

# Chapter 3

## Sustainable Development Goals and the CapSEM Model



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**Abstract** This chapter discusses the links between Sustainable Development Goals (SDGs) and the CapSEM Model. It suggests placing these SDGs along the four Levels of the model to serve as a starting point for organizations’ engagement with the goals and their objectives. The location of SDGs in the nested system perspective or ‘wedding cake model’ according to Griggs et al. (Nature 495:305–307, 2013) and later Rockström and Sukhdev (New way of viewing the sustainable development goals and how they are all linked to food. Stockholm Resilience Centre/ Stockholm University, 2016) situates the economic system within the societal system, which is situated within the system of the biosphere and helps to conceptualize the interconnections between SDGs and the dimensions of sustainability. Taking a similar systems thinking approach, the CapSEM Model situates sustainability and environmental management methods and tools within the systems of business operation and production. Extending and merging these two perspectives, the SDGs are placed along the CapSEM Model to provide a point of engagement for organizations to align their activities with SDG objectives.

### 3.1 Sustainable Development Goals

The 2030 Agenda for Sustainable Development is “a plan of action for people, planet and prosperity” (United Nations 2015). The 17 Sustainable Development Goals (SDGs) (embedded in Fig. 3.1) are the core of the agenda, established to guide the

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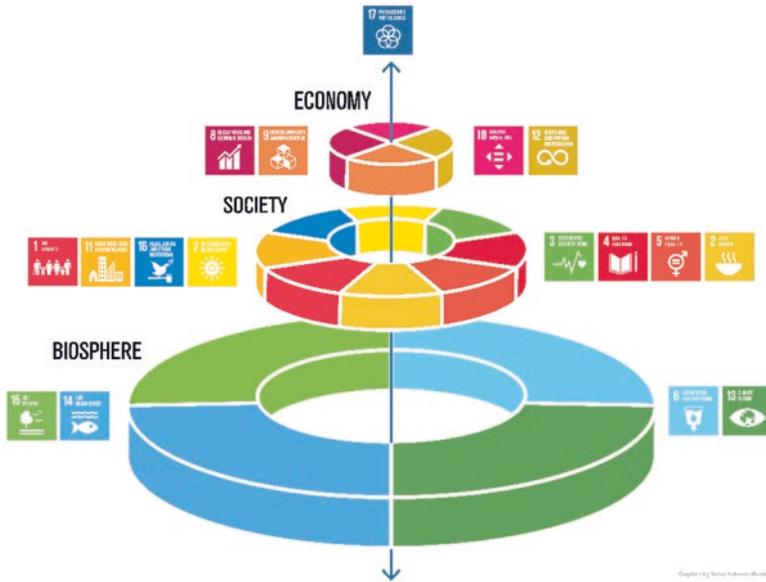
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**Fig. 3.1** The SDG wedding cake. (Rockström and Sukhdev 2016)

global sustainable development agenda until 2030. The goals recognize that “ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all whilst tackling climate change and working to preserve our oceans and forests” (UN Department of Economic and Social Affairs 2022).

The SDGs extend beyond the prior global development framework, the Millennium Development Goals (MDGs), which focused on global poverty reduction. In recognition of the MDGs’ constraints, the SDGs were developed, involving stakeholders globally and enhancing the goals with a set of specific targets and indicators for national governments for measuring and communicating progress (United Nations 2017).

Critics of the triple-bottom-line approach, such as Griggs et al. (2013), suggested substituting environmental, social and economic silos with a more unified approach in a nested system for sustainable development. These factors were combined to develop the SDGs into a systemic framework necessitating the recognition of the interconnectedness between the environmental, social and economic dimensions through the goals and their targets. The objectives and requirements for achievement of SD on the system level is represented by the 17 goals and their 169 targets.

Although the official SDG target and indicator framework is aimed at national governments, the success of the agenda hinges on all stakeholders and their engagement and commitment. Crucial to this is the contribution by industry and businesses. Since 2015, a number of companies use SDGs to direct and communicate their sustainability strategies as well as share their results. Several organizations provide guidelines and frameworks for use in companies to set goals and indicators for their respective strategies and operations. The SDG Compass (2015), a joint

initiative between the World Business Council for Sustainable Development (WBCSD), UN Global Compact and the Global Reporting Initiative 2015 is a good example. They provide databases of business tools and indicators that give open access to companies. Nevertheless, there are many challenges involved when attempting to follow the 17 goals together with their respective targets and indicators.

### 3.2 SDGs and the Three Dimensions of Sustainability

The nested model shown in Fig. 3.1 illustrates an embedded view of the three dimensions of sustainability. The economic layer, or system, is nested within the societal layer, which is ultimately nested inside the Earth’s biosphere. This communicates the essential fact that all activities must be considered within the Earth system. This model, often referred to as the *wedding-cake model*, maps each SDG along these nested sustainability dimensions, or *layers*. Relationships and interactions between the layers and therefore between the goals, then become apparent. For example, environmental impacts are caused by the interactions between man-made systems (in the societal and economic layers) and nature (the biosphere layer). SDGs 6 (clean water and sanitation), 13 (climate action), 14 (life below water) and 15 (life on land) are those goals directly linked to changes in the natural system caused by the flow of material in and out of its many interacting systems.

SDGs 1 (no poverty), 2 (zero hunger), 3 (good health and well-being), 4 (quality education), 5 (gender quality), 7 (affordable and clean energy, 11 (sustainable cities and communities) and 16 (peace, justice and strong institutions) are associated with the societal layer of Fig. 3.2, as their objectives align with the changes necessary for

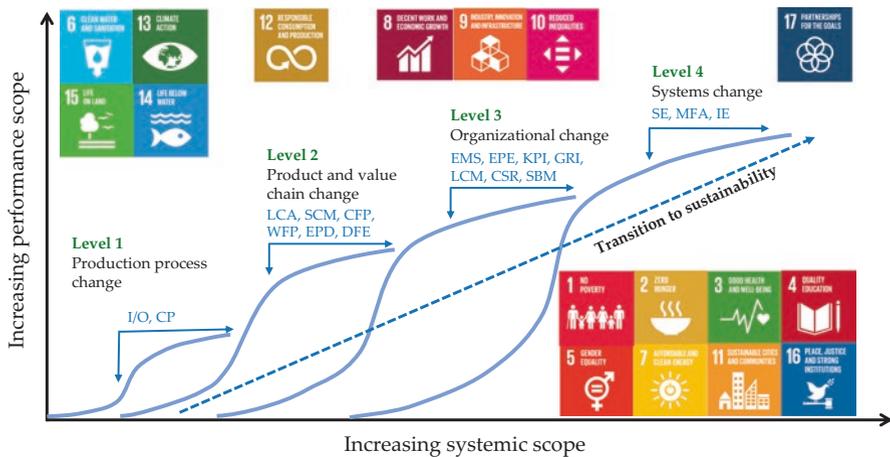


Fig. 3.2 CapSEM model together with sustainable development goals. (Modified from Fet and Knudson 2021)

sustainable development across societal systems. Furthermore, SDGs 8 (decent work and economic growth), 9 (industry, innovation and infrastructure), 10 (reduced inequalities) and 12 (responsible consumption and production) are placed along the corporate layer because their objectives require shifts in business strategies to achieve sustainable solutions. Finally, SDG 17 (partnerships for the goals) is seen as a requirement for, and outcome of, the entirety of the goals. This model is valuable in the process of conceptualizing, distributing and systematizing efforts to move towards achieving individual SDGs.

### 3.3 SDGs and the CapSEM Model

Rockström and Sukhdev's (2016) wedding-cake model places SDGs along layers of the interacting systems of global sustainable development: biosphere, society and economy. Comprised of a similar systems thinking approach, the CapSEM Model places tools and methods for measuring environmental and social performance along the interacting systems of business operations and production: production processes, the product value chains, the organizational operations and larger systems activities. Figure 3.2 therefore introduces an analytical model that places SDGs along the four Levels of the CapSEM Model. This is intended to help organizations distribute and systematize their work toward SDGs by assisting their understanding of how their activities affect and contribute to each of the goals. The advantage of comparing the CapSEM Model with the SDG model in Fig. 3.2 is that while Fig. 3.1 locates the SDGs hierarchically within the three spheres of sustainability, Fig. 3.2 illustrates (and facilitates) dynamic movement and iteration between different systems levels of applications in the transition towards sustainability.

Although the goals are each placed on a single level of the model, this is used primarily to illustrate an entry point to their application. In reality (and inherent to their conceptualization as a framework), the SDGs overlap and transgress. Their placement on specific levels in Fig. 3.2 therefore indicates an emphasis on certain areas, but does not lock them in or prevent their being considered in other areas. Given their systemic nature, each SDG will expand and interact over several areas. However, in order to incorporate the SDGs into business strategies, specific goals and targets must be indicated and prioritized as a starting point.

SDGs 6, 13, 14 and 15 reflect impacts on the biosphere and are placed on that level in Fig. 3.1. This thinking is also applied in Fig. 3.2. The *biosphere SDGs* are placed on Level 1 since material flows in and out of a system, impact different systems of the biosphere, such as land, sea or air. In the CapSEM Model, these flows are monitored within Level 1, where energy and material flows are measured by tracking their movement in and out of the man-made systems under study, referred to as production processes. Material flows in and out of the systems under study also occur within Levels 2–4 of the CapSEM Model and are based on the same calculations and principles as Level 1. Rather than specific production processes (Level 1), the respective processes are summarized as the systems of the product value chain (Level 2), the organization's production site and impacts related to strategic

decisions through stakeholder involvement (Level 3) or the societal well-being or sustainability at a regional or national Level (Level 4).

Similar impacts are likely to occur on the other Levels in the CapSEM Model, but this is then as a result of the material flows described under Level 1.

SDGs 12, 8, 9 and 10 reflect impact on the economy and are placed on that level in Fig. 3.1. However, these SDGs are placed on Levels 2 and 3 of the CapSEM Model. SDG 12, for example, concerns responsible consumption and production. This reflects the activities upstream and downstream in the value chain of products (Level 2). The achievement of this goal is also dependent upon strategic choices made in the producing organization (Level 3), and on the behavior and needs of people in society, Level 4 of the CapSEM Model.

The rest of the SDGs are grouped on the *societal* level in Fig. 3.1. These are not placed at one specific level of the CapSEM Model, but rather shown as goals that should be used as contextually appropriate for driving an organization's transition to sustainability. The use of these goals should therefore be considered according to the specific sector being studied or problem analysed. An example of this is SDG 7 as the role which affordable and clean renewable energy will play and important contribution to changes towards sustainable solutions on all levels.

SDG 17 is placed on the top of the *wedding cake* in Fig. 3.1, and similarly in the CapSEM Model as a goal to be focused on during the entirety of the transition process.

### 3.4 Conclusion

The models assigning SDGs as shown in Figs. 3.1 and 3.2 are not so very different. They both structure SDGs according to their role in the transition to sustainability. However, the additional value provided by their placement in the CapSEM Model is the toolbox of methods and tools suggested for use by companies and other organisations in this transition. The CapSEM Model helps make sense of the many methods available for tracking, measuring and improving sustainability performance by grouping them by level. By grouping the tools by level, it may be easier for companies to consider using them, and to identify which tools are useful for addressing environmental, economic and social impacts associated with each of their activities and processes. This chapter has expanded the systematized approach to the inclusion of the SDGs and their placement along the four levels of the CapSEM Model. The model presented in Fig. 3.2 is an analytical representation of one approach to engaging with the SDGs. Each of the goals is placed along one level to serve as an entry point to understanding the activities and interactions that affect that goal's objectives. Their placement on one level does not mean that they are not relevant on other levels. However, when working with companies, often overwhelmed by their growing sustainability requirements and limited existing capacity, modest models that help simplify complex objectives can serve as a baseline for engagement and improvements in sustainability. The combination of the CapSEM Model and SDGs therefore takes this approach.

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