1. INTRODUCTION: AN INCREASINGLY IMPORTANT - BUT STILL AMBIGUOUS - ROLE OF COMPANIES

The Sustainable Development Goals (SDGs) are a bold blueprint for creating a better world. They aim to ‘free humanity from poverty, secure a healthy planet for future generations, and build peaceful, inclusive societies as a foundation for ensuring lives of dignity for all.’ But attaining the SDGs by 2030, their due date, will be challenging. Although the first five years of the SDG agenda – set in 2015 – witnessed important headway in some key areas, overall progress is too slow in all parts of the world. Yet research also shows that, despite the Covid-19 pandemic, the goals can still be achieved. So, how can the significant momentum that the SDGs have gained be translated into real-world impact?

A key hurdle is to enable companies to become more proactively involved in the SDGs. Companies are critical for sustainable development. They are innovative and can deliver products and services that allow people to live better lives. The way companies operate may furthermore be conducive to advancing sustainability objectives, such as...
gender equality or good governance. However, companies might also create products that harm the SDGs. And rather than sustainably managing the natural, financial, and human resources they use, companies could exploit them.

Notwithstanding the fact that most big companies in the world have embraced the SDGs in their communications, only few have integrated the goals into their core strategy. "Cherry picking"—i.e. targeting SDGs that are relatively easy to address—is prevalent, supporting allegations that companies are using the SDGs primarily as ‘window-dressing’. Hence, enabling companies to more proactively integrate the SDGs into their strategies is key to driving progress towards the achievement of these goals.

These considerations pose analytical and practical challenges centring on the fundamental question: how can companies define and enhance their impact on the SDGs? We search for ways to apply the Nexus Principle as a strategic tool for companies. This should enable us to propose a business school contribution to the rapidly growing Nexus Communities around the world and the SDG Interaction Knowledge Platform (Box 1).

The Nexus Principle:
Optimise positive synergies while minimising negative trade-offs

This report summarises the research we have done since 2015 on the role of companies in achieving the SDGs. It consists of three major parts. First, we introduce a method for establishing evidence-based links between companies’ activities and the SDGs. Second, we analyse companies’ impacts on SDGs and introduce four types of sustainability challenges for companies. Third, we present a framework that companies can adopt to better understand their existing impacts on sustainable development. Throughout, we include textboxes to provide specific examples.

Box 1 - Nexus Communities, SDG Interaction Knowledge Platform and RSM’s contribution

In 2018, a nexus community of researchers, academics, NGOs, policymakers, and the private sector convened to further develop ideas and insights on the interconnections between the SDGs, in particular the Water, Food, Energy (WFE), and Climate nexus. The International Science Council conference considered the nexus-style of analysis—i.e. focusing on optimising positive synergies while minimising negative trade-offs—to be a vital approach to help develop more practical solutions for addressing key sustainability issues, and “helping global communities in their collective efforts to deliver the SDGs, end poverty, and create more equitable and peaceful societies.”

The conference urged all concerned with the advancement of the SDG agenda to consider adopting a nexus style of analysis and action to identify the strongest interconnections between various goals and targets, and to generate integrated approaches and policies for them. In addition to the policy-relevant implications of the WFE nexus, it was stressed that “the time has come to consider applying the approach more widely as it can help to enhance the understanding of connections among other issues such as health, gender, human mobility, population growth and other matters pertaining to the 2030 Agenda.” The conference also recommended that:

(i) the governance dimension should, from the outset, be factored into any new nexus analysis and policy recommendations that emerge,

(ii) a nexus-style analysis be built into public and private financial appraisal systems to ensure that investments support key integration objectives and appropriate co-operation between different levels of governance, and between public and private sectors;

(iii) nexus research on interlinkages be linked to policy formulation and the policy-making community;

(iv) nexus thinking be used when implementing capacity building for SDG delivering, and thus equip communities with tools to better address SDG-challenges.

References:
7 van Zanten & van Tulder (2021)
8 UN Global Compact (2020)
Enhancing corporate contributions to sustainable development: A nexus approach to the SDGs

The research team of Nilsson and colleagues (2018) stressed the importance of contextual factors when mapping and assessing interactions across the SDGs, such as (a) geographical context, (b) resource endowments, (c) time horizon, and (d) governance. To navigate further studies along these lines, they proposed to create a global SDG Interaction Knowledge Platform as a “key mechanism for assembling, systematizing and aggregating knowledge on interactions”.

The proposed web-based knowledge platform should process knowledge development and its use in both science and policy spheres, to search for relevant correlations by coded case studies in “a way that they can be searched, matched and synthesized, and thereby inform stakeholder dialogue and learning in a developing community” (ibid: 1497, figure 1).

RSM Corporate Nexus initiative

Complementary to – and in close collaboration with – the above efforts, Rotterdam School of Management, Erasmus University (RSM) is furthering knowledge creation on effective nexus strategies by individual companies. The analytical focus is explained in this briefing. We aim to develop practical tools for companies to link their own strategy to a strategic portfolio of SDG targets to apply the Nexus Principle in practice, and report relevant progress. This initiative applies the insights further elaborated in more detail in the forthcoming book Principles of Sustainable Business.  

2. COLLECTING THE EVIDENCE: WHICH SDGS ARE IMPACTED BY COMPANIES?

There are millions of companies in the world. Each company has positive and negative impacts on the SDGs. The products that companies deliver may help attain the goals yet could also hamper their achievement. And companies’ operations, such as the way in which they manage their environmental impacts or how they are being governed, also affect the SDGs. How might we get an understanding of different types of companies impacts on the SDGs?

Unfortunately, to date, there are no datasets that comprehensively explain companies’ impacts on sustainable development. That is why we investigated how the economic activities undertaken by companies (as a proxy for corporate strategies) impact the SDGs. Every company conducts particular types of economic activities, like specific types of agriculture, manufacturing, industrial, or services activities. In our paper Towards nexus-based governance: defining interactions between economic activities and Sustainable Development Goals (SDGs) we conduct a systematic literature review to investigate how each type of economic activity that a company may undertake impacts the SDGs. We review a total of 876 articles published between 2005 and 2019, covering 420 types of economic activities. In the article, we analyse the key features of the literature and we then summarise the evidence on the links between economic activities and the SDG targets. We thereby aim to provide an evidence base for linking economic activities with the SDGs.

At an overarching level, the findings reveal that economic activities bring ample opportunities for advancing the SDGs. Most are sources of economic productivity (SDG 8) and drive industrialisation (SDG 9) while many create and/or distribute goods and services that help people meet their basic needs (SDGs 2, 3, 4, 6, 7, 11). However, negative impacts are widespread, most prominently afflicting ecosystems (SDGs 14 and 15), driving climate change (SDG 13) and harming human health (SDG 3).

Yet these interactions vary widely across individual economic activities. Agriculture activities, for instance, feed the world, thereby having clear potential to help achieve SDG 2 (zero hunger). However, they also account for some 70 per cent of water withdrawals globally which raises concerns for SDG 6 (water and sanitation), and the use of fertilizers and pesticides threatens SDGs 14 and 15 (life on land and below water).

As another example, electricity generation promotes SDG 9 (sustainable industrialisation). But if electricity is generated through non-renewable sources, SDG 13 (climate action) is at risk, while SDG 3 (health and well-being) may be harmed due to air pollution. Estimates suggest that in China 15 million and in India 11 million years of life lost can be avoided by eliminating power generation emissions.

In the paper, we summarise the literature on such linkages which can inform the creation of improved strategies for linking economic activities with the SDGs.
for the SDGs. Scientists and policy makers increasingly recognise that progress on the SDGs can be accelerated through a nexus approach. Recognizing that progress on one SDG can promote, but also be detrimental to, progress on another SDG, a nexus approach aims to manage the interactions between SDGs in order to advance multiple SDGs simultaneously and reduce the risk of trade-offs. For example, eradicating hunger (SDG 2) improves health and well-being (SDG 3) and can help people escape poverty (SDG 1). Targeting these SDGs together, instead of treating them as isolated silos brings opportunities for bigger impacts.

The economic activities undertaken by companies present a key lever for operationalising this SDG-nexus. Economic activities drive positive and negative impacts on the SDGs, which are themselves entwined. Hence, there is an imperative to adopt a nexus approach to economic activities’ impacts on sustainable development, in order to promote the co-benefits of economic activities on SDGs and mitigate their trade-offs. The nexus approach not only deserves attention as part of policy agendas, but increasingly as an integral part of corporate strategies. But what types of strategies might companies employ to manage the interactions between their economic activities and the SDGs?

### Box 2 – Integrating SDGs into investment strategies: Robeco’s SDG Framework

**Investors and the SDGs**

Investors play an important role in achieving the SDGs. They can mobilise financing towards those companies that provide solutions for the SDGs and shift capital away from companies that undermine progress. This textbox illustrates how Robeco, an international asset management firm headquartered in Rotterdam, developed a proprietary SDG framework to analyse companies’ impacts on the SDGs. Using this framework, Robeco created dedicated SDG investment strategies.

**Robeco’s SDG Framework**

The Robeco SDG Framework provides an objective, consistent, and replicable approach towards assessing positive and negative SDG contributions within an investment portfolio. Using a three-step approach, the framework investigates to what extent a company positively and/or negatively impacts each of the SDGs. This logic is shown in the figure below.
Step 1: What do companies produce?
The first step asks how much the companies’ products and services positively or negatively impact each of the SDGs and their underlying targets. Companies are assessed on an extensive set of key performance indicators (KPIs) with accompanying thresholds. Jointly, these KPIs and thresholds provide rules for determining how positive or negative is the impact of goods and services on the SDGs.

For example, when analysing a retail bank, positive impacts might be expected for SDGs 8 (Decent Work and Economic Growth), and 9 (Industry, Innovation, and Infrastructure). The reason is that these SDGs have sub-targets that actively call for the participation of the financial sector (targets 8.3; 8.10; and 9.3). To ensure that the bank under analysis actually positively impacts these SDGs, Robeco assesses the bank’s performance on various KPIs. For instance, one KPI looks at the proportion of outstanding loans to small-to-medium sized enterprises (SMEs) compared to the value of its total loan book. Should this exceed 15 per cent, then we determine the impact to be positive, to a medium extent, for SDGs 8 and 9. Other KPIs relevant for banks gauge the share of consumer loans issued by the bank to clients in emerging markets (positively impacting SDG 1, target 1.5), the value of retail mortgage loans issued (positively triggering SDG 11, target 11.1), and so forth.

Step 2: How do companies operate?
Companies not only impact the SDGs through their products and services: their operations matter too. Are they polluting, do they respect labour rights, do they refrain from corruption and do they have a well-diversified board? In step 2, Robeco analysts check if the way the firm operates is compatible with the SDGs. This includes comprehensive evaluations of a company’s environmental policies, conduct record, governance framework, etc. If material positive or negative impacts are identified, the SDG ratings can be adjusted. For instance, gender equality data is sourced to assess companies’ performance on various dimensions of women’s empowerment.

Step 3: Are controversies known?
In the final step, Robeco checks whether the company concerned has been involved in any controversies. A company can make the right products, operate in the right manner, and so meet the criteria set in steps 1 and 2, but still be caught up in controversies, such as oil spills, fraud or bribery. Ratings and data from external providers are used to identify whether a company is involved in a controversy. If a controversy is found, the analyst determines whether this has material impacts on the SDGs. If the controversy is found to do significant harm, the final SDG Score for the company will be negative, regardless of any positives identified in Steps 1 and 2.

The SDG score created by Robeco
Robeco’s assessment of the company produces a score for each of the 17 SDGs. The score can range from very negative (-3) to very positive (+3). This means that a company may impact multiple SDGs, whereby each of these impacts may be positive or negative at various impact levels. To calculate a final SDG score for the company, Robeco applies a ‘min-max’ rule which stipulates that if a company has negative impacts on an SDG (‘min’) the lowest SDG score will be taken as the company’s final SDG score, even though this company may have positive impacts on other SDGs. In turn, if the company only positively impacts SDGs (‘max’), the highest SDG score is taken as its final rating.

This rule is important. The SDGs are integrated and indivisible – in other words, they should be treated as a whole rather than as 17 isolated goals so that progress on one goal does not undermine progress on another. The ‘min-max’ rule warrants that companies with a negative impact on an SDG also have a negative final SDG score. Robeco’s SDG strategy means it invests only in the equity and credits of companies with neutral or positive contributions, thus excluding companies with negative impacts from the eligible investment universe.
Having collected evidence on how different types of companies – according to their economic activities – impact the SDGs, the next step is to determine the implications for corporate sustainability strategies. This is the objective of our article Analyzing companies’ interactions with the Sustainable Development Goals through network analysis: Four corporate sustainability imperatives.

In this paper, we study to what extent different types of companies are aligned with the ambitions of the SDGs. We identify 67 unique economic activities and assess to what extent they positively and/or negatively interact with 59 SDG targets. Because they serve as indications of companies' operations and the goods or services that are created, these economic activities can be used as a proxy for better understanding the heterogeneous influence of the private sector on sustainable development. To assess the interactions between these 67 economic activities and 59 SDG targets, we use a qualitative scoring framework that draws from recent studies that seek to conceptualise and establish interactions between the SDGs themselves. Each interaction between the 67 economic activities and 59 SDG targets is scored as being: cancelling (−3), counteracting (−2), constraining (−1), consistent (0), enabling (+1), reinforcing (+2), or indivisible (+3) with the SDG. We then adopt mathematical techniques from network theory to study the scored interactions as a network, allowing us to define which economic activities positively and negatively impact most SDG targets, which SDGs receive most positive or negative impacts from economic activities, and which pairs of economic activities and SDG targets are most similar.

Figure 1 gives an impression of how we analysed the interactions between economic activities (grey nodes in the figure) and SDG targets (coloured nodes in the figure). Green lines indicate that the economic activity interacts positively with the SDG target, whereas red lines suggest negative interactions. The width of the lines indicates how significant the interaction is, following the scoring system explained above. The size of the nodes corresponds to the centrality of the economic activities (i.e. the overall influence exerted by an economic activity on all SDG targets) and of the SDG targets (i.e. the overall influence received by an SDG target of all economic activities).

This network graph, for example, clearly illustrates that SDG target 13.2, on Climate Action, receives most interactions from economic activities, which are primarily negative. In turn, SDG target 9.2 also receives many interactions, yet all are positive.

Figure 1: Centrality-adjusted network of interactions between economic activities and SDG targets

Source: van Zanten & van Tulder (2021a)

3. ANALYSIS: WHAT ROLE DO DIFFERENT COMPANIES HAVE IN THE SDGS?

11 (e.g., Nilsson et al., 2016, 2018; Weitz et al., 2018)
The results tell us to what extent companies pursuing different activities are positively and negatively aligned with the SDG agenda. This creates critical inputs for corporate sustainability strategies that seek to improve a company’s alignment with the SDGs and to thereby attain long-term sustainability success.

We distinguish between four types of economic activities that companies might undertake. Each of these has a unique strategic sustainability imperative that will allow it to improve its impacts on the SDGs.

- **Activities that are core to the SDG Agenda** generate significant positive and few negative impacts. Examples are education, human health and social work, legal activities, renewable electric power generation, transmission and distribution, insurance, and scientific research. Each of these activities have clear positive interactions with the SDGs while having few negative effects. Hence, the strategic implication for such companies is that they must seek to scale their positive impacts to further align with the SDG agenda.

- **Mixed activities** generate significant positive and negative impacts on the SDGs. For example, growing crops provides staple foods that are key to nutritious diets (SDG 2) but also have a high share of negative interactions, including with water use (SDG 6), chemical use (SDG 12) and land degradation (SDG 15). Due to their moderate or high positive interactions with the SDG targets most of the economic activities in this category cannot be missed out in a sustainable future. This brings the challenge of decoupling their negative impacts.

- **Opposed activities** generate significantly negative, and less significantly positive, impacts on the SDGs. These economic activities may have a potentially strong influence on holding back—or even reversing—progress on the SDGs. Examples include the high negative impacts of mining of coal and lignite, extraction of crude petroleum, mining of metal ores and quarrying of stone, sand and clay on the natural environment (SDGs 6, 12, 13, 14, and 15). Another example is the adverse impacts on human health (SDG 3) of manufacture of alcohol and tobacco or manufacture of soft drinks, which additionally use significant volumes of water (SDG 6). The strategic imperative for companies whose economic activities are opposed to the SDG agenda is to transform in order to abandon economic activities negatively aligned with the SDGs, and shift towards activities with positive alignment. An example is Danish oil and gas company DONG, which transformed itself into a renewable energy company, changing its name to Ørsted. Hence, Ørsted transformed from an opposed company into a core company for the SDGs.

- **Peripheral activities** have relatively insignificant positive and negative effects. This makes them relatively less relevant for achieving the SDGs. They contribute little, yet are also not expected to cost a lot. This does not mean that this has to be the case in the future: the strategic imperative is for such companies to explore ways for generating positive impacts.

### 4. MOVING FORWARD: HOW CAN COMPANIES IMPROVE THEIR SDG IMPACTS?

But how might companies ensure that their strategies effectively advance sustainable development? The foregoing work investigated the evidence for companies’ impacts on the SDGs and delineated the strategic challenges that different types of companies face when they seek to improve their impacts. Yet companies face various challenges in creating strategies that are successful at improving their impacts on sustainable development. In our study *Improving companies’ impacts on sustainable development: A nexus approach to the SDGs* we contribute to developing a theory of sustainability management that enables companies to improve their impacts on sustainable development. We do so by introducing a nexus approach to corporate sustainability.

The starting point of this approach is to create an understanding of how companies interact with the SDGs (direct interactions), how this might spark interactions between themselves (indirect interactions) and how these direct and indirect interactions then influence the resilience of social ecological systems (SES), like an industrial area, a city, a country, or even the planet. Resilience, in turn, is a key indication of whether an SES is advancing on a desirable sustainable development pathway.

To help companies chart their impacts on sustainable development, we introduce the framework shown in Figure 2. To illustrate this framework, consider a hypothetical oil company. This oil company has direct positive interactions with the SDGs by providing people and businesses with energy, but it also has direct negative interactions with SDGs.
due to its greenhouse gas emissions and the impacts that oil drilling have on the natural environment (arrows 1 and 2). Providing energy may indirectly support industrialisation and economic growth, yet these, combined with the greenhouse gases released from the burning of the company’s energy products, may indirectly harm ecosystems and biodiversity, and in the long run could detract from achieving socio-economic objectives (arrows 3-6). The company’s positive SDG interactions – on economic and social goals – may support the resilience of SES at different scales due to improved incomes and employment (arrow 7). However, these effects are at risk from the company’s negative SDG interactions: climate change and ecosystem deterioration undermine the resilience of SES. These effects cross geospatial scales. For example, whereas the company influences the planet’s climate on a global scale, the consequences of climate change affect small-scale SES like individual communities, regions and businesses.

**Figure 2: Framework: the influence of a company’s SDG interactions on SES resilience**

This framework helps to understand how companies influence the sustainable development pathways of the systems in which they are embedded. So, how can companies manage their interactions with the SDGs in order to improve their impacts?

We introduce a nexus approach to corporate sustainability as a viable strategy for companies to enhance their contributions to sustainable development. A nexus approach gained prominence in the sustainable development literature for its potential to more efficiently generate sustainable development impacts. A nexus approach fulfils 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’). 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. A nexus approach induces companies to create and maximise mutually reinforcing

12 e.g., Bleischwitz et al. (2018), Boas, Biermann & Kanje (2016), Liu et al. (2018), Weitz, Nilsson & Davis (2014)
positive interactions while avoiding, or minimising, 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.

To make this actionable, we introduce a flowchart that guides managers in implementing this nexus approach. The chart contains six navigating questions divided into two main stages: strategising and executing. The strategising stage (on the left) selects a portfolio of SDGs that the company must act on. These are the SDGs that are directly and indirectly impacted, as well as transformational SDGs that help the company amplify its positive, and reduce its negative, impacts. The executing stage then advances this portfolio of SDGs by taking three forward-looking steps: to adjust the company’s operations to ensure that the future SDG ambitions can be realised; to innovate in order to create new, and adapt existing, goods and services that improve impacts on the SDGs; and partnering with the companies in the value chain as well as with civil society and governmental organisations to ensure that SDG interactions lead to desired sustainable development impacts within societies. As the chart shows, the stages form an ongoing cycle, thereby encouraging companies to continuously assess and manage their impacts on the SDGs.

Figure 3: Implementing a nexus approach to corporate sustainability in six navigating questions

![Flowchart](image-url)

Source: van Zanten & van Tulder (2021b)
Companies hold one of the keys to the success of the SDGs. They have massive impacts, both positive and negative, on virtually all of the goals. Many companies have embraced the SDGs in their reporting and communications. But the slow progress that the world is making on achieving these goals signals that companies face serious challenges in creating strategies that deliver sustainability results. In this paper we give an overview the research papers that we recently published. These help rethink the role of companies in sustainable development.

First, we summarised the evidence, as reported in nearly 900 published articles, on how different types of economic activities that companies may undertake impact the SDGs and their underlying targets. Second, we studied to what extent such different types of companies are aligned with the ambitions of the SDGs. By investigating the interactions between 67 unique economic activities and 59 SDG targets, we identify four types of corporate activities, each with a strategic sustainability imperatives:

(i) core activities predominantly generate positive, while having few negative, impacts on the SDGs, challenging companies to scale their contributions to further align with the SDG agenda;

(ii) mixed activities have moderate or high degrees of negative or positive impacts, posing a decoupling imperative;

(iii) opposed activities provide few benefits yet cause significant adverse impacts, implying that companies must transform in order to better align with the SDGs; and:

(iv) peripheral activities have immaterial positive and negative impacts, creating an imperative to explore innovative avenues for creating SDG contributions.

Third, we introduce a nexus approach to corporate sustainability, which helps companies ensure that their strategies effectively contribute to sustainable development. 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.

The SDGs aim to transform our world by the year 2030. This means that there are still nine years left to achieve them and ensure that everyone, including future generations, can live a fulfilling life on a healthy planet. Companies are critical for success: they exert significant positive and negative impacts on the SDGs which influences the world’s ability to advance sustainable development. A nexus approach incorporates the evidence of how different types of companies impact different SDGs. This provides a systemic and necessary approach to corporate sustainability that can potentially accelerate companies’ impacts on sustainable development and help achieve the SDGs by 2030.
REFERENCES


*The views expressed in this article are not necessarily shared by Robeco.*