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## RESEARCH ARTICLE

# Business model innovation for the Sustainable Development Goals

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## Abstract

Business model innovation can be a key driver to realizing the transformation needed to achieve the United Nations Sustainable Development Goals (SDGs). At the same time, the SDGs can support organizations as they identify and tackle opportunities for business model innovation. This study uses a constructive research method to build a managerial approach that supports business model innovation for the SDGs. The approach helps organizations assess their contribution to the SDGs, explore and prioritize SDG-oriented business opportunities and risks, and formulate business model innovation strategies accordingly. The proposed approach was developed through participatory action research conducted in collaboration with two companies operating in the medical and educational sectors and then applied to Ørsted, a multinational power company, which is strongly committed to a sustainability-driven business transformation and aspires to contribute strongly to SDG 7 (Affordable and clean energy) and SDG 13 (Climate action). The study furthers the academic and practical debate on business model innovation for sustainability by providing new academic and practical knowledge on how organizations can use the SDGs to stimulate business model innovations.

## KEYWORDS

business model innovation, corporate sustainability, opportunities, risks, Sustainable Development Goals (SDGs)

## 1 | INTRODUCTION

In 2015, the United Nations General Assembly proposed a list of 17 Sustainable Development Goals (SDGs) as a shared expression of the most compelling challenges human beings are facing with respect to environmental, social, and economic sustainability (United Nations General Assembly, 2015). The SDGs cover a wide array of areas ranging from poverty alleviation to gender equality and climate action and are structured around five pillars: people, prosperity, planet, peace and justice, and partnership.

Companies play a key role within the societies where they operate and their commitment to the SDGs is a critical success factor for the overall achievement of the Sustainable Development Agenda (Kolk et al., 2017; Pizzi et al., 2020; Sachs, 2012). Indeed, the private sector can contribute significantly to the achievement of the SDGs through innovation and technological development, strategic thinking, and provision of unique skills and resources (Scheyvens et al., 2016). At the same time, the SDGs provide companies a concrete set of goals and targets that support the identification, prioritization, and anticipation of a wide variety of unmet customer and stakeholder needs.

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According to GRI, United Nations Global Compact, and WBCSD (2015, p. 4), “[c]ompanies that align their priorities with the SDGs can strengthen engagement of customers, employees, and other stakeholders”; those that do not will be exposed to growing legal, reputational, and other business risks.

According to the *Better Business Better World Report* by the Business and Sustainable Development Commission (BSDC, 2017), the SDGs can create huge market opportunities worth an estimated US \$12 trillion in business savings and revenue by 2030. Further, they will contribute to the generation of 380 million new jobs in four economic systems (i.e., food and agriculture, cities, energy and materials, and health and well-being). Therefore, pursuing the SDGs is expected to uncover myriad opportunities to identify unmet market needs, leading to the generation of business model innovation, competitive advantages, and sustainable growth (Muff et al., 2017; Rosati & Faria, 2019a; Scheyvens et al., 2016).

Business model innovation has already been used in practice, and investigated in the academic literature, as an approach that supports the achievement of the SDGs (Breuer et al., 2018), which in turn can trigger—and be triggered by—new opportunities for sustainable value proposition, value creation, and value capture (Bocken et al., 2014; Lüdeke-Freund et al., 2018; Pedersen et al., 2018). Thus, on the one hand, the SDGs can provide useful direction that inspires business model innovation for sustainability (Morioka et al., 2017). On the other hand, business model innovation can be a key driver for realizing the transformation needed to accomplish the SDGs (Rosati & Faria, 2019b; Sachs, 2012).

However, academic literature and business practice still lack actionable approaches to implementing business model innovation for the SDGs. Without actionable approaches to explore and integrate SDG-oriented opportunities and risks into business model innovation strategies, companies are left with a void of true, meaningful progress on sustainability, leading to misdirection in their contribution to global pressing issues (Kramer & Pfitzer, 2022; Oliveira-Dias et al., 2022). With that, practitioners and scholars call for more practical and applied approaches to exploring and assessing businesses' contribution toward the SDGs in a structured fashion (Bashir et al., 2022).

This gap in the research and practical knowledge might lead to a suboptimal business contribution to the SDGs. This study aims to address the gap by proposing a six-phase approach developed

through a constructive research method and based on academic and practical knowledge of business model innovation, sustainable development, and corporate sustainability management.

## 2 | RESEARCH DESIGN

The study was conducted by using the constructive research approach proposed by Kasanen et al. (1993) (Figure 1). According to Kasanen et al. (1993, p. 246),

[t]he constructive approach may be characterized by dividing the research process into phases, the order of which may, of course, vary from case to case:

1. Find a practically relevant problem, which also has research potential.
2. Obtain a general and comprehensive understanding of the topic.
3. Innovate, i.e., construct a solution idea.
4. Demonstrate that the solution works.
5. Show the theoretical connections and the research contribution of the solution concept.
6. Examine the scope of applicability of the solution.

Kasanen et al. (1993, p. 261) “argue that a successful constructive study—in which an innovative solution to a real-world problem is produced, its specific usability and theoretical connections are demonstrated, and its potential for more general adequacy is examined—is apt to fulfil the most significant general characteristics of science (i.e., objectivity, criticalness, autonomy, and progressiveness).” In this paper, the constructive research approach helped us combine the theoretical and empirical studies needed to generate a managerial approach supporting business model innovation for the SDGs. Particularly, in *Phase 1* (i.e., *find a practically relevant problem, which also has research potential*), we highlight the relationship between business model innovation and business contribution to the

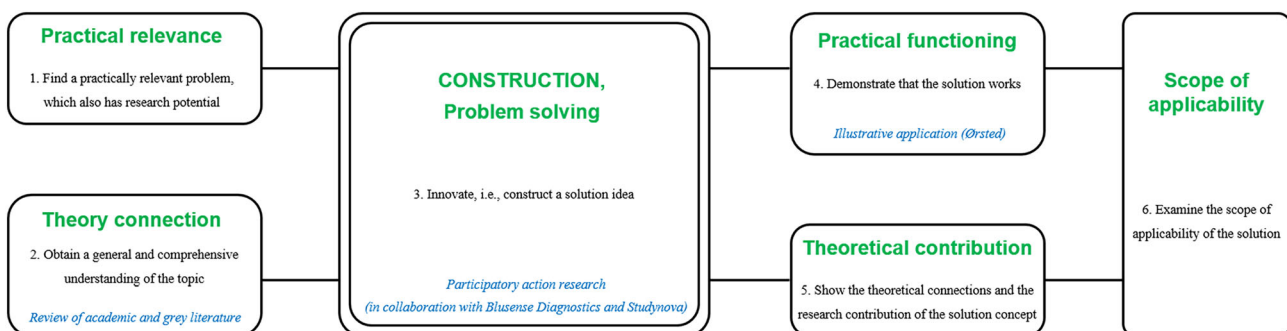


FIGURE 1 Elements of the constructive research process (adapted from Kasanen et al., 1993, p. 246)

SDGs and reflect on the necessity of developing a managerial approach that supports business model innovation for the SDGs. The outcome of *Phase 1* is illustrated in the Introduction of this paper (Section 1). Applying *Phase 2* (i.e., *obtain a general and comprehensive understanding of the topic*), we conduct a review of academic and gray literature on business contribution to the SDGs (Section 3) and on the role of business model innovation for the SDGs (Section 4). For *Phase 3* (i.e., *construct a solution idea*), the proposed managerial approach is developed through an iterative abductive research process (Dubois & Gadde, 2002), described in Section 5. This process builds upon the academic and gray literature reviewed in *Phase 2* and participatory action research conducted in collaboration with BluSense Diagnostics and Studynova, two Danish companies operating in the medical and educational sectors at a global level. Following *Phase 4* (i.e., *demonstrate that the solution works*), we apply the resulting managerial approach to Ørsted, a multinational power company, which is strongly committed to a sustainability-driven business transformation (Section 6). Finally, Section 7 discusses the *theoretical connections and the research contribution* of the proposed solution along with its *scope of applicability* and methodological limitations (*Phase 5* and *Phase 6* of the constructive research approach).

We decided to collaborate with two specific companies, BluSense Diagnostics and Studynova, in order to deploy a participatory action research process that would lead to a collaborative design and development of a managerial approach. The two companies were selected from a network of 80 partner companies in a research project on business model and product development led by the Technical University of Denmark. They were selected because they were both willing to (i) innovate their business models; (ii) address grand challenges at global level; and (iii) collaborate with scholars through an action research approach.

BluSense Diagnostics is a spin-off from the Technical University of Denmark and has a highly skilled and internationally diverse mix of founders and employees. It is a born-global start-up with operations in Denmark and Taiwan and scientific and technological partners in nine countries worldwide. BluSense Diagnostics contributes to SDG 3 (Good health and well-being) by enabling the diagnosis of dengue and SARS-CoV-2 through its proprietary technology using a single drop of blood. By creating accurate and fast diagnostics tests, they aim to help people live longer and healthier lives. Studynova is a portal for education in mathematics and sciences, which advances SDG 4 (Quality education) and SDG 10 (Reduced inequalities) by offering students all around the world the opportunity to access free tutorial videos in mathematics, physics, chemistry, and biology, one-to-one tutoring, and review courses. The videos go through the relevant theory and feature examples and past exam questions showing every step of the solution process. Studynova's aim is to offer practical, helpful tools that students can access anytime, anywhere. They facilitate student learning by using plain explanations and a healthy dose of humor to help students build their confidence in a fun and entertaining way.

For each company, we conducted three business model workshops with the company co-founders to (i) identify their current business model; (ii) outline the future desired business model; and

(iii) prioritize necessary objectives and steps to bridge the gap between the current and the future desired business models. Action research involves researchers' active participation in a change situation, often within an existing organization, in order to either solve an immediate problem or generate a reflective process of progressive problem solving (Brydon-Miller et al., 2003; Reason & Bradbury, 2001). As defined by Coughlan and Coughlan (2002, p. 222), action research is "research in action, rather than research about action" and takes place concurrently with action. In the roles of both researchers and outside agents, we worked with the two companies to develop and propose a new course of action with regard to their business model innovation while co-designing and co-developing the managerial approach presented in Section 5.

### 3 | BUSINESS CONTRIBUTION TO THE SDGS

Among business leaders and policymakers alike, there is widespread recognition of the importance of enhanced and timely adoption of the SDGs as a framework for businesses to deliver results on global challenges (Agrawal et al., 2022; Hák et al., 2016; Mustafa et al., 2022; PwC, 2019). The SDGs have increasingly become a robust tool to set strategies and business targets, inform structured disclosures, and perform gap analyses (Muff et al., 2017; van Zanten & van Tulder, 2021). In this respect, companies are not only invited to reflect on their contribution to the SDGs but also urged to take immediate and long-term actions to make structured progress toward the goals (United Nations Global Compact, 2017).

Companies have also been consistently seeking the establishment of coordination mechanisms among different key stakeholders, such as governments and nonprofit organizations, which aim to advance the Sustainable Development Agenda. The SDGs can support companies in defining priorities, articulating the macro-micro consistency of business practices, indicators, and targets and jointly reporting on their progress within their operating space (Malay & Aubinet, 2021). According to GRI, UNGC and WBCSD (2015, p. 9), companies that help advance the SDGs will be more likely to (i) improve customer, employee, and stakeholder engagement; (ii) strengthen their license to operate; (iii) build resilience to costs or requirements imposed by future legislation; (iv) and reduce legal, reputational, and other business risks.

Despite the growing recognition of the importance and relevance of the SDGs for business, only a few academic and practice-oriented initiatives and tools are geared toward managing SDG progress from a business perspective. For example, Eriksson et al. (2019) propose the SDG Impact Assessment Tool, a qualitative and reflective approach consisting of five steps:

1. *Gather forces*, aiming at engaging and gathering people with different competencies, to strengthen interdisciplinarity and holistic thinking.
2. *Define, refine, and draw the line*, describing the object and scope of the SDG impact assessment.

3. *Sort the SDGs*, with a focus on sorting the SDGs based on their relevance for the object of the SDG impact assessment.
4. *Assess your impact*, aiming at assessing the impacts of the object under assessment on each SDG, using the following categories: (i) direct negative impact; (ii) indirect negative impact; (iii) no impact; (iv) indirect positive impact; (v) direct positive impact; and (vi) more knowledge needed.
5. *Choose strategy forward*, focused on formulating a strategy on how to improve the SDG impact of the assessment object.

Therefore, the tool can support organizations in the identification of their positive and negative SDG impact and inspire their SDG-oriented strategic decision making and learning (Eriksson et al., 2019). Besides strategies for managing and integrating the SDGs into business practices and strategies, Bebbington and Unerman (2018) explore the role of corporate accounting policies in achieving the SDGs, with reflections for both theory and practice. Scholars also discuss the emerging role of auditing mechanisms to ensure engagement and achievement around the SDGs (Yusoff et al., 2016). Another example is the *SDG Compass*, a guide proposed by the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), and the World Business Council of Sustainable Development (WBCSD). The *SDG Compass* delineates a generic five-step process companies can use to apply the SDGs to their strategic business planning (GRI et al., 2015; Muff et al., 2017; Pizzi et al., 2021).

Furthermore, conducted as a partnership between GRI and the UNGC, the *Business Reporting on the SDGs* initiative supports businesses in reporting their contribution to the SDGs through the use of established guidelines for sustainability disclosure (Global Reporting Initiative, 2018; United Nations Global Compact, 2017). Finally, Barbier and Burgess (2019) propose a trade-off and complementarity analysis emphasizing public and corporate policymaking related to prioritization of indicators, points of leverage, and a view on welfare effects associated with the SDGs.

## 4 | BUSINESS MODEL INNOVATION FOR THE SDGS

The business model (BM) concept has been increasingly used in practice since the Internet boom and the rise of e-commerce in the 1990s (Chesbrough & Rosenbloom, 2002; Magretta, 2002), being appropriate to describe and analyze the logic of new forms of businesses (Cosenz & Noto, 2018; Timmers, 1998). During the past two decades, the concept has also had a growing relevance in academia, influencing and being influenced by literature in various disciplines, such as strategic management (Magretta, 2002; Teece, 2010; Zott & Amit, 2007; Zott & Amit, 2008), innovation (Chesbrough & Rosenbloom, 2002), entrepreneurship (Morris et al., 2005), information systems (Osterwalder et al., 2005), and corporate sustainability (Bocken et al., 2014; Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2012; Schaltegger, Hansen, & Lüdeke-Freund, 2016; Stubbs & Cocklin, 2008). The academic literature has also provided a vast array

of BM definitions, integrating elements from various perspectives and theories that range from competitive advantage, strategic positioning, and dynamic capabilities (Morris et al., 2005; Teece, 2010) to value chains, value networks, and stakeholder theory (Chesbrough & Rosenbloom, 2002; Freudenreich et al., 2019; Richardson, 2008). From an entrepreneurship perspective, Morris et al. (2005, p. 727) define the BM as “a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets.” In the field of information systems, Osterwalder et al. (2005, p. 4) define a BM as “a conceptual tool containing a set of objects, concepts, and their relationships with the objective to express the business logic of a specific firm.” In subsequent work, Osterwalder and Pigneur (2010, p. 14) state that “a business model describes the rationale of how an organization creates, delivers, and captures value.” Along these lines, Chesbrough (2006) describes the BM as performing two crucial functions: value creation and value capture.

Although a shared BM definition has not yet been reached (Zott et al., 2011), some of the definitions do share certain elements, such as value proposition, economic model, customer relationship, partner network, internal resources, and target markets (Morris et al., 2005). To understand what a BM really is, it is thus helpful to identify its constituent elements (Cosenz et al., 2020; Zott et al., 2011). According to Schaltegger et al. (2016, p. 267), a business model can be defined as a concept describing what value a company proposes to existing and potential customers (value proposition), how the business is organized to create the value (value creation), with which resources and infrastructure (value creation infrastructure), under which circumstances (value creation conditions), and how financial value is retained for the company (value capture). Accordingly, a “business model for sustainability helps describing, analyzing, managing and communicating (i) a company's sustainable value proposition to its customers and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social and economic capital beyond its organizational boundaries” (Schaltegger, Lüdeke-Freund, & Hansen, 2016, p. 268). BMs for sustainability (also referred to as sustainable business models) have been discussed in corporate sustainability literature as a necessary element to fully unlock companies' potential to solve environmental, social, and economic challenges (Lüdeke-Freund et al., 2018).

Particularly, BM innovation (BMI)—defined as the conscious renewal of a company's core business logic (Schneider & Spieth, 2013) and its constituting elements (Carayannis et al., 2015)—can help companies that are exploring, tackling, and generating new opportunities for sustainable value proposition, value creation and delivery, and value capture (Bocken et al., 2014; Bocken & Geradts, 2019; Ferlito & Faraci, 2022; Lüdeke-Freund et al., 2018; Pedersen et al., 2018). Indeed, BMIs for sustainability are “[i]nnovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organization and its value-network create, deliver value and capture value (i.e., create economic value) or change their value propositions” (Bocken et al., 2014, p. 44).

Pursuing the SDGs is one of the biggest challenges faced by humanity. Indeed, achieving the SDGs will not only require huge investments from governments and businesses but also present high uncertainty and complexity, which are inherently embedded into complicated sustainability problems (Glass & Newig, 2019; Persson et al., 2016). In this context, BMI can support companies in considering uncertainties as potential sources of business opportunities (Schneider & Spieth, 2013) to exploit for both sustainability and viability purposes (Oliveira-Dias et al., 2022). BMIs can thus play a crucial role in realizing the transformation needed to accomplish the SDGs (Ferlito & Faraci, 2022; Sachs, 2012) while simultaneously supporting companies in their search for new market opportunities and new ways to create, deliver, and capture value for stakeholders (Casadesus-Masanell & Zhu, 2013; Yunus et al., 2010). Indeed, BMI has already been used in practice (e.g., United Nations Development Programme, 2020) and investigated in academic literature as a lever to create SDG impact (Breuer et al., 2018). van Tulder and Lucht (2019, p. 271) argue that there are two main innovation approaches that can be used by leading companies to create impact: “[I] innovation as an extension of existing business models that are based on present markets and needs or [II] innovation as an anticipation of new business models based on future markets and needs.” Van Tulder and Lucht (2019) also argue that despite many companies use the SDGs in various ways (e.g., reactively or proactively), not many companies have explicitly linked them to business model innovation. Interestingly, the three exceptions studied by the authors (i.e., Philips, DSM, and Unilever) all set concrete global sustainability ambitions. Raith and Siebold (2018) propose four generic strategies that can be used by organizations to address the SDGs through business model design and innovation. These four strategies are based on a matrix that combines two fundamental strategic decisions to be made by entrepreneurs in designing their business models. The first concerns how a sustainability target is addressed in the process of value creation (i.e., supportive mode of value creation for the sustainability target vs. integrative mode of value creation with the sustainability target). The second focuses on how value is captured (i.e., commercial mode of value capture through market revenues vs. social mode of value capture through the mission, e.g., with monetary or in-kind donations).

However, academic literature and business practice still lack approaches supporting organizations in turning SDG challenges into business model innovation opportunities. We conclude that this can lead to a suboptimal business contribution to the Sustainable Development Agenda, given the key role of innovation in realizing the transformations needed to accomplish the SDGs (Breuer et al., 2018; Sachs, 2012; Sachs et al., 2019). In fact, companies are still struggling to make meaningful progress toward sustainability-related goals, with the majority of the 2000 global companies tracked by the World Benchmarking Alliance either having no explicit sustainability goals or failing to stay on track to meet them—in most cases, companies are building up incremental changes without articulating the more profound, strategic shifts in their business models that are required to meet the SDGs (Kramer & Pfitzer, 2022). At the same time, several

companies, even in resource-constrained settings, are realizing the importance of moving toward a more systematic and integrated consideration of the SDGs into their business models (Ferlito & Faraci, 2022).

To address this research and practical gap, the next section builds upon academic and practical literature on business model innovation, sustainable development, and corporate sustainability management in order to design the proposed managerial approach.

## 5 | PROPOSED MANAGERIAL APPROACH

The approach outlined in this study builds upon the exploration of SDG-driven business opportunities and risks, which, along with an assessment of an organization's current contribution to the SDGs, can lead to the formulation of a future desired organizational SDG contribution. The formulation of an organizational future desired SDG contribution is then used to envision a future desired business model and inspire business model innovation for the SDGs. This approach uses a three-dimensional sustainable business model framework, that is, sustainable value creation and delivery, value proposition, and value capture (Bocken et al., 2014). The approach aims to support entrepreneurs and managers in considering a variety of ways to conduct business model innovation for the SDGs. Particularly, the proposed approach consists of six phases, which are discussed below and shown in Table 1. For each phase, key supporting materials and tools that can help achieve the goal of the respective phase are identified. Figure 2 illustrates the architecture of the proposed managerial approach and its six phases.

### 5.1 | Current business model

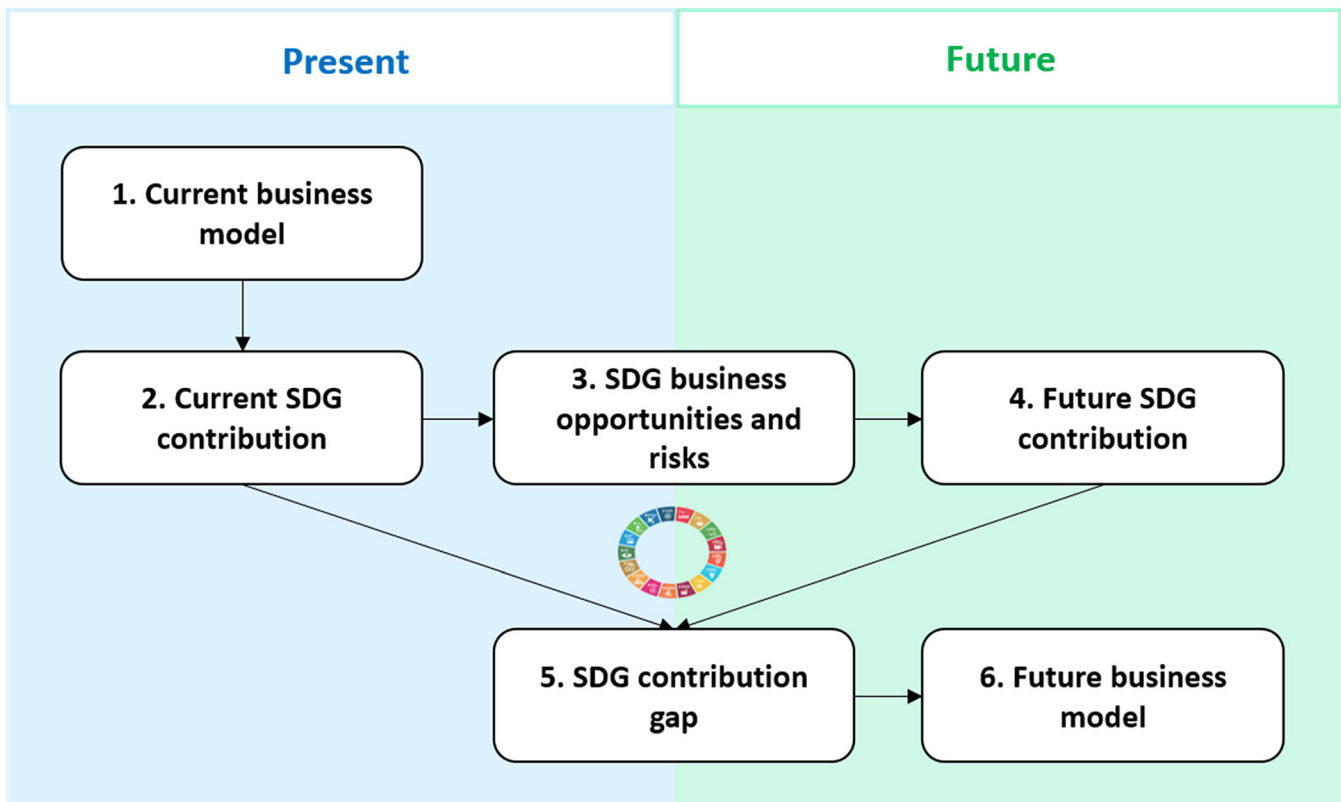
The goal of the first phase of the approach is to analyze the current business model. The Adapted Sustainable Business Model Canvas (SBMC) proposed by Bocken (2015) and Bocken et al. (2018) can be used as a guiding framework to perform this analysis, due to its focus on stakeholders and sustainable value creation. The SBMC builds upon the Business Model Canvas designed by Osterwalder and Pigneur (2010) and the framework developed by Richardson (2008). The SBMC includes a value proposition component depicting environmental, social, and economic forms of value; a value creation and delivery component describing how internal resources, capabilities, and activities are used to create and deliver value in cooperation with a broad set of stakeholders; and, finally, a value capture component inspiring economically, environmentally, and socially sustainable ways of capturing value.

### 5.2 | Current SDG contribution

The aim of this phase is to assess the SDG contribution of the current business model. From a practical perspective, such an assessment can

**TABLE 1** Phases of the proposed managerial approach

Phase	Name	Description	Output	Supporting materials and tools
Phase 1	Current business model	Analysis of the current business model	A graphical description of the current business model	Adapted SBM Canvas by Bocken (2015) and Bocken et al. (2018)
Phase 2	Current SDG contribution	Assessment of the current SDG contribution of the organization	An assessment of the current organizational SDG contribution, for each SDG relevant to the organization	SDG Impact Assessment Tool by Eriksson et al. (2019)
Phase 3	SDG business opportunities and risks	Exploration of SDG-oriented business opportunities and risks relevant for the organization	A list of SDG challenges that represent the most relevant business opportunities and risks for the organization	Better Business Better World Report by BSDC (2017) Gap Frame by Muff et al. (2017) SDG Compass by GRI, UNGC and WBCSD (2015)
Phase 4	Future SDG contribution	Envisioning of the future organizational SDG contribution, based on the decision to address the SDG business opportunities and risks identified in Phase 3	An estimation of the future SDG contribution of the organization, resulting from addressing the SDG business opportunities and risks identified in Phase 3	SDG Impact Assessment Tool by Eriksson et al. (2019)
Phase 5	SDG contribution gap	Analysis of the SDG contribution gap, through the comparison between the current (output of Phase 2) and future organizational SDG contribution (output of Phase 4)	A formulation of the most relevant SDG contribution gaps the organization needs to address to tackle the identified SDG business opportunities and risks	SDG Impact Assessment Tool by Eriksson et al. (2019)
Phase 6	Future business model	Envisioning of the future desired business model, which will address the SDG contribution gap identified in Phase 5 and tackle the SDG business opportunities and risks identified in Phase 3	A graphical representation of the future desired business model, inspired by the SDG contribution gaps identified in Phase 5	Adapted SBM Canvas by Bocken (2015) and Bocken et al. (2018)



**FIGURE 2** The architecture of the proposed managerial approach

be inspired by Step 3 and Step 4 of the assessment tool proposed by Eriksson et al. (2019). In this phase, the innovation team first sorts the SDGs based on their relevance to their organization's business model and then assesses the contribution of the organization's business model for each SDG. The SDG contribution can be assessed in a scale from 1 (*direct negative*) to 5 (*direct positive*)—see Eriksson et al. (2019). In this phase, the assessment team can also determine whether more knowledge is needed to provide a comprehensive assessment of the SDG contribution of the current business model.

### 5.3 | SDG business opportunities and risks

Based on the output of Phase 2, in this phase the innovation team reflects upon potential SDG-oriented business opportunities and risks for the organization. Scholars and practitioners have developed various practice-oriented guidelines and tools to inspire the identification of business opportunities unlocked—and business risks reduced—by advancing the SDGs (e.g., the Gap Frame by Muff et al., 2017 and the SDG Compass by GRI, UN Global Compact and WBCSD, 2015). In particular, the *Better Business Better World Report* by the Business and Sustainable Development Commission (2017) can help the innovation team identify SDG-oriented opportunities in four economic systems (i.e., food and agriculture, cities, energy and materials, and health and well-being). Similar guidelines have also been developed at a national level (e.g., in Denmark, Dalberg, 2019). The United Nations Development Programme (2021, p. 2) suggests that, while identifying relevant opportunities, organizations should consider which SDG challenges are relevant to their industry, which are critical to them at present and in the future, which have the greatest potential in terms of innovation and impact, and the company's motivation for solving a specific challenge.

In this phase, the innovation team should also explore the business risks that would be reduced by advancing the SDGs. Indeed, according to GRI, UNGC, and WBCSD (2015), companies that help advance the SDGs are more likely to reduce legal, reputational, and other business risks, while improving stakeholder trust and strengthening their resilience and license to operate.

### 5.4 | Future SDG contribution

Based on the outputs of Phase 3, in this phase the organization envisions the future desired SDG contribution of the business model. From a practical perspective, this phase can again be inspired by Step 4 of the assessment tool proposed by Eriksson et al. (2019). However, in this phase, the innovation team will not assess the current contribution of the organization's business model on each SDG, but its future desired contribution—still using a scale from 1 (*direct negative*) to 5 (*direct positive*)—see Eriksson et al. (2019). It is up to the innovation team to choose the preferred time horizon (e.g., 3, 5, or 10 years) to be considered in this phase. The output of this phase will be a list of prioritized SDG challenges to be addressed by the organization's future desired business model.

### 5.5 | SDG contribution gap

In this phase, the innovation team compares the output of Phase 4 (envisioning of the future SDG contribution) with the output of Phase 2 (assessment of the current SDG contribution) and identifies the organizational SDG contribution gap, indicating the areas where the organization aims to improve its SDG contribution. Addressing this SDG contribution gap will lead the organization to tackle the SDG-oriented business opportunities and risks identified in Phase 3 and innovate its business model accordingly.

### 5.6 | Future business model

In this phase, the innovation team envisions the future desired business model, addressing the SDG contribution gap identified in Phase 5 and enabling the organization to address the SDG business opportunities and risks identified in Phase 3. Particularly, in this phase, the innovation team reflects upon the required changes that the organization needs to make to its business model to address the SDG contribution gap. In this phase, as in Phase 1, the Adapted Sustainable Business Model Canvas (SBMC) proposed by Bocken (2015) and Bocken et al. (2018) will also serve as a guiding framework. This will help the innovation team compare the current and future business models and support the identification of relevant SDG-driven business model objectives for the organization.

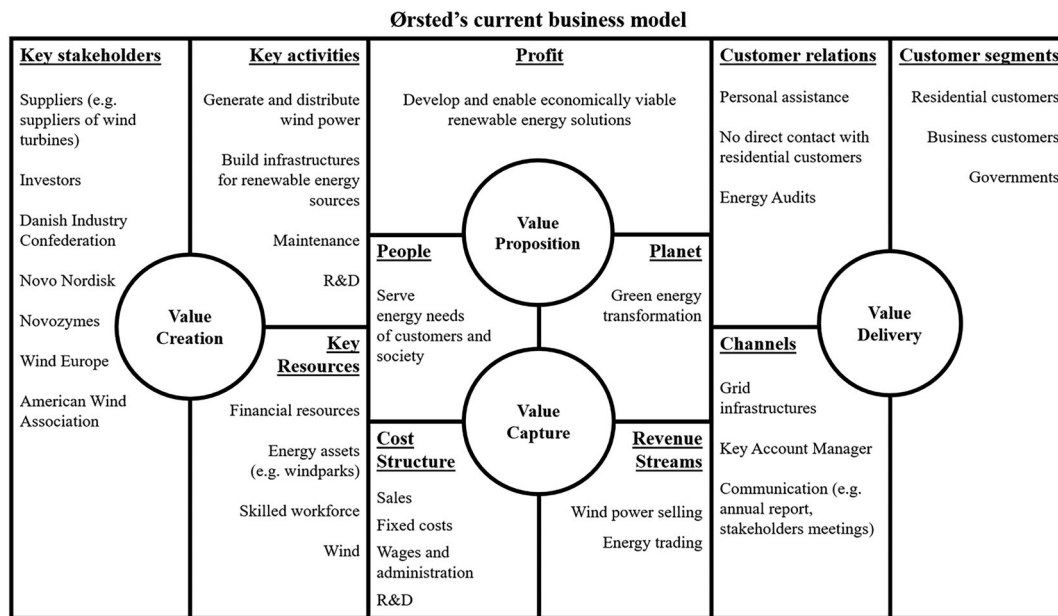
## 6 | ILLUSTRATIVE APPLICATION

This section provides an illustrative application of the proposed managerial approach to Ørsted, a Danish multinational power company operating through several branches all over the world. Ørsted is strongly committed to a sustainability-driven business transformation and aspires to contribute strongly to SDG 7 (Affordable and clean energy) and SDG 13 (Climate action). This company was selected for this illustrative application based on a twofold rationale. First, the energy sector has a major impact on the global environment (e.g., in terms of massive pollution), and, due to this, it is always placed at the core of national and international sustainability plans. Second, in comparison with other energy companies operating on a global scale, Ørsted has been recently undertaking a sustainability-driven business model innovation, transitioning from a coal-intensive business model to one based on renewable energy generation (Madsen & Ulhøi, 2021). Particularly, since 2017, Ørsted (formerly DONG Energy) has focused its business model on the generation and supply of renewable energy from wind, biomass, and thermal power, thus abandoning its previous operations related to oil and gas power.<sup>1</sup>

As depicted in the company's 2020 sustainability report (Ørsted, 2020a), this business model transformation was mainly driven

<sup>1</sup>An in-depth overview of Ørsted's history related to its transition toward green energy can be found in Madsen and Ulhøi (2021).





**FIGURE 3** Ørsted's current business model—output of Phase 1 of the managerial approach (adapted from Bocken, 2015 and Bocken et al., 2018, and based on the information included into Ørsted, 2020a, Madsen & Ulhøi, 2021, and Kötter & Heil, 2018)

by the opportunity to take on several sustainability challenges inspired by the UN SDGs (particularly SDGs 7 and 13). The company is still addressing these challenges today, with the intent to become the world's most sustainable energy company. This evolutionary pathway toward sustainability entails radical innovations in the current business model of the company, thereby providing us the potential to experiment with the suggested managerial approach (see Figure 2) tracing and monitoring its SDG-driven business model innovation. This analysis focuses on the time frame 2017–2020 and expands to 2025 by taking into account the company's current business plan (Ørsted, 2020b).

Following the phases of the managerial approach proposed in this study (see Table 1 and Figure 2), Figure 3 portrays Ørsted's current business model by using the Adapted Sustainable Business Model Canvas proposed by Bocken (2015) and Bocken et al. (2018) (output of Phase 1 of the approach). This business model analysis is based on information included in the Ørsted's sustainability report (Ørsted, 2020a), as well as in the works of Madsen and Ulhøi (2021) and Kötter and Heil (2018).

Ørsted's current business model displays some elements relevant to sustainability issues, for example, using the infrastructure for renewable energy sources to develop and enable economically viable renewable energy solutions. However, there is still room to increase the current SDG contribution of the company—for example, by working on innovative technological and business model solutions for carbon neutrality and zero coal consumption. In this vein, Table 2 shows the output of Phases 2, 3, 4, and 5 of the approach, illustrating Ørsted's current SDG contribution (see Ørsted, 2020a), along with Ørsted's SDG-related business opportunities and risks (based on Ørsted, 2020a; BSDC, 2017; and GRI, UNGC and WBCSD, 2015), future desired SDG contribution (see Ørsted, 2020a), and SDG

contribution gap. Therefore, drawing on SDG-related business opportunities and risks (Phase 3), the application of the proposed approach leads to an assessment of not only the current but also the future desired SDG contribution of the company, supporting the identification of relevant SDG contribution gaps and planned future actions aimed to fill them.

In this illustrative application, Ørsted's SDG contribution gaps were identified by means of a set of performance indicators measuring the current and the future desired SDG contribution of the company. As reported in Ørsted (2020a), these measures are strongly connected with the definition of long-term programs inspired by the SDGs (e.g., carbon neutrality, zero coal consumption), the implementation of which implies business model innovation along with the introduction of new elements into the company's strategic and organizational architecture. Following Phase 6 of the proposed approach, the identification of the company's SDG contribution gap leads to the formulation of concrete plans to conduct business model innovation. Figure 4 displays the future business model of the company and highlights—in green—the main changes that Ørsted plans to implement.

As shown by Ørsted's example, business model innovation can be inspired by various SDG-driven initiatives that are expected to have positive environmental, social, and economic contributions, for example, reaching carbon neutrality (SDG 13) while expanding green energy supply (SDG 7). To succeed in this value proposition renewal, companies tend to strengthen partnerships with additional actors promoting sustainable development (e.g., UNGC). Ørsted's illustrative example shows how future goals with respect to an organization's SDG contribution can be turned into concrete performance indicators that can be used in practice to guide business model innovation. In so doing, the example shows how the approach can support the

**TABLE 2** Ørsted's current SDG contribution, SDG-related business opportunities and risks, future desired SDG contribution, and SDG contribution gap (output of Phases 2, 3, 4, and 5)

SDG	Current SDG contribution	SDG-related business opportunities what is likely to happen if the organization improves its SDG contribution	SDG-related business risks what is likely to happen if the organization does not improve its SDG contribution	Future SDG contribution	SDG contribution gap
SDG 5	Share of women in positions as senior directors or higher in 2020: 20%	Opportunity to empower women employees and promote diversity and inclusion within the organization (BSDC, 2017, pp. 54–55; Ørsted, 2020a, p. 31)	Reputational risks related to gender inequality in the workplace (BSDC, 2017, p. 27)	Share of women in positions as senior directors or higher in 2023: 22%	<b>2% increase</b> of women in positions as senior directors or higher
SDG 5	Share of women in positions of directors, senior managers, managers, and team leads in 2020: 26%	Opportunity to empower women employees and promote diversity and inclusion within the organization (BSDC, 2017, pp. 54–55; Ørsted, 2020a, p. 31)	Reputational risks related to gender inequality in the workplace (BSDC, 2017, p. 27)	Share of women in positions of directors, senior managers, managers, and team leads in 2023: 30%	<b>4% increase</b> of women in positions of directors, senior managers, managers, and team leads
SDG 7	Installed offshore wind capacity in 2020: 7.6 GW	Opportunity to develop innovative technological and business model solutions aimed at increasing offshore wind capacity (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 21)	Reputational risks and potential loss of sustainability-oriented customer segments (BSDC, 2017, p. 43; GRI, UNGC and WBCSD, 2015, p. 8)	Installed offshore wind capacity in 2025: 15 GW	<b>7.4 GW increase</b> of installed offshore wind capacity
SDG 7	Installed onshore wind and solar capacity in 2020: 1.7 GW	Opportunity to develop innovative technological and business model solutions aimed at increasing onshore wind and solar capacity (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 21)	Reputational risks and potential loss of sustainability-oriented customer segments (BSDC, 2017, p. 43; GRI, UNGC and WBCSD, 2015, p. 8)	Installed onshore wind and solar capacity in 2025: 5 GW	<b>3.3 GW increase</b> of onshore wind and solar capacity
SDG 7	Coal consumption in 2020: 0.6 million tonnes	Opportunity to develop innovative technological and business model solutions reducing coal consumption (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 21)	Reputational risks and potential loss of sustainability-oriented customer segments (BSDC, 2017, p. 43; GRI, UNGC and WBCSD, 2015, p. 8)	Coal consumption in 2023: 0 million tonnes	<b>0.6 million tonnes reduction</b> of coal consumption
SDG 8	Total recordable incident rate in 2020: 3.6 (number of incidents per million hours worked)	Opportunity to build a culture of workplace safety within the organization (GRI, UNGC and WBCSD, 2015, p. 18; Ørsted, 2020a, p. 38)	Reputational and legal risks related to workplace safety (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 38)	Total recordable incident rate in 2025: 2.9 (number of incidents per million hours worked)	<b>0.7 reduction</b> in the total recordable incident rate
SDG 13	Reduction in GHG intensity in 2020: 87% (% reduction in g CO <sub>2</sub> e/kWh, base year 2006)	Opportunity to develop innovative technological and business model solutions reducing GHG intensity (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 21)	Business risks related to adverse country regulations toward GHG intensity reduction (GRI, UNGC and WBCSD, 2015, p. 8)	Reduction in GHG intensity in 2025: 98% (base year 2006)	<b>11% reduction</b> in GHG intensity

TABLE 2 (Continued)

SDG	Current SDG contribution	SDG-related business opportunities what is likely to happen if the organization improves its SDG contribution	SDG-related business risks what is likely to happen if the organization does not improve its SDG contribution	Future SDG contribution	SDG contribution gap
SDG 13	Reduction in carbon emissions (scope 3) in 2020: 13% (base year 2018)	Opportunity to develop innovative technological and business model solutions reducing carbon emissions (GRI, UNGC and WBCSD, 2015, p. 8; Ørsted, 2020a, p. 21)	Business risks related to adverse country regulations toward carbon emission reduction (GRI, UNGC and WBCSD, 2015, p. 8)	Reduction in carbon emissions (Scope 3) in 2032: 50% (base year 2018)	37% reduction of carbon emissions in Scope 3
SDG 13	Green energy share in 2020: 90%	Opportunity to maintain a global leading position in terms of green energy generation, and be recognized and trusted as such (GRI, UNGC and WBCSD, 2015, p. 9; Ørsted, 2020a, p. 8)	Reputational risks and potential loss of sustainability-oriented customer segments (BSDC, 2017, p. 43; GRI, UNGC and WBCSD, 2015, p. 8)	Green energy share in 2025: 99%	9% increase in green energy share

operationalization of business strategizing and decision making when it comes to innovating an organization's business model to tackle societal grand challenges, such as the ones represented by the SDGs.

Through this illustrative application and the series of workshops conducted with BluSense Diagnostics and Studynova, we learned two key lessons. First, the application of the approach works substantively better when key decision makers are fully committed in the process. For example, in a workshop conducted in collaboration with BluSense Diagnostics, it was crucial to obtain CEO's validation of the analysis of the current business model (output of Phase 1 of the approach) and SDG contribution (output of Phase 2) to ensure that the first two phases of the approach were adequately addressed by the innovation team. Indeed, the first two phases of the approach serve as starting points to envision an organization's sustainability transformation and its corresponding SDG contribution and future business model. This is in line with studies on change management (Aladwani, 2001), quality management (Soltani, 2005), and information technology (Dong et al., 2009), which show that top management commitment plays a significant role in the successful implementations of organizational changes. Second, we experienced that cross-functional skills in the team proved to be particularly useful during the process. This was particularly relevant in Phase 3, as team members from different functions provided a wide array of perspectives on SDG-related business opportunities and risks. The observed advantages of the cross-functional nature of teams are in line with previous studies in innovation management (Love & Roper, 2009), new product development (Edmondson & Nembhard, 2009; Sarin & Mahajan, 2001), operations management (Santa et al., 2010), and corporate sustainability (Longoni & Cagliano, 2015). In this respect, Longoni and Cagliano (2015) show that cross-functional executive involvement and worker involvement positively affect strategic alignment between lean manufacturing and social and environmental sustainability. According

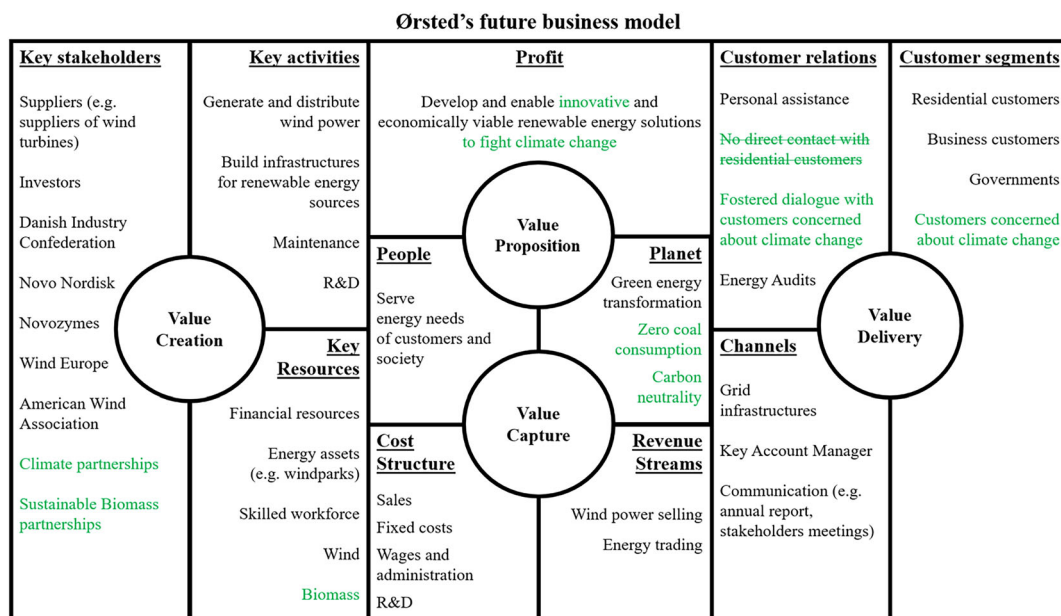
to Love and Roper (2009, p. 194), “[t]he benefits of cross-functional teams arise from synergies from different sets of views, skills, and expertise that can arise only through physical interaction of, and particularly verbal communication among, specialized personnel.”

The next section of the paper discusses the research and practical contribution of the study along with future research perspectives for theory and practice.

## 7 | FINAL REMARKS

Private organizations can contribute substantively to achieving the SDGs through innovation and technological development, strategic thinking, creative processes, and the provision of unique skills and resources (Scheyvens et al., 2016). At the same time, organizations can also benefit from the SDGs, as they provide a concrete set of goals and targets that support the identification, prioritization, and anticipation of unmet customer and stakeholder needs, leading to the generation of new opportunities for business model innovation and sustainable growth (Muff et al., 2017; Rosati & Faria, 2019a; Scheyvens et al., 2016).

We have devised a managerial approach that addresses the persistent lack of approaches supporting business model innovation for the SDGs. This gap in research and practice leads to a suboptimal business contribution to the SDGs. This study addressed this gap by proposing a six-phase approach developed through a constructive research method and based on academic and practical knowledge of business model innovation, sustainable development, and corporate sustainability management. The proposed managerial approach helps organizations assess their SDG contribution, explore and prioritize SDG-oriented business opportunities and formulate business model innovation strategies accordingly.



**FIGURE 4** Ørsted's future business model—output of Phase 6 of the managerial approach (adapted from Bocken, 2015 and Bocken et al., 2018, and based on the information included into Ørsted, 2020a, Madsen & Ulhøi, 2021, and Kötter & Heil, 2018)

From an academic perspective, this paper delivers a novel contribution to the scientific literature on business model innovation, sustainable development, and corporate sustainability management. It does so by first systematizing knowledge of existing approaches, guidelines, and tools related to the connection between business models and the SDGs. Then, it uses this knowledge to generate a managerial approach to inspire business model innovation for the SDGs. The proposed approach addresses the assessment of organizational SDG contribution and the identification of relevant SDG business opportunities and risks. Other tools, methods, and approaches might be derived from this managerial approach, upon which scholars can build more contextualized and specific use cases. The approach can be adapted and tailored towards analyzing different sectors and business model innovation strategies, and it can be used in connection to extant tools in the fields of sustainable development and corporate sustainability to extend their reach and impact.

From a practical perspective, the proposed managerial approach can support organizations in exploring opportunities, challenges, and risks related to business model innovation for the SDGs by integrating an SDG perspective into a business model innovation journey. The proposed approach offers a structured pragmatic roadmap supporting managers and consultants in assessing, pivoting, and implementing business model innovation for the SDGs by fostering an iterative learning process that originates emerging SDG-driven opportunities, challenges, and risks. Implementing this evolutionary pathway facilitates participatory decision making by calling into action different company actors. Regardless of their knowledge of business management principles, different company actors may effectively contribute to suggesting new sustainability-related insights from other viewpoints (e.g., technical, commercial, administrative, logistical, as

citizens/users). To this end, their understanding overcomes potential managerial cognition limits by taking advantage of the described supportive approach, which draws on agile visual management tools, such as the SBM Canvas, the SDG Impact Assessment tool, and the Gap Frame (Eppler & Platts, 2009; Eriksson & Fundin, 2018; Jin et al., 2021; Knight & Paroutis, 2019; Paroutis et al., 2015). The illustrative application sheds light on how to implement the approach, as it provides insight to companies about the robust and structured integration of the SDGs into business model innovation aimed primarily at generating optimized positive contributions. Although the practical application focuses on a private sector organization, the design principles of the approach enable its application to different organizational settings and size. Lastly, practical implications also include the possibility of promoting SDG-oriented collaboration mechanisms and behaviors between organizations operating in a business ecosystem. Indeed, deploying the approach in a cross-organizational setting may enable the growth of cross-fertilization and joint collaborative initiatives (e.g., industrial symbiosis) oriented to increase SDG impact across the business ecosystem (Bertello et al., 2022; Manring, 2007; Volkmann et al., 2021).

Some research limitations can be identified. First, as a conceptual work, we intended to develop a generic framework that offers limited insight into sector-specific aspects. Second, the empirical dimension of the illustrative application of the proposed approach was limited to secondary data collection. Third, we highlighted tools and applications that are mostly focused on the private sector. To address these limitations and inspire future research development, we look forward to the work of scholars and practitioners advancing the approach put forth in this paper. Promising lines of investigation include (i) instantiating the managerial approach in a broad set of industrial sectors, geographies, and company sizes to check for potential adjustments and

adaptations to the approach architecture; (ii) developing in-depth case studies based on the proposed managerial approach, in order to collect primary data to enhance its potential applications and uses; and (iii) extending and adapting the rationale of the managerial approach to cover cases of non-profit organizations and the public sector.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest related to this study.

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