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THE SUSTAINABLE DEVELOPMENT GOALS FROM A FIRM'S PERSPECTIVE

Reports from the Field

3

Doctoral Program

"Ethics and Responsible Leadership in Business"

zeppelin universität | Leadership Excellence Institute Zeppelin | LEIZ
Initiiert und gesponsert durch die Karl Schlecht Stiftung KSG

Karl Schlecht Stiftung

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URN urn:nbn:de:gbv:3:2-65134

Published by

The Wittenberg Center for Global Ethics, in cooperation with the Leadership Excellence Institute of the Zeppelin University. The study was supported by the Karl Schlecht Stiftung.

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THE SUSTAINABLE DEVELOPMENT GOALS FROM A FIRM'S PERSPECTIVE

Management Summary

The Sustainable Development Goals (SDGs), which were released by the United Nations in September 2015, allocate responsibility to the business sector for contributing innovations and creative solutions to the most pressing societal challenges. This report presents a systematic management approach whereby firms can pursue their economic interests whilst simultaneously fulfilling the requirement to enhance societal interests, as articulated by the SDGs. It shows how corporations can apply their core business processes to create value, in both a societal and economic sense.

To date, three different instruments have been developed to guide companies in strategically applying their core business processes to create economic and societal value; the SDG Compass, the SDG Industry Matrix and the SDG Market Evaluator. The analysis in this report reveals that both the Compass and the Industry Matrix emphasize a qualitative approach to managing corporations' contributions to the SDGs. Hence, the SDG Market Evaluator was conceptualized by the authors of this report in order to harmonize the qualitative, societal focus of the aforementioned tools with the quantitative, economic management approaches which guide the operations in the vast majority of modern corporations.

Thus, the SDG Market Evaluator, takes on a multi-directional focus in order to identify corporations' opportunities to simultaneously create economic and societal value. Following this approach, the question as to what the SDGs can contribute to the economic value creation of the business sector receives equal notice. Specifically, the Evaluator aligns existing business goals with fitting SDGs, lists business activities that allow drafting an SDG footprint and identifies micro-economic key performance indicators which can be used for internal controlling and resource allocation purposes. By applying the SDG Market Evaluator, corporations can optimize their operations with regard to the SDGs and in doing so, create additional economic value.

The paper gives an overview of the five-step SDG management process that firms should systematically progress through with regard to their core business operations to tackle the challenges, and take advantage of the opportunities, created by the declaration of the SDGs. The five steps in this process are: (1) Awareness Creation, (2) Corporate Reflection, (3) Activity Allocation, (4) Quantification of Resources and finally, (5) Reporting & Storytelling. Applying this process will enable corporations to utilize the SDGs as opportunities of shared value creation. This means that economic value will be created while simultaneously addressing societal demands by contributing to the most pressing challenges of the 21st century.

Introduction

The fact that the Sustainable Developments Goals delegate responsibility for addressing global challenges to all members of society is of crucial relevance for companies (European Commission, 2011; United Nations, 2014, 2015). They are explicitly encouraged to "[…] apply their creativity and innovation to solving sustainable development challenges" (United Nations, 2015: 29) for the sake of shared value creation (United Nations, 2014). Designating the target function of "creating shared value" (Porter & Kramer, 2011: 64) requires giving systematic consideration of broader stakeholders' interests in core business functions which, in turn, suggests that a fundamental change is necessary concerning the understanding of firms and how they (should) create value (Wieland & Heck, 2013).

Modern corporations, which are faced with this challenge to mainstream business thinking, need new management tools. Tools for this purpose are emerging but, to date, many lack sophistication and hence, have not become widely known nor applied. This remarkable gap between the demands which corporations are facing, in particular, regarding their responsibility to effectively manage their contribution to the SDGs and the empirical reality of firms, whereby they lack a strategic management approach to this task motivated this study. The study began by evaluating existing SDG management approaches in terms of how effectively they enabled corporations to harmonise SDG management with incumbent management processes. The weaknesses identified in the tools available led to the development of the *SDG Market Evaluator*. This report argues that 'shared value' can only be created when the societal requirements expressed by the SDGs are entirely translated into the economic language and mechanisms inherent to the business sector.

After laying out the theoretical foundation of this study, an analysis of the two existing SDG management tools, namely the SDG Compass (GRI, UNGC, & WBCSD, 2015) and SDG Industry Matrix (UNGC, 2016), is presented. Even though they allow for a systematic alignment of the SDGs to underlying business strategies (GRI et al., 2015) and illustrate best practice examples and benchmarks for seven different industry sectors, respectively (UNGC, 2016), they remain on a qualitative level when it comes to assessing future growth potential for corporations. Hence, we argue in support of the SDG Market Evaluator as a third management instrument for SDG implementation in the business sector in the final section of this report.

Apart from using combined desk research of conceptual studies as well as guidance documents, such as those developed by the Sustainable Development Solutions Network (SDSN) (Leisinger, 2014; SDSN, 2015a, 2015b, 2016) or the United Nations (United Nations, 2014, 2015), primary data has been collection through a SDG workshop with one of the most advanced German companies in the field of sustainability.

SDG MANAGEMENT AS SOCIAL INNOVATION MANAGEMENT

The theory of the firm as a nexus of stakeholders introduced by J. Wieland is the conceptual reference point of the argumentation of this report[1]. Based on the traditional understanding of stakeholder management (Freeman, 1984; Freeman, Parmar, Harrison, Wicks, Purnell, & Colle, 2010) as a "theory of added value" (Wieland, 2011: 228), Wieland (ibid.) reconstructs stakeholder theory economically with regard to the economics of governance as conceptualized by Williamson (2005).[2] In this governance-economical conception of stakeholder theory, "the *nature* of the company can then be defined as a contractual nexus of stakeholder resources and stakeholder interests, whose *function* is the governance, i.e., leadership, organization and control, of the resource owners with the *aim* of creating economic added value and distributing a cooperation rent" (Wieland, 2011: 225, emphasis in original). In this context, the firm becomes a cooperation project for stakeholders who invest their specific resources, either tangible (capital, infrastructure, payments) or intangible (legitimacy, know how), into a cooperation team that intends to create long-term stability, for the sake of conducting economic transactions (Wieland & Heck, 2013).

Following this understanding, the resources invested by stakeholders can either be organization-specific assets, i.e. investments that have a positive contribution to the durability of the organization, or they are transaction-related assets needed for conducting a specific economic transaction with the aim of generating a cooperation rent (Wieland, 2008, 2011). Based on their prior investments, stakeholders can claim a certain share of the generated cooperation rent relative to the specific relevance of their invested resources (Wieland, 2008; Wieland & Heck, 2013). In such an understanding of the firm, stakeholders are not just considered as external claimants to the corporation[3], but as internal resource owners "[…] without whom a company could not be constituted and operationally reproduced" (Wieland, 2011: 227).

Reflecting on the managerial challenges for the business sector imposed by the SDG framework, this conception of the firm implies that economic cooperation also means social cooperation which, contrary to mainstream economics, specifically includes the social sphere of the company as an inherent element for its economic value creation purpose (Wieland, 2011). In this context, firms as social cooperation projects do not only operate in the economic dimension, but their "[…] organizational transactions can also be coded polylingually[4], i.e., economically, legally, technologically, aesthetically, morally, politically etc." (Wieland, 2011: 239).

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[1] The argumentation in this section mainly refers to Wieland (2008, 2011, 2014) and to Wieland and Heck (2013).
[2] The economics of governance is the theory of the leadership, organization, and control of collaborative relations and adaptively efficient governance structures. Wieland (2008), p. 18 and Wieland (2011), p. 226.
[3] Cf. exemplarily Roloff (2002) for this argumentation.
[4] For the introduction of the term "polylinguality" and the idea of developing firms as polylingual organizations systems cf. Wieland (1996). "Economic organizations encode polycontextual and polylingual under the restriction of a function-specific guiding code." Wieland (1996), p. 75. Own translation.

Firms' ability to reflect on, understand and communicate about issues, which is referred to as polylinguality, is inherent to their nature as social cooperation projects (Wieland, 2011; Wieland & Heck, 2013). This ability makes firms capable of leading, managing and controlling the necessary stakeholder resources with the goal of generating a cooperation rent and creating shared value (Wieland, 2011; Wieland & Heck, 2013). The polylinguality of firms, which also has to be reflected in their global and local governance structures, is a central theoretical reference point for this study as we argue that successful SDG management presupposes effective polylingual management instruments being in place. Such instruments translate the moral language of the SDG framework, including all the relevant societal stakeholders, into the business language of companies.

In support of this theoretical foundation, the EU Commission equally highlights stakeholder management as a crucial element of a firm's value creation process with the aim of "[…] maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large" (European Commission, 2011: 6). From the standpoint of the economics of governance (Wieland, 2008, 2011, 2014), shared value can then be understood "[…] as the total value added by a firm which is based on the investments of tangible and/or intangible resources of all cooperating stakeholders and their effective and efficient organization" (Wieland & Heck, 2013: 18, own translation). The SDG framework also recognizes the relation between stakeholder management and shared value and its importance for successful management of sustainable development (United Nations, 2015), but stays normative in its "practical" recommendations (Kloke-Lesch, 2015).

Developing SDG management as a means of social innovation management, as this study seeks to do, enables this epistemological gap to be crossed by moving the analytical focus from the normative level of the SDGs to the descriptive level of specific governance structures within corporations. Managing the SDGs within a corporate environment will only be successful when their governance structures are appropriate for initiating and steering social innovation processes. Social innovation has been broadly discussed in academia (Grimm, Fox, Baines, & Albertson, 2013; Mirvis, Herrera, Googins, & Albareda, 2016, in press; Nicholls & Murdock, 2012; Osburg, 2014; Osburg & Schmidpeter, 2013), politics and society (CSR Europe, 2015; European Commission, 2010, 2013, 2014) as well as in the business sector in which it has developed from being 'just' a side issue to becoming an element of corporative innovation processes (Osburg, 2014; Schmidpeter & Weidinger, 2014). The European Commission (2013) recognizes that the concepts of social innovation and shared value are interconnected with each other and suggests the following definition:

"Social innovation can be defined as the development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations. It represents new responses to pressing social demands, which affect the process of social interactions. It is aimed at improving human well-being. Social innovations are innovations that are social in both their ends

*and their means. […] Compared to mainstream innovations, 'social innovations' are critically driven by an extra motive: a social mission, and the value they create is necessarily shared value, at once economic and socia*l*"* (European Commission, 2013: 6-7).

For the further course of this paper, we propose the term *social innovation management* as it allows the distinction between the overarching target function for society and organizations, namely the creation of shared value, and the strategic instrument in form of specific governance structures used for its realization. This is exemplified by the following illustration:

Figure 1: SDG Management as Social Innovation Management[5]

The SDGs are a normative framework, which sets the agenda for sustainable development across all sectors of society over the next 15 years. At the same time, this claim raises the question as to how companies can manage the societal demands inherent to the SDG agenda within their daily operations. Thus, what is necessary for managing these normative demands (Wieland, 2014) is a descriptive and application-oriented translation of the SDGs into the specific business logic of firms. Social innovation management should serve as this "translator".

Firstly, this is because both the SDGs and the concept of social innovation recently introduced by the European Commission (European Commission, 2013) share the idea that innovations and new business opportunities are related and dependent on "[…] social relationships or collaborations" (European Commission, 2013: 6) to create what has been defined as shared value. This means that both comprise the *business innovation* and *stakeholder* dimension.

Secondly, the focus on stakeholders in terms of "social relationships or collaborations" (ibid.) as part of social innovation management offers firms the opportunity to establish local governance structures that enable them to systematically scan their stakeholder networks for negative external effects of economic value creation pro-

[5] Own figure.

cesses that society considers to be pressing problems. The internalization of these effects, however, presupposes close interaction between firms and their relevant stakeholders along core business processes. Only then can innovations and new business opportunities be realized (Wieland, 2016, in press). In fact, business innovation follows social innovation.

The reconstruction of SDG management as social innovation management breathes life into this idea on the level of descriptive governance structures of firms. In this regard, shared value stays the overarching target function of social innovation management and contains both dimensions –social and economic value creation.[6] At this point, SDG management as social innovation management still remains a “black-box” as concrete steps for realizing the transition from the normative SDG framework to application-oriented solutions for business practice are missing. The following chapter provides an analysis of existing SDG management tools that have been published following the release of the SDGs and which are meant to equip firms to accomplish this transition. We will systematically reveal the main characteristics of these tools and elaborate their strengths and weaknesses with regard to a sound SDG management approach.

SDG MANAGEMENT MARKET ANALYSIS

Two existing SDG management tools support businesses in terms of enabling them to measure and manage their contribution to the SDGs; the SDG Compass and the SDG Industry Matrix. The SDG Compass (GRI et al., 2015) was developed by the Global Reporting Initiative (GRI) in cooperation with the World Business Council for Sustainable Development (WBCSD) and the United Nations Global Compact (UNGC) and the SDG Industry Matrix (UNGC & KPMG, 2016b) was designed by KPMG and the UNGC.[7] Given that these are the only two instruments in the market for SDG management tools, to date, they are discussed in detail in the following.

SDG COMPASS

The SDG Compass represents a five-step process that was developed to support companies in monitoring and maximizing their contributions to the SDGs (GRI et al., 2015). In doing so, the SDG Compass raises the claim to explain “how the SDGs affect your business” (GRI et al., 2015: 2) and how the tool can be utilized “to put sustainability at the heart of your strategy” (GRI et al., 2015: 2).

[6] Reflecting on the current discussion, we recognize that shared value is first and foremost a normative concept at the moment. However, creating shared value through social innovation management presupposes that shared value also has to be operationalized on a descriptive level in the long run. This will be necessary for steering and monitoring the effectiveness and efficiency of social innovation management and related strategic activities.

[7] For industry-specific examples cf. UNGC and KPMG (2016a) for the financial sector, UNGC and KPMG (2016c) for healthcare & life sciences, UNGC and KPMG (2016d) for industrial manufacturing and UNGC and KPMG (2016b) for the food, beverage and consumer goods sector. The analysis of the instrument in this paper will refer to the latter.

In the **first step** – Understanding the SDGs – the SDG Compass' focus is on making companies familiar with the SDGs, thereby discussing potential opportunities and responsibilities for the business sector. This 'easy introduction' approach seems indeed indispensable as the SDGs remain on a rather abstract level, which means that companies need to deal with a high level of complexity. After briefly introducing the 17 SDG goals by referring to their development process, the SDG Compass outlines the so-called business case[8] of the SDGs.

Since the SDGs encompass all the relevant topics of sustainable development and are, therefore, rather comprehensive in the requirements they impose for their effective management, in a **second step**, the SDG Compass recommends the definition of a company's priorities with regard to the post-2015 agenda. Through mapping the value chain to identify impact areas, selecting performance indicators, collecting data and defining priorities, corporations can focus their efforts and allocate resources efficiently.

Step three of the SDG Compass includes the definition of firm-specific sustainability goals that are set for the major impact areas identified in the previous step. The goal setting process is determined by the following four actions: (i) Define scope and goals of selected Key Performance Indicators (KPIs), (ii) Define baseline and select goal type, (iii) Set level of ambition and (iv) Announce commitments to SDGs.

The **fourth step** in the SDG Compass process is to systematically integrate the previously set sustainability goals into the core business activities of the firm. This step can be reasonably expected to be both the most crucial and the most difficult step in the SDG management process as it requires the management of a company to align the corporate sustainability goals with each of the functional areas of the corporation. This includes delegating responsibilities on an individual level. The SDG Compass highlights that the aforementioned transformation process cannot be realized in isolation but is dependent on strong sustainable development partnerships. To this end, the Compass recommends that firms engage in value chain partnerships to foster the development of new technologies and enable additional synergies along the entire value creation.

The continuous exchange with stakeholders about the management of the SDGs within the firm is also the central topic of corporate reporting – **step five**, as outlined by the SDG Compass. It makes companies aware of the great potential that exists when they include the performance reporting on the SDGs into their existing frame-

[8] In this context, the SDG Compass points out that "the business case for corporate sustainability is well established". GRI, UNGC, and WBCSD (2015), p. 8. It is understandable that the successful implementation of the SDGs, especially in the business sector, needs a *supportive marketing strategy* in order to incentivize firms to contribute their efforts accordingly. However, it should also be mentioned that, as Wieland and Heck show in their analysis, there is no clear empirical evidence to date that supports the assumption of a positively correlated causal relationship between Corporate Social Responsibility (CSR) and the financial performance of companies. Cf. Wieland and Heck (2013), especially chapter 1. In this regard, Peloza describes the business case research of CSR precisely when he raises the question: "Do companies that are more profitable engage in CSP [Corporate Social Performance], or do companies that engage in CSP become more profitable?" Peloza (2009), p. 1518.

works of sustainability reporting (GRI et al., 2015). In this context, the comprehensive GRI G4 framework (GRI, 2013) will most likely gain further importance along with other reporting instruments that facilitate the integration of the SDGs (GRI et al., 2015).

SDG INDUSTRY MATRIX

The SDG Industry Matrix will encompass seven industry-specific matrices that display corporate actions and ideas addressing the SDGs in daily business practice. It can mainly be understood as an ex-post "storytelling" and benchmarking tool that lays emphasis on creating awareness and transparency within the business community about successful sustainable business activities. To date, four industries, the Financial Services (UNGC & KPMG, 2016a), the Food, Beverage and Consumer Goods Industry (UNGC & KPMG, 2016b), the Healthcare and Life Sciences Industry (UNGC & KPMG, 2016c) and the Industrial Manufacturing Industry (UNGC & KPMG, 2016d) have been published in a final version on the UNGC website. Two industries, Transportation and Energy, Natural Resources & Chemicals are pre-written in consultation drafts whereas the Infrastructure industry matrix (including Real Estate & Construction) is currently under way (UNGC, 2016).

Contrary to the SDG Compass, the SDG Industry Matrix is not intended to provide companies with in depth instructions on how to integrate sustainability into core business processes and operations. Rather, it is mainly concerned with creating awareness and sharing information among the wider business community about opportunities for firms to manage their implementation of the SDGs and thereby, create both societal and economic value.

Given that the SDG Industry Matrix focuses on reporting about opportunities of the respective business sector for dealing with the requirements imposed by the post-2015 agenda, the tool emphasizes the creation of shared value. Similar to the SDG Compass, which discusses the business case of the SDGs to make companies aware of the economic potential created by the SDG framework (GRI et al., 2015), the SDG Industry Matrix groups shared value opportunities into four major themes: (i) Enterprise development, (ii) Sustainable supply, (iii) Healthy, sustainable living and (iv) Product innovation (UNGC & KPMG, 2016b).

After identifying by which themes companies might find opportunities to create shared value, the SDG Industry Matrix proceeds by illustrating several different practice principles and initiatives of the respective industry that firms might want to take into account when pursuing a shared value strategy. At this point, the Matrix differentiates between industry-specific certification schemes, industry-specific standards and industry-specific tools that are already available to address sustainable development challenges. It also introduces several industry-specific examples for multi-stakeholder partnerships and collaborations that might offer some first orientation for companies in the field of sustainable management (UNGC & KPMG, 2016b).

The core contribution offered by the SDG Industry Matrix is the systematic allocation of the 17 SDGs to industry-specific examples and ideas for corporate action to address sustainable development challenges.

Need for quantification

Both of the tools examined above claim to be application-oriented business tools which were developed to support firms in managing the normative complexity of the post-2015 agenda by following an integrated sustainability approach (by applying the SDG Compass) or a shared value strategy (based on the SDG Industry Matrix).[9] The figure below summarizes the major insights gained during the market analysis in this chapter by outlining the main characteristics, strengths and weaknesses of both instruments. As a final step, the tools' targets will be illustrated in relation to their actual performance.

	SDG Compass	SDG Industry Matrix
Main Characteristics	Qualitative Holistic Focus on SDG progress monitoring Strong political impetus Internal controlling & external reporting	Qualitative Industry-specific Focus on shared value opportunities Storytelling and information hub Focus on external reporting
Strengths	Strategic approach to SDG management Business indicators are linked to GRI Creates transparency and visibility Reduces complexity	Pooling of industry-specific information Enables knowledge exchange Creates transparency and visibility Reduces complexity Analytical starting point: societal needs
Weaknesses	Qualitative approach without quantitative dimension Focus on contributions of the business sector to the achievement of the SDGs Analytical staring point: the firm	Qualitative approach without quantitative dimension Focus on contributions of the business sector to the achievement of the SDGs No strategic integration into core business

Figure 2: Comparison of SDG Compass and SDG Industry Matrix[10]

As shown in figure 2, both of the tools discussed place a major focus on qualitative approaches to SDG management. The systematic quantification of innovation potential for the SDGs, however, would add additional value to a sound SDG management instrument. In addition, the integration of a quantitative dimension into the existing qualitative frameworks would enable the uni-directional argumentation of both tools that focus on the contributions of the business sector to the realization of the SDGs only to be expanded to include the practically-relevant economic dimension. By balancing qualitative and quantitative aspects, a comprehensive governance structure

[9] Note the different wordings in both tools. Not surprisingly, the SDG Compass, developed by GRI et al. (2015), uses the sustainability term most likely due to the conceptual proximity to the GRI G4 framework. In contrary, KPMG uses the shared value paradigm for the SDG Industry Matrix.
[10] Own figure.

for SDG management could be developed that would allow firms to be analyzed as polylingual organizations systems (Wieland, 1996, 2014, 2016).

USING THE SDG MARKET EVALUATOR TO IDENTIFY UNTAPPED MARKET POTENTIAL

The identified need for increased quantification and polylinguality in SDG management led to the development of the SDG Market Evaluator, which highlights the investment and market potential offered by the SDGs for each industry. After laying out the single components of the SDG Market Evaluator database[11], the systematic five-step SDG management process is presented. In this way, light can be shed on the aforementioned "black box" of SDG management (cf. figure 1) by combining the strengths of the two existing tools with the conceptual enhancements provided by the newly developed SDG Market Evaluator.

SDG Market Evaluator Database

The SDG Market Evaluator database includes all necessary information for the SDG Market Evaluator. It translates the moral language in which the SDGs are written into a business language, thereby reconstructing SDG management as a social innovation management process through which shared value can be created. The database should be seen as a continuous "work in progress" that shall be complemented by new ideas, figures and business innovations provided by the business sector itself. Successful SDG management, as we believe, depends on the fruitful amalgamation of both existing tools (SDG Compass and SDG Industry Matrix), along with their conceptual enhancement. The SDG Market Evaluator attempts to reach this goal via a strategic social innovation management process, starting with the moral language inherent in the SDGs.

Moral Language

Information on the following indicators is presented in the database for the moral language for each SDG sub-goal: (**i**) Social impact, (**ii**) Defining indicator, (**iii**) Target indicator, (**iv**) Target Group and (**v**) Stakeholders.

The (**i**) Social impact reflects the wording of the SDG sub-goal, e.g. for sub-goal 1.1, it is "Eradicate extreme poverty" (United Nations, 2015: 12). In line with the understanding of SDG management as a social innovation management process, we emphasize that this process has to start with clearly stating the social impact, i.e. the needs and preferences of society, as a starting point for creating shared value – business innovation follows social innovation. By putting the social impact at the beginning of the SDG Market Evaluator database, this theoretical understanding finds expression in the conceptual setup of the SDG Market Evaluator.

[11] This information database provides the foundation for the SDG Market Evaluator.

The (**ii**) Defining Indicator describes how the goal is measured and defined, e.g. extreme poverty is defined as living on less than $1.90 per day. This indicator was included to further clarify the social impact either quantitatively or qualitatively.

The (**iii**) Target indicator provides information on a target that shall be reached with regard to the sub-goal, e.g. a reduction of the proportion of people living in poverty by half (sub-goal 1.1). Although such a target is not always available, it was included in the SDG Market Evaluator database when present, in order to specify when the respective goal is reached.

The (**iv**) Target group is mentioned either in line with the SDG, the sub-goal or the defining indicator, as applicable. The indication "no specific" in this column is made when the SDG targets aspects where no specific target group is addressed, such as sub-goal 3.6 which says "Halve number of deaths by road traffic accidents" (United Nations, 2015: 14), where the target group is simply too broad to define properly. We have decided to include this indicator in the SDG Market Evaluator database because it adds information on who exactly is addressed by the SDGs and sub-goals and, in a later step in the business language, who could profit from respective products and services offered by companies.

(**v**) Stakeholder groups for each SDG or sub-goal have been included in the database to aggregate the single targets to overarching groups. Furthermore, the stakeholder classification included in the SDG Market Evaluator is in line with the paper's theoretical reference point, i.e. the understanding of the firm as a nexus of stakeholder resources that are provided by five stakeholder groups: employees, suppliers, society, shareholders and customers (Wieland, 2008, 2011; Wieland & Heck, 2013).

Business Language

At this point, the transition from the normative level of the SDGs to the descriptive level of concrete governance structures in firms (cf. figure 1) takes place. The moral language of the SDGs is translated into a business language by the Market Evaluator and specified according to several categories that help companies to identify substantial untapped market potential and product suggestions that they can address within their core business activities. These categories include: (**i**) Business goals, (**ii**) Consumer Market Size (Amount of People), (**iii**) Market Size (in USD), (**iv**) Industry and Sub-Industry, (**v**) Product/ Service, (**vi**) Business activities, (**vii**) Micro-economic figures (in USD), (**viii**) Business impact and (**ix**) Storytelling.

A self-evaluation by a firm, conducted by comparing the firm's (**i**) Business goals, mission, vision, code of ethics and KPIs with the SDGs and identifying congruencies has the practical benefit of identifying those SDGs with which the business has the largest overlap in terms of their overall corporate strategy. These are the areas in which they are likely to be best able to develop product and service innovations and thereby, to create the highest amount of shared value. Here, the business could list respective strategic goals, such as becoming the market leader in textiles that are free of harmful chemicals in a certain country under SDG 12.7, or instigating additional procedures for certain aspects of the code of ethics, such as the strict ban of bribes in business operations under SDG 16.5.

The (**ii**) Consumer market size either represents the amount of people that suffer from the consequences of an issue addressed by an SDG each year, such as deaths in road traffic accidents, or the amount of people whose living conditions shall be improved by the achievement of the respective SDG, e.g. number of people employed in the agricultural sector. This indicator is particularly interesting for those companies that would like to assess potential sales quantities for products addressing the needs of these people. In this regard, the consumer market size offers a non-monetary quantification of market potential, which allows firms to be addressed in their own language. This benefit is neither provided by the SDG Compass nor by the SDG Industry Matrix.

In order for these figures to become a valuable support for companies in managing the SDGs, they need to be broken down into specific target groups based on certain geo-political, demographical or socio-cultural characteristics. The amount of women suffering from extreme poverty, as an example, could be listed for each developing country, in order to make the potential of individual target groups for certain products visible.

Besides a non-monetary quantification referring to potential demand, the SDG Market Evaluator also provides an economic, macro level figure that approximates the monetary (**iii**) Market size necessary for reaching a sub-goal. This figure represents three types of costs. Firstly, it might take on the form of costs associated with potentially reaching a certain SDG or sub-goal (e.g. ending global hunger). Secondly, it might represent costs of measures that are already implemented to improve livelihoods (e.g. annual costs for treating malaria). Thirdly, the cost figure might be derived through proxy indicators when concrete cost figures were unavailable.

The first and second type of costs both represent a monetary figure that has to be invested (first type) or is partially already being invested (second type) by some entity, such as governmental institutions in most cases, in order to reach the respective sub-goal. Instead of assessing the revenue-generating potential of products and services that target a certain sub-goal, this enables firms to evaluate the market potential in terms of investment or spending that needs to be made via governmental subsidies, funds or coming from the targeted consumers themselves. In other words: in its current status, the SDG Market Evaluator might give firms a rough indication of how big the “SDG market” is when looking at particular sub-goals. The question how companies can participate in this market and how big their share might be in the future if, for example, specific products and services are developed, can only be answered by the companies themselves.[12]

[12] Authors are aware that these types of monetary figures do not represent the market size that is used in the conventional business language. Usually, multiplying the customer market size (amount of people) with their average purchasing power would be the more beneficial approach for companies.

The third type of cost (proxy indicator) is included in the Market Evaluator database when cost figures of the first and second type could not be found, for example for SDG 2.a: “Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries” (United Nations, 2015: 13). Total investments needed (first cost type) could not be found and even though measures that aim to achieve this sub-goal and their costs (second cost type) are known, the sheer magnitude of potential products and efforts does not allow a cost estimation at this point.

In line with the recommendation of the SDSN saying: “A single indicator cannot measure every aspect of a complex issue, but well-chosen proxy indicators can track broader concepts” (SDSN, 2015a), we utilized one proxy indicator representing a cost figure that only indirectly refers to the respective sub-goal, but enables an assessment of the market potential nevertheless. For the above-mentioned example, the total global government subsidies for the agricultural sector per year were used as a proxy to evaluate the potential market size. Even though governmental subsidies for agricultural businesses are primarily intended to stabilize commodity supplies and prices, subsidies in credit, irrigation and fertilizer also enhance agricultural productivity (Fan, Gulati, & Thorat, 2008). In line with our argumentation above, this figure allows firms an overall assessment of a source of revenue through governmental investments or consumer spending with the aim of achieving the respective SDG.

Figure 3, below, depicts the monetary quantification underlying the SDG Market Evaluator by illustrating market sizes in billion USD for the sub-goals of SDG 3.

Using SDG 3.2, which aims to end preventable deaths of children and new borns, as an example the monetary indicators provide a cumulative market potential of US$ 26.8 billion annually which equates to the amount of money that has to be spent to reach that SDG.

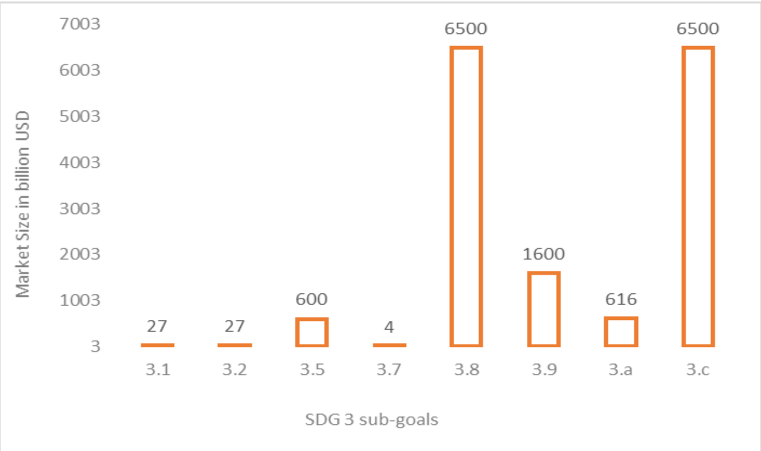

Figure 3: Market sizes in billion USD for sub-goals of SDG 3

The (**iv**) Industry and sub-industry classification of the Market Evaluator database is mainly based on the Global Industry Classification Standard (GICS) by Standard & Poor’s (Standard & Poor's, 2008). We have listed every industry under every sub-goal, in order to make the Market Evaluator database as comprehensive as possible and thereby, highlight the SDGs and sub-goals for which an industry is not yet providing any product or service.

This might be the case when an industry is simply unfit to come up with business innovations for a certain issue that might not relate to its core business activity. However, it might also be the case that a company utilizes its available resources to come up with a product or service that does not necessarily relate to their core business but still proves to be viable on a new market and beneficial concerning one or several SDGs.

(**v**) Product and service suggestions are assigned to a specific industry and sub-industry. In case an industry does not offer a feasible product yet (to the knowledge of the authors), the respective cell in the database indicates “To be identified”. This classification allows firms to identify SDG areas where companies are already targeting one or more sub-goals and where business innovation is still needed to address societal challenges. This is meant to create transparency in SDG management in the first place, which might build the foundation for future business activities. Existing products and services of the respective company might also be added by the business itself, especially with reference to the next indicator.

(**vi**) Business activities are listed in the Market Evaluator database, such as the production of renewable energy at company headquarters or the assurance of a minimum wage for employees along the supply chain in countries where no legal minimum wage has been established. Product/service- as well as activity-based figures at the organizational level might enable the company to draft an *SDG footprint*, which might have the potential to sell a comprehensive SDG management process that visualizes the business’ overall contribution to the SDGs. The calculation of such a footprint, however, requires the monetary quantification of company activities, which is addressed through the following aspect; (**vii**) micro-economic figures.

As the feasibility and practicability of the above-mentioned macro-level figures might be limited, a focus should also lie on micro-economic figures that enable internal controlling and resource allocation in companies (with specific regard to the SDGs) to be improved. This advanced stocktaking of business figures on products, services and other activities, such as through gross margins or sales and cost figures, would support businesses in making their SDG contribution more transparent for internal decision-making and external reporting.

Nonetheless, the reasonable integration of these figures into existing sustainability calculations remains a challenge. This integration needs to ensure that auxiliary results are of value for managers instead of being “just-another KPI” without meaning.

Here, business solutions which are specific to the company at hand have to be identified.

Depicting the possible (**viii**) Business impact of product and service suggestions highlights the potential creation of shared value for stakeholders addressed by the SDGs as well as for the business itself. Companies might increase their revenues through the sales of a new product, such as microfinance schemes targeted at people in developing countries, or reduce their costs, for example when health care providers offer incentives to their customers for improved nutrition or exercise in line with SDG 2.2. The database only differentiates between 'revenue increase' and 'cost reduction'. Other business impacts, including those suggested by Porter et al. (Porter, Hills, Pfitzer, Patscheke, & Hawkins, 2012) in line with their approach to measuring shared value, such as increased market share or improved profitability, seem to be too diversified and specific for the purpose of the SDG Market Evaluator.

The qualitative (**ix**) Storytelling aspect inherent to the SDG Industry Matrix reduces complexity and provides creative input at the same time. Inserting best-practice examples into the SDG Market Evaluator would transfer one of the strengths of the Industry Matrix to this newly developed instrument. These best-practice examples should state at least the company name and roughly explain the initiative and its positive contribution to the respective SDG. This enhancement serves companies not only in terms of creating awareness about sustainability for themselves and society, but also by enabling them to develop a sound reporting framework to communicate with their stakeholders.

SDG Compass, SDG Industry Matrix and SDG Market Evaluator in a Nutshell

A summary of the respective features, similarities and differences regarding the SDG Compass, the SDG Industry Matrix and the SDG Market Evaluator is presented below. By comparing these aspects, the "gap filling potential" of the SDG Market Evaluator is depicted. The bold items indicate which of the above-discussed features of the SDG Compass and the SDG Industry Matrix have been transferred into the conceptual setup of the SDG Market Evaluator.

	SDG Compass	SDG Industry Matrix	SDG Market Evaluator
Main Characteristics	**Qualitative** Holistic Focus on SDG progress monitoring Strong political impetus **Internal controlling and external reporting**	**Qualitative** **Industry-specific** Focus on shared value opportunities **Storytelling and information hub** Focus on external reporting	**Qualitative** and quantitative **Industry** and sub-industry focus Focus on strategic management of investment potential **Storytelling and information hub** **Internal controlling and external reporting**
Similarities & Differences	**Strategic approach to SDG management** Focus on business sector contribution to the SDGs **Creates transparency and visibility** **Reduces complexity** Analytical starting point : the firm	Pooling of industry-specific information Focus on business sector contribution to the SDGs **Creates transparency and visibility** **Reduces complexity** **Analytical starting point: societal needs**	**Strategic approach to SDG management** Focus on shared value **Creates transparency and visibility** **Reduces complexity** **Analytical starting point: societal needs**
Gap Filling	Gap		Quantitative dimension Polylingual governance structure Sub-industry dimension Illustration of investment potential

Figure 4: Comparison of SDG Compass, SDG Industry Matrix and SDG Market Evaluator[13]

By ‘translating’ the moral language of the SDGs into an economic context, the SDG Market Evaluator addresses the gap left open by the monolingual approach inherent to the SDG Compass and the SDG Industry Matrix. The quantitative dimension of the tool, which incorporates monetary as well as non-monetary market- and micro-level figures, represents the additional structural component that differentiates the SDG Market Evaluator from the management approaches available to date and constitutes, together with its other conceptual elements, the polylingual nature of the tool. Contrary to the Compass and the Industry Matrix, the Market Evaluator thus not only addresses the question of what the business sector can contribute to the realization of the SDGs (social value), but also gives notice about business opportunities provided by the SDGs (economic value).

In addition, the sub-industry perspective, as mentioned above, provides the business sector with an even more detailed analytical focus for their SDG management processes, as compared to what the SDG Industry Matrix can deliver. We argue that this enhancement is important as the industry classification put forward by the Industry Matrix stays on a rather superficial level. The Market Evaluator covers 10 industries and 67 sub-industries in total and includes product and service suggestions, as well as listing open markets that still need “To be Identified”.

At this point, the SDG Market Evaluator can complement the existing SDG instruments with its stronger orientation toward the economic language and processes of

[13] Own figure.

companies. Whereas the SDG Industry Matrix, for example, showcases best practice examples to address societal needs along seven different industries, the SDG Market Evaluator not only shows what is already being done (allocation of products/services to SDGs and industries), but also reveals innovation potential by outlining which SDGs are not being addressed by business, to date.

This might also appeal to investors and guide them in their decisions to allocate capital to address the SDGs. Considering the sub-industry “information technology”, for instance, the market for global digital health manufactures is estimated to grow from US$ 60.8 billion in 2013 to US$ 233.33 billion by the year 2020 (Deloitte, 2016), which is of significant importance, especially for poor people who do not have access to proper health services. In this regard, the morally-coded needs of society become economically-coded investment potential for firms; a functional equivalent, which is necessary to involve the economic actor in the search for solutions to global challenges.

SDG Management Process

By listing some of the most important practical implications for sound SDG management in the business sector, the five-step SDG management process described below attempts to lay out a comprehensive SDG management approach that considers all of the previously stated key necessities and challenges of the private sector in coping with the SDGs. By aligning indicators (i) – (v) of the moral language and indicators (i) – (ix) of the business language in the SDG Market Evaluator with the respective process steps, the figure shows that the tool provides companies with the managerial information necessary to systematically pass through the five-step process.

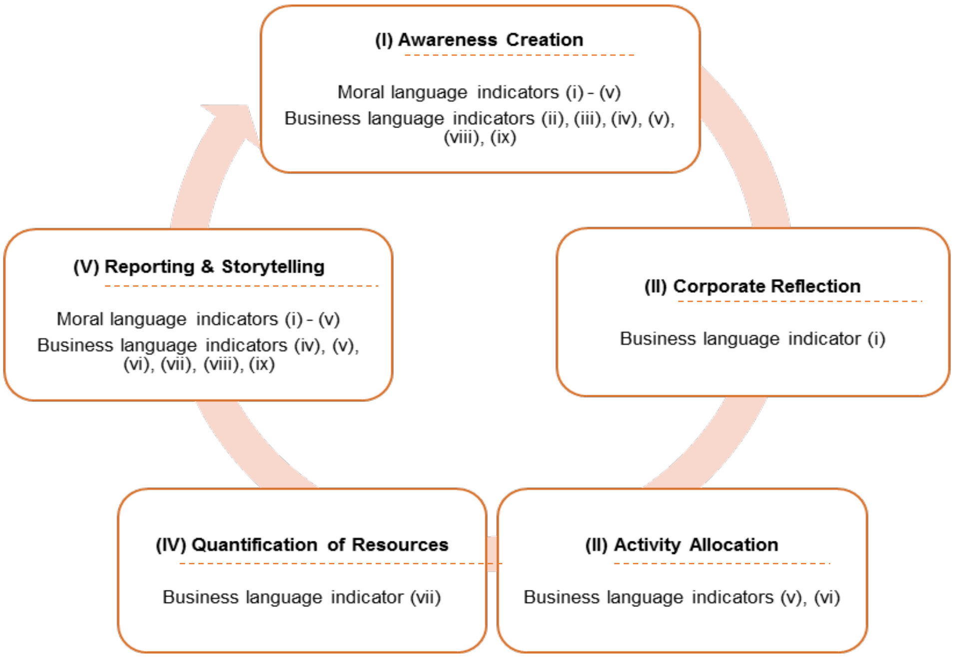

Figure 5: Five-step SDG management process[14]

Step I – Awareness Creation

The SDG Market Evaluator creates awareness through three features that complement the two existing SDG management tools. First, the overview of all SDGs with additional information provided through the moral language section of the Market Evaluator database presents the business with a first impression about the breadth, topics and sub-topics of the SDGs. The information on relevant defining and target indicators as well as target groups and affected stakeholders aids the business in their understanding about the normative claims inherent to the SDG agenda.

Second, similar to the SDG Industry Matrix, the SDG Market Evaluator includes a storytelling and best practice aspect with information on existing or potential products or services, classified by sub-goal and industry. As mentioned before, this inspires companies to reflect on their own potential for action by presenting them with social innovations that industry peers have come up with.

Lastly, the SDG Market Evaluator uniquely lists quantitative figures for each SDG that describe the non-monetary consumer market size as well as macro-economic figures that illustrate the potential monetary market size in USD.

[14] Own figure.

Step II – Corporate Reflection

Just like the SDG Compass, the SDG Market Evaluator contributes to the second step of SDG management, which is characterized by the corporation reflecting on whether its own goals match the social need identified in step one. Whereas the SDG Compass suggests to match these needs with local governance structures (i.e. defining priorities in business operations) by mapping the SDGs against the corporate value chain (SDG Compass, step two), the SDG Market Evaluator recommends mapping the business' mission, code of ethics, strategic goals and KPIs against the SDGs, thus aligning global governance structures with social needs. Such a global structure is also provided by the SDG Compass, but only addressed in step three, 'Setting goals'.

Step III – Activity Allocation

As step three proposes the systematic allocation of corporate activities to the SDGs, the SDG Market Evaluator aligns not only single products and services, but also other corporate activities to each SDG sub-goal, which creates transparency about the company's contribution to the SDGs. The combination of cataloging products and services of industry peers, own product portfolios and corporate activities per SDG sub-goal, enables companies to identify *open markets,* for which shared value opportunities in terms of products and services could be identified.

The SDG Compass supports this step in SDG management in its fourth step, 'Integrating'. Here, identified strategic goals and related sustainability KPIs contributing to the SDGs are systematically embedded in the governance structure by creating awareness in respective departments, defining departmental sub-goals and connecting remuneration schemes and performance evaluations to the achievement of these targets.

Step IV – Quantification of Resources

The quantification aspect was regarded as one of the weakest elements in the existing SDG instruments, which is why this step is systematically addressed by the SDG Market Evaluator's integration of micro-economic figures, such as sales and cost figures, gross margins, distribution rates or market shares.

As outlined in previous paragraphs, this integration allows businesses to not only operationalize their SDG contribution, but also make it more transparent for internal decision-making and external reporting, for example through calculating an *SDG footprint*. The SDG Compass makes valuable contributions to this step of the SDG management process through its suggestions on 'Defining priorities' (step two), especially through its integration of business indicators provided by the GRI.

State-of-the-art SDG management, as suggested here, is a circular process that presupposes constant monitoring and the realignment of strategic KPIs with social needs, which are continually evolving. Hence, the progress evaluation and controlling of activities needs to be ongoing, especially when micro-analytical data is added to the SDG management equation.

Step V – Reporting & Storytelling

Internal transparency as well as external disclosure is a key element in each of the three SDG instruments, representing the fifth step in a comprehensive SDG management approach. Not only the storytelling feature and alignment of business goals, but also the inclusion of economic figures and the subsequent calculation of an *SDG footprint* inherent in the SDG Market Evaluator could be utilized for internal as well as external reporting purposes. Relating back to the moral language of the Market Evaluator database at this point might support reporting and storytelling activities by adopting the normative perspective of the SDGs when communicating to a diverse range of stakeholder groups.

Passing through each of the above mentioned five steps and referring to the three SDG instruments analyzed in this report, enables companies to implement state-of-the-art SDG management. In this way, the strengths of the SDG Compass and the SDG Industry Matrix can be leveraged although their weaknesses can be avoided by referring to the SDG Market Evaluator and its underlying database.

CONCLUSION

Current SDG management tools focus on qualitative approaches to guide firms on their “path to sustainability”. The SDG Market Evaluator tries to address this emphasis by integrating a (monetary and non-monetary) quantitative dimension into SDG management, thereby framing the demand side in the economic language of companies. The additional focus on micro-level elements, such as cost structures and profit margins are intended to improve external reporting and internal resource allocation. For companies looking to commit resources to innovation, production and distribution of products and services, this is indispensable, as they need to communicate and operate according to an economic logic. This does not exclude the other codes in the “language portfolio” of the economic actor. However, from the perspective of economics, all of them have to be evaluated in relation to the economic code guiding the firm (Wieland, 2014, 2016).

For internal management aspects, the integration of the SDG Market Evaluator into existing management accounting systems would be a necessary prerequisite for its successful implementation in practice. In this context, the SDG Market Evaluator would not only allow the contributions of the firm to the realization of the SDGs (social value) to be managed, but it would also support companies in entering a social innovation process in which SDG management becomes a strategic instrument for discovering and sustaining competitive advantages (economic value).

However, it seems as if the time has yet to come for SDG instruments like the SDG Market Evaluator and other tools that might follow in the upcoming months, focusing on the business-oriented management of the 2030 agenda. This report proposes first ideas of an integrated approach for the SDG Market Evaluator that combines strategic management aspects with the sharing of information and storytelling along a five-step SDG management process.

This five-step approach sheds light on “the black box” of SDG management as social innovation management. In this conceptualization, the SDG Market Evaluator would provide companies with quantitative data for internal steering purposes as well as quantitative and qualitative information for external reporting.

Here, the individual level of sustainability performance of companies is decisive: more experienced firms will probably use more quantitative information to communicate with external stakeholders in a business-specific language, whereas companies less advanced in sustainability will focus more on morally-coded storytelling of corporate action in the first place. The SDG Market Evaluator serves both purposes due to its polylingual conception.

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