resource systems (such as a specified territory with forested areas, biodiversity, and water systems) and resource units (e.g., the trees, animals, plants and water resources in the resource system), the SES’s social components include groups of users (e.g., individuals, companies, and public organizations) and the governance systems that they create (e.g., formal and informal rules and regulations applying to the SES) (Ostrom, 2009). An SES perspective thereby not only emphasizes that people, communities, economies, societies, and cultures are embedded in, dependent on, and shaped by, resources and services provided by ecosystems, but also that social activities shape ecosystems (Chapin et al., 2009; Folke et al., 2016, 2011).

This implies that SES evolve over time. The ways in which SES change may be conducive to, but could also deteriorate, sustainable development objectives. An SES perspective on sustainable development assesses the interconnections between human activities and the environment in light of the sustainability of biophysical life support systems (Leach et al., 2018). These interconnections thereby provide a systems lens that helps understand the processes that lead to improvements in, or deterioration of, sustainable development outcomes (Chapin et al., 2009; Ostrom, 2009). So how do SES change and what does that imply for sustainable development?

Generally, SES change along adaptive cycles. Adaptive cycles generally cover four phases: growth, conservation, release, and renewal (Gunderson & Holling, 2002). An SES’s initial growth phase is marked by the exploitation of resources, followed by a stable
conservation period in which capital is accumulated. This may make the system more rigid, leading to collapse and release of the system's energies. The release phase is followed by reorganization, in which the SES components reassemble, which may lead to a reset to an earlier state of the system, but could also result in a shift towards a new regime. A return to the old, or a transformation to the new, could be desirable, but may also be undesirable, for sustainable development. Yet this outcome is not solely determined by the adaptive cycle of one individual SES. Feedbacks between SES across space and time must also be accounted for.

Indeed, SES adaptive cycles are nested across geospatial and temporal scales. SES tend to consist of mosaics of subsystems that are at different phases of their adaptive cycles (Chapin et al., 2009). Larger scale systems, like the climate or the financial system, change slowly, whereas smaller scale systems, like a coral reef or an individual factory, do so more quickly (e.g., Chapin et al., 2009; Gunderson & Holling, 2002). Interactions between the adaptive cycles of different SES can be top-down, when processes at larger scales influence SES at lower scales, but also bottom-up, as smaller scale processes impact SES at larger scales (Allen et al., 2014). This implies that an SES' ability to meet sustainable development outcomes is influenced by interactions and feedbacks among the adaptive cycles of the SES various subsystems at different spatial and temporal scales (Chapin et al., 2009).

However, adaptive cycles' cross-scale and intertemporal interactions and feedbacks, their phases of stability and instability, and therefore their influence on the SES' ability to meet sustainable development objectives, are not always predictable. Not all systems always progress sequentially through all four phases of the adaptive cycle (e.g., Walker et al., 2004). This unpredictability renders most SES to be complex adaptive systems (Levin et al., 2013). A system's components respond to larger emerging patterns that influence the system, triggering changes in the properties of the whole complex adaptive system (Lansing, 2003; Levin et al., 2013). So the system adjusts in response to changes in its components' interactions (Chapin et al., 2009). Thresholds and tipping points, once passed, may suddenly spark rapid, large-scale and undesired changes to the entire SES (Folke et al., 2011; Reyers et al., 2018). For example, the reduction of natural carbon sinks, like rainforests, at a smaller geospatial scale may destabilize the climate system at a larger scale, and drive it closer to other thresholds, such as the loss of Greenland's ice cover (e.g., Steffen et al., 2015). This nonlinear nature of SES makes it hard to plan for improvements in sustainable development outcomes (Folke et al., 2016). The concept of resilience helps tackle this complexity.

3.2 Resilience: Advancing sustainable development in complex systems

Resilience thinking helps manage sustainable development outcomes in an uncertain, nonlinear, and unpredictable world. Resilience influences whether an SES changes to alternate pathways are desirable or undesirable for sustainable development (Folke, 2016). If an SES is resilient, it can cope with potential uncertainties and adapt or transform if needed, so as to maintain on a desirable sustainable development pathway (Folke et al., 2010). Resilient SES thereby have the capacity to sustain the fulfilment of human well-being while safeguarding ecological sustainability in the face of change, by persisting and adapting or transforming in response to change (Biggs et al., 2015).

Resilience comprises three central elements that interact across scales: resilience, adaptability, and transformability (Folke et al., 2010). Through these three elements, resilience indicates the capacity to absorb or adapt to change, but also the ability to transform with change by creating a completely new system (Chapin et al., 2009; Folke, 2016; Folke et al., 2010; Reyers et al., 2018; Walker et al., 2004). Resilience thinking is therefore not about maintaining the status quo, recovery, or resisting change. Instead, resilience thinking is dynamic, proactive and forward-looking (Folke, 2016). Resilience emphasizes the ability to support sustainable futures through evolving or transforming with change (Reyers et al., 2018).

The actors within an SES can support or even increase the system's resilience. Their ability to do so is indicated by the concept of “adaptive capacity.” Adaptive capacity influences the resilience of an SES and can be understood as actors’ capacity to learn from experience, gather knowledge and respond to changing conditions (Folke et al., 2010) in order to shape change in the state of the system (Chapin et al., 2009). Hence, actors can use their adaptive capacity to both help the system adapt and transform. In this sense, whereas adaptation comprises the actions of agents within SES that sustain, innovate, and improve development on current pathways, transformation involves shifting development into other emergent, or even new, pathways (Folke, 2016; Folke et al., 2016; Walker et al., 2004).

Promoting sustainable development through resilience, that is, adapting and transforming with change, can be achieved by managing the interactions within and between SES (Chapin et al., 2009; Fischer et al., 2015; Folke et al., 2016; Ostrom, 2009; Reyers et al., 2018). In changing the system’s dynamics—by reconfiguring SES’ social-ecological interactions that create sustainable development problems—actors can enhance SES’ resilience and thereby advance desirable sustainable development pathways (Reyers et al., 2018). Thus, resilience thinking frames sustainable development in the context of understanding and governing SES’ complex social-ecological dynamics that influence human well-being as part of a dynamic biosphere (Folke, 2016).

However, determining if the resilience of an SES is on a desirable or undesirable sustainable development pathway is inherently value-laden (Folke, 2016). Determining whether the resilience of an SES is desirable or undesirable for sustainable development—in particular when we apply this to the strategies of individual actors—thus involves a degree of subjectivity (e.g., Folke, 2016; Leach et al., 2018). This is where the SDGs come in. As the leading intergovernmental frame of sustainable development, the SDGs help reduce this subjectivity. The globally relevant, politically negotiated, delineation of thresholds, specified in a collection of 17 goals and 169 targets, lead
the SDGs to help specify whether systems’ sustainable development pathways are desirable (e.g., Leach et al., 2018). The SDGs aim to simultaneously promote ecological sustainability, social inclusion and equality, and sustainable economic development. They thereby help reduce the likelihood of natural and manmade hazards, while simultaneously improving the ability of actors within SES to cope with, adapt to, or transform to more sustainable development pathways. From an SES perspective, contributing to the SDGs promotes resilience, thus paving desirable sustainable development pathways.

3.3 Systemic corporate sustainability strategies

The macro-level perspective on better understanding how sustainable development outcomes materialize (Sections 3.1 and 3.2) is also relevant for assessing the impact of corporate sustainability strategies at the micro-level of analysis.

Companies are agents in SES. One company can be embedded in multiple SES, at varying geospatial scales, at the same time. By interacting with systems’ social-ecological components, like the SDGs, companies influence the resilience of systems and thus their sustainable development pathways. While it is acknowledged that it is very difficult for individual companies to change entire systems by themselves (Loorbach et al., 2010; Waddock, 2020), companies do have adaptive capacity. This means that companies can manage their interactions with an SES’s components to influence the system’s adaptive cycle and thereby its resilience (e.g., Williams et al., 2019). In fact, the management actions of agents—like companies—are a crucial part of improving SES resilience (Grafton et al., 2019). To illustrate, research has shown that only a few companies control major proportions of marine biodiversity (Blasiak et al., 2018), a handful of firms dominate global agricultural production (Renwick et al., 2012), and only 100 companies have been the source of over 70% of global greenhouse gas emissions since 1988 (Carbon Disclosure Project, 2017). Hence, major companies exert major influences on the resilience of SESS. The way such companies are managed matters for sustainable development (e.g., Keys et al., 2019).

The relevance of a systems perspective on corporate sustainability has long been noted. Already since the mid-1990s scholars argued that, in order to positively impact sustainable development, corporate sustainability strategies must be based on systems thinking (e.g., Gladwin et al., 1995; King, 1995; Korhonen & Seager, 2008; Shrivastava, 1994; Starik & Rands, 1995). These insights have more recently found resonance among (some) business leaders. In 2014, former Unilever CEO Paul Polman proclaimed: “I truly believe that future leaders will be systems thinkers. It is inconceivable that anyone will successfully steer companies, or countries, through our volatile world without understanding the interdependencies between the systems on which we depend” (Polman, 2014). In a June 2020 podcast on the Covid-19 pandemic Polman pondered: “Will this crisis help us accelerate? The pressures are increasingly apparent to businesses. We need to start to re-ignite the global economy, but we need to do that in a different way than we came from. The reason why we are in this situation is not forgotten by many. The big lesson here are the links here between biodiversity, health and climate change. We should listen more to science and the importance of fact based decisions.” (Polman, 2020).

But, with the notable exceptions of Valente (2010), Williams et al. (2019), and Whiteman et al. (2013), few studies have examined how companies can ground their corporate sustainability strategies in systems thinking, and how companies influence SESS’ resilience (Linnenluecke, 2017; Williams et al., 2017). And although some corporate leaders have clearly understood the importance of systems thinking to corporate sustainability, the adoption of systemic corporate sustainability strategies in practice remains elusive (e.g., Bansal et al., 2018; Haffar & Searcy, 2018; Schad & Bansal, 2018; Whiteman et al., 2013; Williams et al., 2017).

How can companies create systemic corporate sustainability strategies that effectively contribute to sustainable development, by improving the resilience of the SES in which they operate? In the next section, we argue that a company’s interactions with the social-ecological components of the systems in which they operate can serve as a starting point. We view these interactions through the lens of the SDGs.

4 COMPANIES’ INTERACTIONS WITH SDGS: A STARTING POINT FOR SYSTEMIC CORPORATE SUSTAINABILITY STRATEGIES

4.1 Sustainable development requires understanding how the SDGs interact

Because it would promote the resilience of the SES in which they operate, companies can contribute to sustainable development by advancing the SDGs. Unfortunately, this is not as simple as just advancing each of the individual SDGs. An SES perspective suggests that “sustainability outcomes are more than the sum of the ecological, economic, and the social parts of a system and are in fact also the result of complex interactions, feedbacks, and dynamics within and between systems” (Selomane et al., 2019, p. 2). These complex interactions indicate that the SDGs are not just 17 distinct goals and 169 sub-targets. Rather, they are deeply entwined, which causes them to signal systemic sustainable development challenges (cf. Chapin et al., 2009; Folke et al., 2016; Reyers et al., 2018).

The 2030 Agenda for Sustainable Development acknowledges the existence of interactions among the SDGs. It notes: “the SDGs are integrated and indivisible and balance the three dimensions of sustainable development” (UN, 2015, p. 2). This indivisibility is important as it may help ensure that “the short-term achievement of improved human well-being does not occur at the cost of undermining well-being in the long term by damaging the underpinning social and environmental capital on which our global life support system depends” (Stafford-Smith et al., 2017, p. 912). The interactions between the SDGs thus cause feedback loops that cross space and time. Effectively contributing to the SDGs consequently requires actors to manage the
complex interconnections between the SDGs and their sub-targets (e.g., Leach et al., 2018; Nilsson et al., 2016; 2018). But the SDGs face a major drawback: limited attention is paid to operationalizing their interdependencies (Nilsson et al., 2016; Stafford-Smith et al., 2017). The various cross-references between the SDGs’ targets in the 2030 Agenda (e.g., Le Blanc, 2015) are argued to be weak and rarely structural or transparent, causing many SDGs to remain primarily sectoral in their basic formulation (Boas et al., 2016). Consequently, the politically defined interactions in the SDG Agenda do not adequately reflect the SDGs’ natural and socio-economic relations (International Council for Science and International Social Science Council, 2015). This causes agents—including companies—to have incomplete guidance in addressing the SDGs’ complex interdependencies (Costanza et al., 2016; Le Blanc, 2015). To guide actions towards achieving the SDGs, the natural and social interactions between the goals need to be better understood (Lu et al., 2015).

Emerging efforts to assess interactions among the SDGs can be classified into two groups. One method is quantitative and uses public statistics to unearth correlations between the goals. Most such studies depart from a single SDG to explore linkages with other SDGs. Few research projects have assessed interactions across all goals (Weitz et al., 2018) but those that do help reveal which SDGs form synergies, and which are trade-offs in specific geographic locations (e.g., Allen et al., 2019; El-Maghribi et al., 2018).

Another method is qualitative and maps which SDG interactions are positive (co-benefits) and which interactions are negative (trade-offs). An influential framework was created by Nilsson et al. (2016). They propose a 7-point scale to rate SDG interactions and thereby highlight priorities for policy-making. Positive interactions occur when SDGs are enabling (+1), when they are reinforcing (+2), or when they are indivisible (+3). Neutral, or consistent, interactions describe a situation in which contributions towards one goal do not yield significant positive or negative interactions with another goal (0). Finally, negative interactions arise when SDGs are constraining (−1), counteracting (−2), or cancelling (−3) (Nilsson et al., 2016). To illustrate the argumentation that can be based on this framework: eliminating discriminatory laws (SDG 10) is indivisible from promoting gender equality (SDG 5); eradicating hunger (SDG 2) reinforces good health and well-being (SDG 3) and it enables pupils to perform well in schools (SDG 4), although food production can constrain water sustainability (SDG 6) and counteracts climate action (SDG 13); and although full transparency (SDG target 16.6) is consistent with access to affordable and clean energy (SDG 7), it cancels national security goals (SDG target 16.1) (see also Nilsson et al., 2016). The model can lead to testable hypotheses in particular at the macro-economic level. The process of mapping interactions can be informed by scientific literature and expert opinions. Assumptions and the inclusion of context variables are a necessary feature of using this framework, which calls for a critical review of the assessment process and transparent communications (Nilsson et al., 2018; Weitz et al., 2018) for instance use the framework to assess interactions among 34 SDG targets in the context of Sweden, explaining in detail how they assigned scores, while van Zanten and van Tulder (2021) recently used the framework to analyze the interactions between 67 types of activities that companies may undertake and 59 SDG targets.

Such science-informed analyses of interactions across SDG domains supports more coherent and effective decision-making and facilitates monitoring of progress (Griggs et al., 2017, p. 7). More broadly, these cross SDG interactions underscore the critical notion that because it is hardly possible to achieve individual SDGs independently of others (Bhaduri et al., 2016), the “true transformative potential of the 2030 Agenda can be realized only through a systemic approach that helps identify and manage trade-offs while maximizing co-benefits” (Independent Group of Scientists appointed by the Secretary-General, 2019, p. 20).

4.2 Interactions between companies and the SDGs

Whereas an understanding of the interactions between the SDGs is critical for advancing sustainable development in general, an understanding of companies’ interactions with the SDGs helps to create systemic corporate sustainability strategies as well as provide insights in the way companies can adopt strategies to optimize their systemic contribution to the SDGs.

Companies interact with the SDGs through (i) the processes that companies engage in and (ii) the goods and/or services that they subsequently create. We adapt Nilsson et al.’s (2016) framework to conceptualize these interactions (Table 2). This builds on the discussion and empirical insights on the interactions between companies and SDG targets as reported in van Zanten and van Tulder (2020b, 2021). In addition to these types of interactions, we distinguish between two degrees of interactions between companies and the SDGs. First, interactions arising from a company’s processes and the resulting goods/services that it creates are direct SDG interactions. Second, these direct SDG interactions cause indirect SDG interactions because the SDGs themselves are interconnected (Section 4.1). When a company positively/negatively interacts with an SDG, this goal can then advance or hamper progress on another SDG. Such indirect SDG interactions indicate “feedback loops” since they denote secondary effects that follow direct effects between two variables (Williams et al., 2017).

Companies are likely to have multiple interactions with the SDGs that may present complex dilemmas. For instance, a tobacco company may contribute to gender equality (SDG 5) through its processes, while its products harm health and well-being (SDG 3). Or consider Unilever. While the nutritious food products that it sells may contribute to fighting hunger (SDG 2), the company reports that around 44% of its portfolio has relatively lower nutritional value (Unilever, 2020), thus reducing, or even harming, that same goal. Furthermore, because SEEs are nested across space and time, companies’ interactions with the SDGs—in particular multinational enterprises (van Tulder, 2018; van Zanten & van Tulder, 2018)—can cross spatial and temporal scales. Companies may interact with SDGs in one SEE, which could
Seven types of interactions between companies and the SDGs

| Type | Interaction | Definition | Explanation | Example |
|------|-------------|------------|-------------|---------|
| Positive | +3 | Indivisible | Processes or goods/services are inextricably linked to the achievement of an SDG | Health care services are indivisible from the objective of achieving universal health coverage (SDG 3.8) |
| | +2 | Reinforcing | Processes or goods/services aid the achievement of an SDG | Solar panels reinforce the share of renewable energy in the global energy mix (SDG 7.2) |
| | +1 | Enabling | Processes or goods/services create conditions that enable achievement of an SDG | Insurance services enable the resilience of the poor to natural and manmade shocks (SDG 1.5) |
| Neutral | 0 | Consistent | Processes or goods/services do not significantly - positively or negatively - interact with an SDG | Crop production is consistent with reducing violence (SDG 16.1) |
| Negative | -1 | Constraining | Processes or goods/services limit options to achieve an SDG | Housing construction limits options for improving people’s access to green spaces (SDG 11.7) |
| | -2 | Counteracting | Processes or goods/services clash with an SDG | Conventional, non-electric, cars counteract with reducing deaths and illnesses from air pollution (SDG 3.9) |
| | -3 | Cancelling | Processes or goods/services make it impossible to achieve an SDG | Coal production cancels the objective of climate change mitigation in line with the Paris agreement (SDG 13.2) |

Adapted from Nilsson et al. (2016).

consequently impact other SESs in different locations, as well as generate future impacts. For example, a logging company may chop down a forest in order to produce timber products. A consequence of this deforestation may be a reduction in biodiversity (counteracting SDG 15.5), which could reduce the pollination services provided by insects, thereby constraining the food that is produced by farmers in nearby, related SESs, today and in the future (SDGs 2.3, 2.4).

This particular conceptualization of companies’ interactions with the SDGs can be used as a starting point for developing systemic corporate sustainability strategies (cf. King, 1995; Shrivastava, 1994). A company’s positive (+1 to +3) interactions support the resilience of SES and thereby promote sustainable development. A company’s negative interactions (−1 to −3) cause it to exert a negative impact on the resilience of SES and may consequently erode sustainable development pathways (cf. Leach et al., 2018). Neutral (0) interactions would not significantly influence SES resilience. It is important to remember that although assessing these interactions may be challenging, it merely exposes already existing effects that are typically overlooked (Weitz et al., 2014).

### 4.3 | A framework for linking corporate SDG interactions with systems’ resilience

Building on this conceptualization of how companies interact with the SDGs, Figure 1 introduces a framework that analyzes how a company’s positive and negative, and direct and indirect, interactions with the SDGs (Table 2) influence the resilience of the SES that they are embedded in, which themselves are interconnected across space and time.

In the framework, a company’s direct SDG interactions cause indirect SDG interactions. A company’s positive interactions promote the resilience of SES and thus help advance sustainable development. In contrast, negative SDG interactions may erode SES’s resilience and thus counteract sustainable development. And these interactions may affect SESs of different scales, ranging from small to large, which may be linked to one another, and whose adaptive cycles are nested across space.

We will explain the framework and illustrate each segment using Royal Dutch Shell plc. as an example. This Anglo-Dutch energy company is responsible for providing 1.5% of the world’s oil and 3% of natural gas (Shell, 2019). In line with our illustrative purposes, we only focus on Shell’s most obvious SDG interactions. In this example, we mapped Shell’s interactions with the SDGs using our own judgment, with both authors cross-checking the assigned scores. Relevant literature is cited to justify some of the linkages made.

#### 4.3.1 | Direct SDG interactions (arrows 1–2)

Any company assessed using this framework can positively interact with the SDGs and their targets (arrow 1). Yet the company may also have negative interactions that adversely impact the SDGs (arrow 2).

For example, Shell pumps up oil and gas and distributes the related energy to clients. This reinforces (+2) the objective of helping “ensure universal access to affordable, reliable, and modern energy services” (SDG 7.1). These activities similarly reinforce (+2) the creation of formal work opportunities (SDG 8.3 and 8.5). But the company also has negative SDG interactions. Its activities constrain (−1) the sustainable use of natural resources (SDG 12.2) as well as the environmentally sustainable management of chemicals and waste (SDG 12.4) during the extraction process (e.g., van Zanten & van Tulder, 2020b). Moreover, Shell’s current and planned petroleum and gas extraction is incompatible with the Paris Agreement on climate change (Carbon
Tracker, 2019), which seeks to limit global warming to 1.5 degrees above pre-industrial levels, thereby cancelling (−3) SDG target 13.2. Finally, oil and gas reclamation uses land and generates pollution that counteracts (−2) the conservation of water- and land-based ecosystems (SDGs 14 and 15—various targets).

4.3.2 | Indirect SDG interactions (arrows 3–6)

Because the SDGs are interconnected, SDG improvements that follow from a company’s direct positive SDG interactions may spark indirect positive SDG interactions (arrow 3). So too can its direct negative SDG interactions lead to indirect negative SDG interactions (arrow 4). Indirect negative SDG interactions may furthermore follow from direct and/or indirect positive SDG interactions (arrow 5), whereas cases can be thought of in which a direct and/or indirect negative SDG interaction leads to indirect positive SDG interactions (arrow 6).

In our example of Shell, the company’s energy provision enables (+1) industrialization (SDG 9.2), as well as people’s mobility (SDG 11.2). Industrialization and mobility, in turn, enable (+1) the further creation of jobs and incomes (SDG 8—various targets). Nevertheless, the burning of non-renewable energy sources is a critical contributor to climate change, similarly cancelling (−3) climate action (SDG 13.2). Climate change consequently further counteracts (−2) the sustainability of marine- and land-based ecosystems (SDGs 14 and 15—various targets), and constrains (−1) the resilience of communities (SDG 11.5), and particularly of the poor (SDG 1.5) (e.g., Intergovernmental Panel on Climate Change, 2018).

4.3.3 | Resilience (arrows 7–8)

The company’s direct and indirect SDG interactions influence the resilience of the SES in which it is embedded (arrows 7 and 8). Positive interactions support, while negative interactions harm, SES resilience. And a company may simultaneously influence the resilience of multiple SESs, that are nested across scales, and that may be related to other SESs. Note that the framework hereby assesses a company’s influences on—not ultimate changes in—social-ecological outcomes, since these outcomes are not only shaped by the individual company within the framework’s scope. Rather, these outcomes follow from the cumulative and interconnected activities of all agents within a system.

Shell’s collection of SDG interactions likewise influences the resilience of SES at different, geospatial scales. What is clear is that Shell causes confounding influences on SES’ resilience. On the one hand, it supports socio-economic development in the numerous SES in which it operates by promoting employment, providing incomes, and supporting industrialization and mobility. On the other hand, Shell’s adverse impacts on ecosystems and, most significantly, the incompatibility of its energy production with the Paris Agreement, harm the resilience of SES. This applies at the small-scale SESs’ in which it extracts energy, at the large-scale SES of the global climate, and at the small- and intermediary-scale SESs that bear the adverse consequences of climate change. This leads the company to negatively, and significantly, impact various SDGs, thus undermining the resilience of various SESs, and ultimately eroding sustainable development.
4.3.4 | Feedbacks between SESs (arrow 9)

The adaptive cycles of SES are nested across geospatial scales. Smaller scale SESs influence the adaptive cycles of larger scale SESs (bottom-up), while larger scale SESs influence the cycles of smaller scale SESs (top-down). Arrow 9 indicates these feedbacks across SES. This implies that a company’s SDG interactions not only influence the resilience of an individual SES. Rather, these effects may trickle down, or travel up, to influence the resilience of other SES.

To illustrate, Shell influences the planet’s climate at the global scale, whereby the consequences of climate change materialize in small-scale SES (top-down). Similarly, bottom-up effects may, for instance, occur when industrial firms gain access to energy at a small-scale, setting in motion indirect positive effects on industrialization, employment, and incomes that reach larger scale SES. This suggests complex, cross-scale, feedbacks that influence different SES’ adaptive cycles. Although it is difficult to measure and manage these feedback loops, they do influence SES’ resilience and thus their sustainable development pathways.

5 | A NEXUS APPROACH TO CORPORATE SUSTAINABILITY: MANAGING INTERACTIONS BETWEEN SDGs

The framework introduced in the previous section helps understand how, through their positive and negative and direct and indirect interactions with the SDGs, companies influence the resilience of the systems in which they are embedded. So how can companies manage these interactions with the SDGs in order to improve their influence over SES resilience?

5.1 | A nexus approach to the SDGs

Traditional approaches to sustainable development governance have long ignored interactions across the concept’s economic, environmental, and social dimensions. Contrasting a system’s approach, it is attractive to adopt narrowly focused “silo” approaches because they are relatively easy to conceive and implement (Obersteiner et al., 2016), as well as to monitor and to communicate to diverse stakeholders (Boas et al., 2016). They also avoid critical questions relating to the persistence of sustainability issues (Giddings et al., 2002). But fragmentary approaches to sustainable development create policy incoherence and may lead to failure in achieving the SDGs (Boas et al., 2016; Obersteiner et al., 2016; Weitz et al., 2014). And as the framework in Figure 1 emphasizes, if actors adopt silo-ed approaches to sustainable development, they are likely to generate negative impacts on the SDGs, which subsequently reduces SES resilience.

The adoption of the SDGs has given an impetus to viewing sustainable development as an interrelated and systemic concept (Boas et al., 2016). It is now widely acknowledged that because sustainable development challenges are interconnected, resolving them requires systems-based approaches that take interrelations between these challenges into account.

Various concepts advocate for addressing the interrelations between sustainability policy domains in an integrated manner. As discussed in Boas et al. (2016), this includes the “integrated earth system” (Schellnhuber & Wenzel, 1998) and integrated “earth system” governance (Biermann, 2014) approaches that situate socio-economic activities within the overall earth system (Griggs et al., 2013), the “principle of environmental policy integration” (Biermann et al., 2009; Nilsson et al., 2009), the idea of “planetary boundaries” that delineate critical thresholds of the earth system, which together denote the “safe operating space of humanity” (Rockström et al., 2009; Steffen et al., 2015), and the “nexus approach” that reflects the observation that different sustainability issue areas are intrinsically interconnected and have to be governed as such (Boas et al., 2016; Obersteiner et al., 2016; Weitz et al., 2014).

Of these concepts, the nexus approach can perhaps best account for the interconnections between the economic, social, and environmental dimensions of sustainable development, and especially for the interconnections among the SDGs and their targets (Boas et al., 2016). A nexus approach also has the greatest potential to attain managerial relevance (explained in the next section). A nexus approach acknowledges that the SDGs seek to simultaneously achieve diverse sustainable development outcomes. Their interconnectedness conveys an opportunity to advance multiple SDGs simultaneously (Waage et al., 2015) while reducing the risk that policies for the SDGs undermine each other (Weitz et al., 2014). These interconnections thereby enable finding synergies among the SDGs, which is said to be the source of the transformational potential of the 2030 Agenda (Pahl-Wostl, 2017; Timko et al., 2018). Rather than devising silo-ed policies that cherry-pick easy SDGs, the nexus approach promotes the cross-sectoral integration of different policy domains with the objective to increase the overall impacts on the SDGs (Obersteiner et al., 2016; Weitz et al., 2014). Systems analysis and scientific evidence serve as inputs to this nexus approach (Obersteiner et al., 2016; Weitz et al., 2014) which is one of its main strengths (Boas et al., 2016).

An increasing number of scholars, intergovernmental institutions like the World Bank and the OECD, and development focused organizations such as the Bertelsmann Stiftung and the Sustainable Development Solutions Network have encouraged policy makers to adopt versions of a nexus approach to the SDGs (see, e.g., Boas et al., 2016; El-Maghrabi et al., 2018; Independent Group of Scientists appointed by the Secretary-General, 2019; Obersteiner et al., 2016; Pahl-Wostl, 2017; Sachs et al., 2019; Weitz et al., 2014). Such calls follow a broader promotion of nexus thinking in diverse areas of sustainable development. This includes the interactions between water, energy, climate, and land and food systems (Howells et al., 2013; Ringler et al., 2013), the environment-poverty nexus (Uitto, 2016), the inclusive growth and inclusive green growth concepts (OECD, 2012; World Bank, 2012), the linkages between gender, education, health, and poverty
(Clancy et al., 2003), and the connections between education, health, and water (Kitamura et al., 2014).

By tackling the interactions between SDGs, a nexus approach aims to improve the efficiency of the entire SES, rather than enhancing isolated parts of the system (e.g., Hoff, 2011). Since the resilience of SES is influenced by the ways in which the system’s actors manage their interactions with the system’s components (e.g., Chapin et al., 2009; Reyers et al., 2018), a nexus approach can be one way for actors to use their adaptive capacity to manage these interactions in an integrated, systemic, manner that supports desirable sustainable development pathways. The wide support for a nexus approach to the SDGs has the additional benefit that around the world many statistical offices are trying to align their data gathering to make relevant indicators available and comparable across countries. These efforts increase the potential for studies to focus on micro-level (corporate) initiatives, while taking more macro-level (SES) effects into account as well.

5.2 Corporate sustainability based on a nexus approach

We argue that, although they are to date typically applied to policy making, the principles of the nexus approach are equally relevant at the corporate level. A nexus approach to corporate sustainability can help companies create sustainability strategies that advance the resilience of SES and thus (more) effectively promote sustainable development.

A nexus approach to corporate sustainability would aim to manage a company’s positive and negative, and direct and indirect, interactions with SDGs in an integrated, cross-sectoral, and cross-systems manner. This acknowledges that sustainable development challenges are interconnected. By zooming in on these interactions, a nexus approach induces companies to create and maximize mutually reinforcing (positive) interactions while avoiding, or minimizing, trade-offs associated with negative interactions. This increases the likelihood that gains in one of the SDGs’ areas positively contribute to, and do not lead to losses in, another SDG area. In this sense, a nexus approach helps companies use their adaptive capacity to ensure that their operations, and the goods/services they deliver, interact with SDGs in ways that support SES resilience (cf. Leach et al., 2018). In short, by managing their interactions with the SDGs in an integrated manner, the nexus approach helps companies to create systemic corporate sustainability strategies.

Figure 2 presents a flowchart that guides managers in implementing a nexus approach to their interactions with the SDGs through six navigating questions, divided along two main stages: a strategizing and an executing stage.

First, a portfolio of SDGs must be selected for the company to pursue. The company’s existing interactions with the SDGs (Table 2, based on Nilsson et al., 2016) are a starting point, enabling the company to select three groups of SDGs:

1. Direct SDGs: SDGs that are directly, and positively and negatively, impacted by the company’s present operations and the goods/services it produces;
2. Indirect SDGs: SDGs that are indirectly, and positively and negatively, impacted as a consequence of the company’s direct SDG interactions, due to the interconnectedness of the SDGs;

Figure 2. Implementing a nexus approach to corporate sustainability in six navigating questions

FIGURE 2 Implementing a nexus approach to corporate sustainability in six navigating questions
3. Transformational SDGs: SDGs that help the company transform towards a resilient and sustainable enterprise. These SDGs amplify the company’s positive impacts while mitigating its negative impacts, in order to ensure the company enhances the resilience of the SESs in which it operates.

Hence, the SDG-nexus portfolio created through this first step not only contains SDGs that are directly and indirectly impacted by the company. It also includes additional—transformational—SDGs that ensure that the company exerts positive impacts on the resilience of SESs. For each of the goals in the portfolio, the company would set targets that it aims to achieve. In line with the ambitions of the nexus approach, the objective of this SDG portfolio is to ensure that the company impacts SDGs that mutually reinforce each other while reducing the likelihood of trade-offs. Ultimately, this strategizing step sets the scope for a systemic corporate sustainability strategy.

Second, the company must then execute this “SDG nexus portfolio.” This requires taking three forward-looking steps, including

4. Operationalizing: adjusting the company’s operations to ensure that the future SDG ambitions can be realized. This may require changes to the company’s institutional framework and governance structure (SDG 16), its business model (SDG 12), but also the pursuing of, for instance, gender equality (SDG 5), decent jobs (SDG 8), and equal opportunities (SDG 10), which can all be advanced through changing the company’s processes and its corporate governance (e.g., Martinez-Ferrero & García-Meca, 2020);

5. Innovating: creating new, and innovating existing, goods and services to improve impacts on the SDGs in the portfolio, for example by producing goods/services that improve well-being, and/or innovating to reduce these products’ environmental footprints (e.g., Nylund et al., 2021; van Zanten & van Tulder, 2021);

6. Partnering: collaborating with value chain partners to improve SDG impacts associated with the production (upstream) and the consumption (downstream) of goods/services (e.g., Negri et al., 2021); and partner with civil society and governmental organizations to ensure that SDG interactions lead to desired sustainable development impacts within societies (e.g., van Zanten & van Tulder, 2018).

As the flowchart shows, the stages form an ongoing cycle. This would encourage companies to continuously assess how their activities interact with the SDGs and thus influence their present and their preferred “SDG-nexus portfolio,” which is aimed at enhancing their contributions to more resilient systems.

5.3 | Example of a nexus approach to corporate sustainability

Since we used an oil major (Shell) to illustrate our framework (Figure 1), let us use a generic (hypothetical) oil company to illustrate in broad terms how a company might implement a nexus approach to corporate sustainability. In line with our illustrative purposes, we simplify this discussion and only focus on the most poignant SDG interactions.3

This oil company would first establish an “SDG-nexus portfolio” by following the three strategizing steps in Figure 2. First, directly impacted SDGs include SDG 7.1 (access to energy), which the company positively interacts with through its core business, and 13.2 (climate change mitigation), which it negatively impacts. Second, indirectly impacted SDGs may include SDG 9 (industrialization, infrastructure, and innovation) and SDG 11 (sustainable cities and communities), since these SDGs may benefit from the energy that the firm provides. However, SDG 13 (climate action), and consequently SDGs 14 (life below water) and 15 (life on land) are likely to be negatively—and indirectly—impacted from the greenhouse gases emitted by burning the non-renewable energy delivered by the firm. Third, transformational SDGs would help this company transform its business model. Relevant SDGs that expand the company’s direct positive SDG impacts include SDG 7.2, which aims to provide renewable energy, and SDG 7.3, centered on energy efficiency. Adopting these SDG targets would see the company transform into a renewable energy provider, leading it to maintain its existing positive impacts on providing people with access to energy (SDG 7.1), yet strongly reducing the negative impacts caused by the firm’s high GHG emissions. To mitigate the existing GHG emissions during the transformation of the company, the creation of carbon sinks through afforestation activities may be explored, relating to SDG 15 (reforestation). Combined, these SDGs and sub-targets form a portfolio that—when implemented—increase the company’s support to systems’ resilience.

The executing stage then advances these SDGs by changing the company’s operations, enhancing its innovation, and through partnering. First, operationalizing this SDG portfolio requires actions such as aligning the company’s (scope 1, 2, and 3) emissions with the ambitions of the Paris Agreement on climate change (for instance by linking executive pay to the SDGs in the portfolio) and by targeting markets that have the highest need for the SDGs that the company positively impacts. Second, innovating is required to transform towards a renewable energy provider and to improve the energy efficiency of the products delivered. Third, partnering is crucial: working with suppliers upstream in the value chain can help innovate in order to improve energy efficiency, while working with clients downstream in the value chain is important to ensure that new (renewable) sources of energy match clients’ needs. Moreover, partnering with environmentally oriented organizations may help set up and scale forestry activities for creating nature-based carbon sinks.

The cycle then repeats, inviting a re-exploration of the company’s SDG interactions. It may, for instance, turn out that reforestation efforts intended to mitigate climate change conflict with land used for agriculture, thus limiting SDG 2 (zero hunger). Conversely, it is possible to directly reforest reforestation efforts to areas facing water scarcity and land degradation, and thereby advance multiple SDGs at the same time (including SDG 6—water and sanitation—and SDG 15 more broadly). Hence, the nexus approach allows a company to constantly manage its interactions with the SDGs, thereby influencing SESs'
resilience on an ongoing basis, in order to improve overall sustainable development impacts.

6 | IMPLICATIONS AND FUTURE RESEARCH

Companies are increasingly engaging with sustainable development and most large companies say to embrace the SDGs. However, the world is hardly developing in a sustainable direction. As progress is too slow around the world (Independent Group of Scientists appointed by the Secretary-General, 2019; Sachs et al., 2019), there is increasing consensus that “a much deeper, faster and more ambitious response [is needed] to unleash the social and economic transformation needed to achieve our 2030 goals” (UN, 2019, p. 2). In turn, sustainable development is critical for companies’ activities. Companies depend on ecosystems and on economic and social capital (Whiteman et al., 2013; Williams et al., 2017; Winn & Pogutz, 2013). The quote that “business cannot succeed in societies that fail,” reiterated by leaders such as former UN Secretary General Kofi Annan and current WBCSD president Peter Bakker, point to the need for systemic theories of sustainability management.

Companies have a significant influence on systems’ sustainable development pathways. We introduced a nexus approach to corporate sustainability. This approach helps companies use their adaptive capacity to manage positive and negative, and direct and indirect, interactions with the SDGs in an integrated manner, in order to improve SESs’ resilience and advance sustainable development. This way, we respond to calls for helping advance a theory of sustainability management capable of incorporating the complexity and interconnectedness of sustainable development in general (Starik & Kanashiro, 2013; Winn & Pogutz, 2013) and the SDG-agenda in specific (Kolk, 2016; Kourula et al., 2017).

The nexus approach also helps the company to accumulate evidence of its impact on the SDGs’ indicators. This makes it easier to report about progress in an integrated manner—which various organizations proclaimed to be critical for accelerating the SDG Agenda (e.g., Global Reporting Initiative & United Nations Global Compact, 2019). Corporate reporting on its impacts on the SDGs generates transparency. Consequently, this may help companies and policy makers to map and prioritize dilemmas and trade-offs that require more focused interventions. Alignment of corporate and government strategies on the level of the nexus is a necessary—not sufficient—condition to speed-up the implementation of the SDG agenda.

Our paper faces limitations concerning its scope yet opens avenues for future research. First, a nexus approach advises companies to simultaneously increase positive and reduce negative SDG interactions, in order to improve SESs’ resilience. This may prove challenging for managers who need to navigate these complex interactions between their company and the SDGs, within and across diverse SESs. Future research can build on scholarship investigating how managers’ mental models help make sense of, and improve, systems’ resilience (e.g., Biggs et al., 2012; Holling, 2001; Pahl-Wostl, 2007) with a particular view on the interconnections between the SDGs.

Second, our analysis centered on individual companies although SESs comprise numerous companies and various public- and civil-society actors. Ultimately, the resilience of SES is the consequence of the actions of all actors within the system. Future scholarship can explore the interconnections and collaborations among these actors in the context of creating positive sustainable development impacts that support SES resilience (e.g., Mintzberg, 2015; Valente, 2010; van Tulder, 2018; van Tulder et al., 2016; van Zanten & van Tulder, 2018).

Another avenue of research can focus on “Theories of Change.” There is a growing understanding in monitoring and evaluation practice that systemic effects are difficult to specify ex-ante. Complexity sensitive Theories of Change commence with delineating the approach and goals, which then can be fine-tuned during implementation in never more complex loops or research and learning in partnership with all actors involved (van Tulder & Keen, 2018). Our framework provides an ex-ante approach for understanding the interactions between a company and SESs’ resilience. Case studies and action research can help specify these interactions through experiential learning.

Third, SES resilience is a function of the interactions between SESs’ components. This begs the question how much of a negative influence one company may have on SESs resilience. Future studies can define which parameters might determine the influence that one company may have on the entire system, for instance by using the planetary boundaries framework (Rockström et al., 2009; Steffen et al., 2015; Whiteman et al., 2013) or the targets of the SDGs.

7 | CONCLUDING REMARKS

Sustainable development challenges are interconnected and systemic. Because corporate sustainability now is becoming a mainstream ambition, indicating that companies intend to help solve such challenges, we think it is useful to adopt a systems lens and tease out lessons that could help companies contribute more effectively to sustainable development.

We drew from the social-ecological systems literature to argue that companies’ contributions to sustainable development stand to be improved if they contribute to nexuses of integrated SDGs, rather than treating the SDGs as isolated silos. The SDGs and their underlying targets provide metrics that specify whether SESs are able to provide human well-being and promote environmental sustainability by adapting to and transforming with change. Companies interact with the SDGs through their operations and the goods and services they deliver. A company’s positive interactions with the SDGs support the resilience of the SESs in which they are embedded, while negative interactions reduce SES resilience, thereby leading to undesirable sustainable development pathways. A nexus approach to corporate sustainability aims to enhance resilience by inducing companies to pursue a portfolio of interconnected SDGs, selected based on the company’s present SDG interactions, in order to drive multiple SDGs...
simultaneously through the creation of co-benefits, while minimizing the likelihood of trade-offs between the SDGs as well as guide the company’s future SDG interactions.

The SDGs aim to “transform our world” by the year 2030. This means that there are still 9 years left to achieve them and ensure that everyone, including future generations, can live a fulfilling life on a healthy planet. In particular big companies hold a key to the success of the SDG agenda: they exert significant positive and negative impacts on the SDGs which influences the world’s ability to advance sustainable development. The nexus approach introduced in this paper, provides a systemic and necessary approach to corporate sustainability that can potentially accelerate companies’ impacts on sustainable development.

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CONFLICT OF INTERESTS

The first author is employed by Robeco, an asset management firm with its headquarters in Rotterdam, the Netherlands. The views expressed in this paper are not necessarily shared by Robeco.

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ENDNOTES

1 This is captured by the concept of panarchy (Gunderson & Holling, 2002).
2 Applying the technique of “navigating questions” is based on developmental evaluation methods (Patton et al., 2016) and is particularly relevant for more complex projects that aim at systems change (cf. van Tulder & Keen, 2018).
3 Although the discussion here is hypothetic, a real example of an oil company that transformed its operations to better align with the SDGs is Danish oil and gas company DONG. It transformed itself into a renewable energy company, changing its name into Ørsted along the way (see e.g., van Zanten & van Tulder, 2021).

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