



The role of private sector in the implementation of sustainable development goals

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Abstract

On September 25, 2015, the Sustainable Development Agenda of 2030 was agreed and adopted by the United Nation. This agenda consists of 17 sustainable development goals (SDGs) and 169 targets. It expressed a global call for taking urgent actions to save the planet. In this regard, the private sector is one of the key stakeholders that could shoulder a fundamental responsibility for accelerating the SDGs implementation process. The current article reviews important aspects of the role of the private sector toward SDGs achievement. The corporate social responsibility, circular economy, and the environmental initiatives are required to support the implementation of SDGs. However, for achieving SDGs the private sector faces a number of challenges such as lack of influential leadership, harmonious partnerships, shortage of investments, exhaustiveness and complexity of interlinkages among the goals and their targets, and lack of monitoring and evaluating methods for assessing the progress of implementation. Moreover, there is a dire need for a reliable set of measurable indicators to support the private sector in measuring the implementation progress. This review article highlights the role of private sector in beating the challenges confronting the achievement of SDGs.

Keywords Sustainable development goals (SDGs) · Private sector · Corporate social responsibility (CSR) · Circular economy · Impact assessment

1 Introduction

In September 2015, a new agenda for sustainable development entitled “transforming our world: the 2030 Agenda for Sustainable Development” was approved globally. It represents an enthusiastic world plan for taking action by 2030 to tackle the global challenges

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of environmental degradation and poverty (UN 2015; UNGA 2015). This agenda is a non-obligatory agreement that demand countries to identify their national priorities and targets in-line with the requirements of SDGs (Allen et al. 2019). This agenda is a guiding vision for governments, private sector, and civil society for sharing actions (Hajer et al. 2015) and for an effective transition toward sustainable development (Le Blanc 2015; D'Amato et al. 2019). To implement the 17 SDGs, there is a need for substantial modifications in the patterns of societies and economies. Therefore, the 17 SDGs activate a new phase for sharing of responsibility at national, regional, and global levels (Bexell and Jönsson 2017).

Since 2008, the UN Global Compact has organized annual summits of the UN Private Sector Forum, aiming to enhance the dialogue between governments and the private sector. This forum substantially focuses on the SDGs since they were adopted in 2015, including the obligations of multinational companies to support the SDGs, particularly focusing on pilot projects, gender quota, and investment in sustainable infrastructure (Abshagen et al. 2018). The private sector is an important stakeholder under Agenda 2030 which can lead the progress for achieving the SDGs (Hacking 2019; Fukuda-Parr and McNeill 2015; Lalaguna and Dorodnykh 2018; Scheyvens et al. 2016; Topple et al. 2017) because this sector comprises the largest part of the economy (Abe et al. 2019). Private sector is a job creator, source of technological innovation, and fundamental for capital and tax income, which are the main solution drivers for the economy, society and environment (Frey and Sabbatino 2018). Buhmann et al. (2019) stated that private sector benefits the society via expertise, knowledge, technology, and financial resources. Scheyvens et al. (2016) also affirmed that private sector has different capabilities such as technology innovation, responsiveness, and manpower of particular experiences and resources to assist in achieving SDGs. In line with this notion, Pedersen (2018) stated that the private sector plays a significant role in attaining the SDGs through (Marx 2019) contributing resources, expertise, and experiences. Pineda-Escobar (2019) reported that companies consider implementation of SDGs as an element of their sustainability plans and strategies.

Nevertheless, Frey and Sabbatino (2018) stated that if the 17 SDGs are entirely but unevenly related to the private sector, all of them are related to all companies. In this regard, Pineda-Escobar (2019) found that the private sector companies at the beginning willingly determine the specific SDGs that are relevant to the company's operations. According to Allen et al. (2018), obligation to the SDGs is hindered due to lack of an efficient framework, insufficient awareness and lack of technological capability concerning integrated planning and policy coherence, owing to the modernity and complexity of the SDGs. Thorlakson et al. (2018) pointed out that the private sector mainly pays attention to the rights of workers and complies with local regulations; therefore, there is a critical need to include social and environmental concerns, which are expected to be a great motivation in achieving the SDGs. Moreover, the economy is one of the three dimensions of sustainability, which allows the private sector to join with the SDGs. For instance, Allen et al. (2019) concluded that Arab countries that are starting to implement the SDGs are developing essential basic evidence for action through subsequent studies. Therefore, there is a need to conduct broader studies to explore the role of private sector in the implementation of SDGs.

The SDGs should be adopted as an integrated approach (Allen et al. 2019; Merry 2019; Elder and Olsen 2019; Gasper et al. 2019; Saner et al. 2019). In this regard, Frey and Sabbatino (2018) stated that the SDGs' framework was developed to be implemented entirely within the companies' influences; all the 17 SDGs are committed to be viewed in their plans. The SDGs' framework is quite extensive and considerably complex, and it is necessary to prioritize the primary step in implementation of the SDGs and its indicators

to match national priorities. In this context, Thorlakson et al. (2018) conducted a global survey of 449 companies for answering an important issue of how the private sector can participate in the implementation of SDGs 2 (Zero Hunger), 8 (Decent Work and Economic Growth), 12 (Sustainable Consumption and Production), 15 (Life on Land), and 16 (Peace, Justice and Strong Institution) via 16 sustainable practices, e.g., change the product's formulation to make it more sustainable and make products from recycled materials, which were defined as "voluntary practices companies pursue to improve the social and/or environmental management of their suppliers' activities." Allen et al. (2018) also carried out an extensive survey based on "evidence-based approaches to the SDGs: systems thinking, analysis and modeling" of 26 countries concerning the implementation of the SDGs in terms of the fulfillment of primary planning stages by establishing coordination mechanisms, engaging various stakeholders in the consultations, and customizing SDGs into national strategies. Kumar et al. (2018) study looked into investigating the complex relationships among the SDGs and utilizing the interpretive structural modeling technique to present them in a hierarchical framework. Moreover, Weitz et al. (2018) studied the synergies among the SDGs concerning the policy and planning and utilized a systemic and contextual perspective via developing a network analysis and basic means of synergies. By this stage, the authors go on to declare that the valid methodologies would obviously provide a greater understanding of the connections among the SDGs, which will facilitate the SDGs' implementation. However, certain arguments in these research methodologies and approaches need further research. For instance, according to Kumar et al. (2018) 29% of the 169 targets are adequately explained whereas 54% require more efforts for clarification, and the remaining 17% are incomplete and/or worthless. Moreover, Merry (2019) in line with Elder and Olsen (2019) stated that there are many weak indicators excluding many environmental elements that hinder an integrated approach. It is worth mentioning that Weitz et al. (2018) analyzed the SDGs at the level of targets because targets are very particular than goals. To reduce the SDGs targets' complexity, there is a necessity to develop practical means for assisting the country in prioritizing their targets (Elder and Olsen 2019; Allen et al. 2019). In this regard, Saner et al. (2019) and Scheyvens et al. (2016) suggested that the private sector should modify their plans with the SDGs. In the same streak, Hacking (2019) point out that the fundamental concerns are how to connect the SDGs and how to treat the trade-offs among them. Another issue raised by Pedersen (2018) is that the majority of the private sectors are still striving to specify their actions and to modify the plans and strategies according to the SDGs requirement. While these primary references help in contributing knowledge dissemination regarding SDGs, there is dearth of organized scientific literature on the subject of the private sector role and implementation of SDGs. Hacking (2019), Pineda-Escobar (2019), and Salvia et al. (2019) mentioned that there is a need for further investigations to examine the role of the private sector in the context of SDGs. Therefore, the aim of the current review article is to organize the scholar's contributions to this essential and vital field of merging the SDGs in the plans and strategies of the private sector.

2 The role of private sector

In the early twenty-first century, serious environmental global issues such as increasing environmental overshoot, worsening climate change, and insufficiency of human needs caused unsustainable consumption of natural resources (Bengtsson et al. 2018). Hence, the

delay of the integration of environmental and social aspects with the economic aspect of sustainability in private sector activities may lead to accumulation of negative impacts on human health and the environment. Agenda 2030 considered that the private sector is an essential stakeholder (Lalaguna and Dorodnykh 2018) and has an influential part in the progress of the SDGs (Scheyvens et al. 2016; Ridho et al. 2018), because this sector is a crucial player in the economic investments (Sullivan et al. 2017). The SDGs' implementation depends on voluntary efforts (Elder and Olsen 2019), although the tensions among compulsory and voluntary SDG responsibility will continue, due to the intense debates among countries and the private sector about the implementation roles of sustainability issues (Bexell and Jönsson 2017). Therefore, the private sector should perform a major role in sustainability, not merely from an economic progress angle but considering the social and environmental issues and requirements (Sullivan et al. 2017). Furthermore, the private sector should amend their plans and strategies to comply with the SDGs (Saner et al. 2019; Scheyvens et al. 2016; Pedersen 2018). According to Baldassarre et al. (2017), and the new holistic approach of business strategies emphasizes more on how further profits may be gained by putting more focus on the social and environmental outcomes beside economic gains. Similarly, Lima et al. (2017) mentioned that there is a need for further coordination and support of public sector to enable the private sector to invest more resources for positive SDGs outcomes. Further, the technology and innovation capacity of this sector are required besides their obligation for supporting the SDG implementation (Hajer et al. 2015). According to Topple et al. (2017), impact assessments are an essential method to enhance motivation for facing sustainability challenges in the private sector. According to Roos et al. (2020), there are potential benefits of carrying out an environmental impact assessment that includes conservation of biodiversity and ecosystem; allowing society participation and access to information; mitigation of environmental impacts; and comply with regulations and proper enforcement. These benefits serve the private sector to attain sustainable development.

The private sector is also responsible for environmental degradations. Therefore, attention toward global industrial development has increased due to its negative impacts on the human society and environment (Ardakani and Soltanmohammadi 2019). According to Koprina (2016), the accumulation impacts of industrial development (revolution) due to unsustainable patterns of production and consumption are the result of trying for economic benefits prior to protection of environment, which has led to environmental unsustainability and abuse of ecosystems. On the other hand, the SDGs clearly encourage "sustainable industrialization" and "sustainable use of land." Most of the SDGs obviously focus on the environmental dimensions, by preventing environmental degradation, pollution, climate change, waste management, and promoting resource recovery. Therefore, there is a need for urgent actions toward those challenging aspects of the economic growth, which has led to adverse impacts on the environment and human society (Leal Filho et al. 2018). Gobierno De Colombia (2018) pointed out that mining and energy sectors consume more than 70% of ground and surface water, while food and manufacturing sectors consume more than 50% of the water from public canals. Moreover, these cause high consumption of non-renewable energy such as natural gas and also significantly affect biodiversity due to operations of companies through their supply chains. Though the developed countries achieved some progress on waste management and recycling and energy efficiency, but so far, they have not been able to dissociate the economic growth from increased consumption of energy and other resources, due to continuous excessive consumption of non-renewable energy and the primary resources (Osborn et al. 2015). In this regard, Xiao et al. (2017) stated that global trade business has a significant impact on sustainable development

issues, in particular climate change, natural resources consumption, and food security. For instance, the oil and gas sector is an essential industry and one of the largest private sectors globally. This sector consumes more than 57% of total global fuel. Moreover, this sector has both positive and negative impacts on an array of scopes related to SDGs; therefore, it may contribute to the challenges that SDGs look to tackle, for example climate change, environmental degradation, economic inequality, and some health issues (IPIECA 2017).

A recent study conducted in Colombia reveals that the companies are willing to include the SDGs in their sustainability reports and consider incorporating it in their sustainability strategy (Pineda-Escobar 2019). According to 2018 KMPG study on corporate reporting of the SDGs, 55% of reporting companies are paying the most attention to SDG 4, 8 and 12, while about 26% reporting companies are paying the least attention to SDG 2, 14, and 15 (Blasco et al. 2018). Another study conducted on Indonesian and Russian companies reveals that the private sector had contributed suitably to a specific number of SDGs, but more efforts are needed to increase company's implementation to achieve other goals of SDGs (Ridho et al. 2018). Concomitantly, other studies on different aspects were conducted to assess a range of voluntary actions for improving the environmental and social issues within the private sector. Thorlakson et al. (2018) found that 52% of firms practice at least one voluntary sustainable practice but to a confined extent. Working in this field, Fleming et al. (2017) concluded that the SDGs are still unconfirmed in the private sector practices due to the differences in the language utilized in the SDGs when compared to the business; the required changes are difficult and complex, and few regulatory tools incentivize the SDGs' adoption. Another study by Moldavska (2017) concluded a lack of knowledge about sustainable development in the private sector. Hacking (2019) point out that there is an increasing attention to adopting the SDGs in the private sector, but they also found that the impact assessment community is slow. Further, there is a call for corporate sustainability assessment (CSA) at a global level (Zijp et al. 2015), and the private sector is considered one of the main stakeholders (Dijk et al. 2017). The real value of CSA is to voluntarily adopt for measuring sustainable development (Topple et al. 2017). The existing CSA still does not adequately cover the SDGs, and the researchers are so far uncertain regarding its weaknesses and difficulties (Moldavska and Welo 2019). Undoubtedly, the private sector has an essential responsibility toward achieving the SDGs because it acts as a development actor through business activities. In doing so, the SDGs strongly encourage this sector to eliminate or stop their negative impacts on the human and their environment, enhancing their positive participation, for example, minimizing the air pollution through implementation of the SDG 7 (Affordable and Clean Energy), which is linked directly to SDG 13 (Climate Action). For instance, Axon and James (2018) stated that the chemical industrial sector has contributed scientific and technological solutions that address various global challenges, e.g., pollution prevention.

Adoption of circular economy (CE) is another role of private sector toward implementation of SDGs. According to Morsetto (2020), CE is "an economic model aimed at the efficient use of resources through waste minimization, long-term value retention, reduction of primary resources, and closed loops of products, product parts, and materials within the boundaries of environmental protection and socio-economic benefits." Rizos et al. (2016) envision private sector as a part of CE, and the main barrier to its attainment is the company environmental culture. In this regard, D'Amato et al. (2019) mentioned that the private sector is pivotal for the development of CE strategies at the national and regional level, and this concept leads to corporate sustainability reporting strategies. Kirchherr et al. (2017) also mentioned that the concept of the circular economy implies its ability to attain beyond present efforts of sustainable development. In line with this notion, Geissdoerfer

et al. (2017) stated that companies are increasingly conscious of the opportunities promised by the CE and have begun to recognize their potential benefits for stakeholders. Furthermore, Stahel (2013) believed that the role of the private sector in a sustainable society is yet a premium summary of the CE. Schroeder et al. (2019) documented that circular economy practices are closely linked with SDG 12. As a result, the concern of the scholars has increased in the field study of consumption in the context of the circular economy and its solutions (Camacho-Otero et al. (2018)). Mao et al. (2018, p. 42) mentioned that the principle of circular economy is reduction-, reuse-, and resource-based. According to Millar et al. (2019), the current economic growth may hinder the adoption of the circular economy as a tool to achieve sustainable development. Thus, the power of circular economy can bring the business sector and policy-making working together toward sustainability (Korhonen et al. (2018)).

As a result of this focus, the private sector can attain a competitive benefit via complying with SDGs through efficient energy and resource usage (Bocken et al. 2014). The standard of living could be improved through the adoption of sustainability practices such as recycling strategies, natural resources protection and saving energy, creation of safer and more efficient working environmental conditions, cleaner production and eco-friendly products, and provision of health and safety measures for the entire society (Ardakani and Soltanmohammadi 2019). Malviya et al. (2018) stated that the emphasis on development of green products will lead to focus on minimizing waste effectively, efficient use of raw materials, and producing and designing recyclable and eco-friendly products to save the environment. In this regard, the private sector can play the role of a development actor through effective public–private and civil society partnerships via SDG 17 (Partnerships for the Goals). Moreover, Nilsson et al. (2018) pointed out that SDGs interactions mean initiating new partnerships among concerned stakeholders through science, policymakers, private sector, and the local societies. On that note, SDGs may utilize to facilitate the implementation of sustainable development strategies in both public and private sectors (Leal Filho et al. 2019). In the context of roles, Fowler and Biekart (2017) argued that the role and institutional position of multi-stakeholders are essential for increasing the possibility of successful implementation of SDGs. Similarly, Georgeson and Maslin (2018) stated that the private sector is particularly more accountable for multi-stakeholder partnerships and development. Consequently, this sector must find an efficient means to amend and improve their plans and strategies in line with the requirement of Agenda 2030 toward proper implementation of SDGs. Additionally, both the governments and the private sector increasingly commit to Agenda 2030 by appropriately embedding the SDGs within the assessment rules for facilitating decision-making. Abshagen et al. (2018) reported that due to increasing private sector commitment toward the implementation of SDGs, governments tend to hand over more of their services duties via privatizations, especially in the social services sector such as water and energy infrastructures, healthcare, and transportation. Some important roles of private sector and their relation to SDGs can be seen in Table 1.

3 SDGs and corporate social responsibility (CSR)

The essential aim of the SDGs is to begin a revolution in responsibility by engaging fit for purpose to treat the environmental impacts (Caballero 2019). In the context of 2030 Agenda, the private sector has a key part to perform in accelerating the achievement of the SDGs through strengthening public–private partnerships, eco-friendly investments,

Table 1 Private sector roles in the implementation of SDGs

Sustainable development pillars	Related SDGs	Roles of private sector	References
Environment	All goals	Comply with local regulations	Thorlakson et al. (2018)
	11, 12 and 13	Efficient energy and resource usage	Bocken et al. (2014)
	11 and 12	Natural resources protection, saving energy, and cleaner production	Ardakani and Soltanmohammadi (2019)
	6 and 12	Minimizing waste, and efficient use of raw materials	Malviya et al. (2018)
	12	Corporate sustainability assessment	Zijp et al. (2015)
	11 and 13	Minimize the impacts of future disasters	Abe et al. (2019)
	9, 11, 12 and 15	Environmental impact assessment	Roos et al. (2020)
	8 and 17	Job maker, source of technological innovation, and fundamental for capital and tax income	Frey and Sabbatino (2018)
	8 and 17	Technology innovation, and manpower of particular experiences	Scheyvens et al. (2016)
	8 and 9	Expertise and experiences	Marx (2019) and Buhmann et al. (2019)
Economy	12 and 13	Recycling strategies and eco-friendly products	Ardakani and Soltanmohammadi (2019)
	12	Development of green products	Malviya et al. (2018)
	12 and 17	Technology and innovation capacity	Hajer et al. (2015) and Buhmann et al. (2019)
	8 and 9	Driver of largest part of economy	Abe et al. (2019)
	8, 9 and 12	Circular economy	Morseletto (2020), Rizos et al. (2016), D'Amato et al. (2019), Kirchherr et al. (2017), Geissdoerfer et al. (2017), Schroeder et al. (2019), Camacho-Otero et al. (2018), Mao et al. (2018, p. 42), Millar et al. (2019) and Korhonen et al. (2018)
	17	Rights of workers	Thorlakson et al. (2018)
	8 and 9	Creation of safer and more efficient working environmental conditions	Ardakani and Soltanmohammadi (2019)
	17	Partnerships among concerned stakeholders	Nilsson et al. (2018), Fowler and Biekart (2017) and Georgeson and Maslin (2018)
	All goals	Increased disclosure of information	Bengtsson et al. (2018)
	Societal		

and CSR (Bexell and Jönsson 2017; Lalaguna and Dorodnykh 2018). There is copious overlapping between SDGs and aims of the CSR (Buhmann et al. 2019). The CSR program is embedded in the economic, social, and environmental sustainability obligations of private-sector practices (Kumi et al. 2019). Accordingly, CSR is fundamental to sustainability, economic competitiveness, and innovation, and it is strongly linked with the successful implementation of SDGs. Consequently, the main concern is how both countries and societies obtain CSR benefits to tackle the main sustainable development challenges, e.g., poverty, health, education, energy, and environment (Lu et al. 2019). In this regard, D'Amato et al. (2019) stated that CSR, environmental efficiency, and environmental innovations practices define a lot of the present industrial sustainability agenda. According to Riyadh et al. (2019), CSR refers to “voluntary activities undertaken by a firm to operate in an economic, social and environmentally sustainable manner.”

Out of 17 SDGs, 13 emphasize on social inclusiveness and take some environmental aspects into account (Gupta and Vegelin 2016). The concern of scholars on this concept is increasing, for instance, “Responsibility to Protect” concept (Bellamy 2015), CSR, and the necessity to discuss the climate change, waste management, and other pressing environmental issues. Moreover, Taylor et al.’s (2018) study found that the CSR and the environmental initiatives lead to sustainability and consequently will enhance a company’s profit. Furthermore, Ortiz-de-Mandojana and Bansal (2016) found that the companies that adopted social and environmental actions recorded lesser financial losses, greater growth, and extended period that reaches 15 years. Pogge and Sengupta (2015) suggest that qualified actors who stipulate their particular roles and mandates should be designated for fulfilling the SDGs responsibilities. Furthermore, most companies reporting on the SDGs are found in countries with higher CSR’s certification, which spend more in the education sector and protection of employment (Rosati and Faria 2019). The CSR is considered a prerequisite to contributing to the SDGs (Schönherr et al. 2017) because it is a primary initiative that requires the companies to tackle the social and environmental issues in their operations and then motivate them to identify the significant issues to start environmental improvements (Thorlakson et al. 2018). Regulating private sector responsibility via obligatory laws is politically critical and draws a controversial debate on CSR (Kolks 2016). In this regard, it was found that 52% of the selected sample of global supply chain companies in their annual reports include some components of social or environmental issues (Thorlakson et al. 2018). Furthermore, CSR reporting is one of the various terminologies of sustainability (Siew 2015). Moreover, KPMG international CSR Survey of 2017 covering 49 countries revealed that 93% of the 250 largest global corporations report on CSR, and 43% of companies connect their CSR activities to the SDGs (Blasco and King 2017). In scalar terms, responsibility inclusiveness is at the global, regional, and national levels but at different responsibilities for dealing with global environmental problems.

Consequently, CSR is interpreted into voluntary sustainability standards (ISO 26000) and has become a common standard used by companies globally. Moreover, it is considered an essential component of public policy in the environmental and social dimensions toward achieving SDGs (Marx 2019; Moratis 2018). Further, Basta et al. (2018) found that the most factors for measuring sustainability are the CSR, CER, and the social lifecycle evaluation. Moreover, there is an increasing demand for CSR certification for better transparency and broader measures for private sector accountability (Fleming et al. 2017). In this regard, Palmer and Flanagan (2016) mentioned that the CSR reports provide examples of companies’ sustainability efforts such as greenhouse gas reduction. Furthermore, Kumi et al. (2019) reported that the private sector contributes in promoting the SDGs in

the context of CSR that includes the provision of social services such as education, health, and creation of jobs.

The SDGs are not legally binding, but the key stakeholders must commit to drive forward a stronger global healthy environment to solve sustainable development challenges. According to Singh (2016), there are several challenges for achieving SDGs, such as lack of influential leadership, lack of harmonious partnerships, shortage of investments, the dearth of implementation, and measurable indicators with effective data collection. Notwithstanding, there are some essential initiatives that should be adopted in order to succeed, such as CSR and other environmental initiatives, which are considered as hub between this sector and SDGs. It is because those initiatives demand more ethical, responsible, and sustainable business practices. For this to occur comprehensively, governments should enact appropriate legislation to oblige the private sector and then enforce it to change efficiently in the future, because there is no enforcement mechanism at the moment (Fukuda-Parr 2016). In this context, Ardakani and Soltanmohammadi (2019) mentioned that there are positive impacts of the best environmental management practices such as carbon emissions management, hazardous waste management, and efficient energy consumptions on CSR, which are type of obligation to laws in respect of reducing production costs and environmental risks.

4 The SDGs targets and indicators related to private sector

The shift in global politics toward the role of the private sector is explicit in the SDGs via the involvement of industrial sector in developing the SDGs (Buhmann et al. 2019). The SDGs need new pivotal tracks to sustainability and knowledge mobilization, which can operate among various sectors and regions (Singh 2016). All the SDGs are interrelated to each other (Kumar et al. 2018), and the substantive interactions are more specific via targets than goals (Weitz et al. 2018). But if the 17 SDGs are entirely but unevenly related to the private sector, all of them are related to all companies (Frey and Sabbatino 2018). In this regard, Tosun and Leininger (2017) mentioned that private sector competence is assigned to attain SDGs 2 (Zero Hunger), 6 (Clean Water and Sanitation), 8 (Decent Work and Economic Growth), 9 (Industry, Innovation and Infrastructure), and 12 (Sustainable Consumption and Production). Salvia et al. (2019) pointed out that SDGs 4, 6, 11, 12, 13, and 15 are the most extensively investigated, while the SDGs 4 (Quality Education), 11 (Sustainable Cities and Communities), and 13 (Climate Action) were most globally highlighted. Gupta and Vegelin (2016) reported that the majority of targets are national-level targets with primary responsibilities. The main challenge facing SDGs implementation is the exhaustiveness and complexity of interlinkages among the goals and their targets (Allen et al. 2019), and still unclear how these interlinkages accurately work (Allen et al. 2018). In this regard, Guevara and Julián (2019) stated that the Inter-Agency Expert Group on SDG indicators has adopted about half of the indicators to monitor the implementation progress of the SDGs. An important concern raised by Yonehara et al. (2017) is that the emphasis of the SDGs indicator system is only on the quantitative information, consequently, ignoring the hidden issues where some goals may be left behind. Some examples of vague targets and gaps among SDGs and their indicators are provided in Table 2.

In this regard, Le Blanc (2015) stated that out of the 107 targets, only 60 are referred to one different goal than it belongs to it; for example, 19 targets are linked with three goals or more, either directly or indirectly (as shown in Fig. 1). Instead, Barbier and Burgess

Table 2 Examples that demand further clarity between SDGs targets and their indicators

Target no. as listed in the UN SDGs	Indicator	Clarification required
4.7: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development"	Percentage of 15-year-old students enrolled in secondary school demonstrating at least a fixed level of knowledge across a selection of topics in environmental science and geoscience. The exact choice/range of topics will depend on the survey or assessment in which the indicator is collected	The indicator only discusses a part of the education for the sustainable development agenda that the target promotes
7.2: "By 2030, increase substantially the share of renewable energy in the global energy mix"	7.2.1 Renewable energy share in the total final energy consumption	Global reporting cannot easily determine what progress would be "substantial"
8.4: "Improve progressively, through 2030, global resource efficiency in consumption and Production and endeavour to decouple economic growth from environmental degradation, in Accordance with the 10 Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead"	8.4.1 Material footprint, material footprint per capita, and material footprint per GDP 8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	Sustainable growth indicates growth that proceeds social, economic, and environmental aspects into account, but this does not reflect that a real decoupling will require a drastic redefinition of what constitutes growth
10.2: "By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status"	Proportion of people living below 50% of median income, disaggregated by age group, sex, and persons with disabilities	This target includes three types of inclusion to be achieved across nine different categories of potential exclusion. However, the indicator measures only the three kinds of exclusion, which are age, gender, or disability status
12.6: "Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle"	12.6.1 Number of companies publishing sustainability reports	"Encourage" is an unmeasurable word, and then, it is hard to assess this target

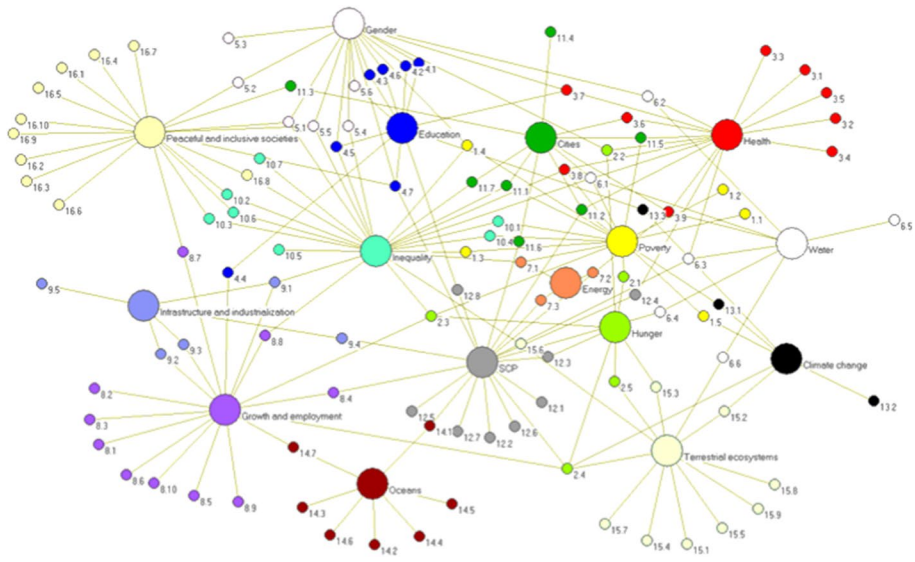


Fig. 1 SDGs as a network of targets [reprinted with permission from Le Blanc (2015)]

(2017) stated that the indicator levels' connections have improved with most of the SDGs. Moreover, Esquivel and Sweetman (2016) stated that Agenda 2030 and its SDGs are well designed. Put differently, greater interest in the connections between SDGs may lead to improved efficiency of implementation and lessen the related costs (Elder et al. 2016). Despite these caveats, sustainability could be achieved only by balancing the three aspects of environment, economy and society.

For instance, in Colombia, 19 companies' reports were studied, and it was found that only five reports have used the keyword "17 goals," and three reports have used the keyword "169 targets" (Pineda-Escobar 2019). Another study found that the annual reports of 52% of the randomly selected global companies address some social or environmental issues (Thorlakson et al. 2018). To clarify that, Scherer et al. (2018) found that the social goals are related to higher environmental impacts. Thomas et al. (2016) stated that the worldwide concern in the assessing results is overtaking the capability of states to collect the required information. Therefore, the private sector should focus on ensuring the minimum data set and gathering capacity for tracking the implementation progress of SDGs (Stafford-Smith et al. 2017). Notwithstanding this logic, there is a need to expand our perception of the sustainable development system and interactions among the SDGs and targets to facilitate the implementation (Reyers et al. 2017). Therefore, the underlying concern is how to measure the progress implementation of SDGs (Yonehara et al. 2017).

Figure 2 illustrates the linkages among some SDGs, which are directly related to the private sector. Undoubtedly, these linkages mean that implementing one goal effectively can support to achieve other goals. For example, recycled and reused water in targets 6.3 and 6.4 are linked to target 12.2 regarding sustainable management and efficient use of natural resources. Additionally, target 6.3 linked with 12.4 and 12.5 is concerned with the type of waste and disposal method. Furthermore, target 12.5 (prevention, reduction, recycling, and reuse) is linked to 15.2 (increase afforestation and reforestation globally). Moreover, target 12.2 linked to 7.3 regarding the reduction in energy consumption, which drives to

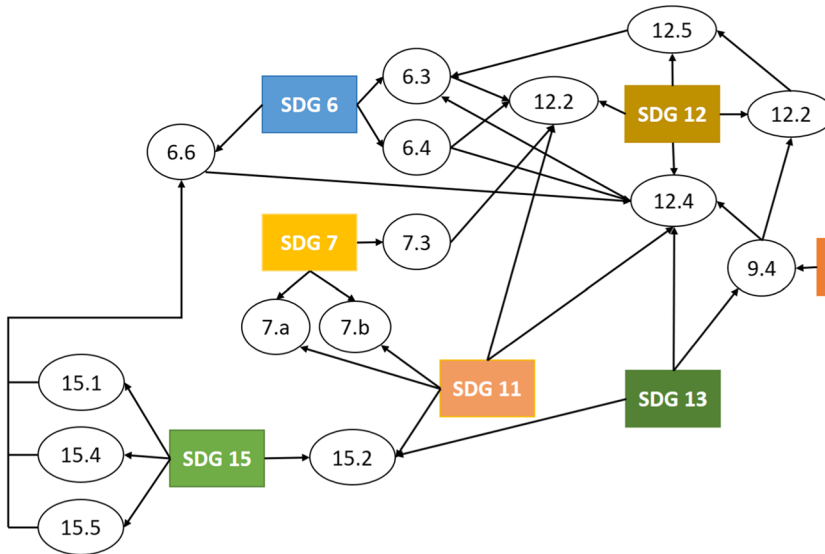


Fig. 2 SDGs related to the private sector

achieving SDG 13. Hence, the private sector when adopting these goals in their plans and strategies will contribute to increased recycled and reused water, reduce energy consumption, minimize the significant impact of activities on biodiversity, and maximize the recycling and reuse materials.

For example, the climate change issue is overlapping with all the SDGs, so this goal (SDG 13) should be considered with each goal. Climate change will affect the most vulnerable people, resulting in failure of the efforts to end poverty (SDG1), to attain gender equality (SDG5), and to lessen inequality among countries (SDG10). Similarly, increased stress on water resources (SDG6) will affect the ecosystems and damage biodiversity (SDGs 14 and 15), consequently threatening food security (SDG2). These changes may spread infectious disease patterns that would affect global health (SDG3). Consequently, these impacts may threaten peace and security (SDG16). On the other hand, by encouraging efforts for overcoming energy efficiency by the development of carbon capture and storage and energize investment in cleaner burning of the natural gas besides investing on renewable energies and technologies (SDG7), all these initiatives are expected to provide promising economic investment opportunities (SDG8) in the oil and gas sector (IPIECA 2017).

As noted previously, indicators are essential to measuring the achievement of implementing the sustainable goals and their targets, but still, there are no clear cases of activities that strengthen the implementation of the SDGs, specifically in the private sector (Sullivan et al. 2017). Gupta and Vegelin (2016) concluded that the successful implementation of SDGs means identifying a powerful linking connection among the goals and the ways of the integration into the global society. The existing SDG indicators are neither comprehensive nor final because some target areas lack indicators that are still not defined or weak in the method part and require strengthening (Saner et al. 2019). About half of the indicators seem to be appropriate for the targets, and the scope of the other half is too narrow (Elder and Olsen 2019; Merry 2019). In this regard, 49 (29%) out of the 169 targets are

well defined and developed, whereas 91 (54%) need more work and 29 (17%) are weak or require substantial work (Stokstad 2015; Hak et al. 2016; Kumar et al. 2018). A study conducted by Palmer and Flanagan (2016) on 22 out of 50 large companies in USA identified 389 goals; most of them concentrated on the environment, and the companies list 18 goals in sustainability, including seven goals for “people,” three for “overarching” and eight for “planet.” A piloted contemporary study in Montenegro (Galli et al. 2018) found in the first reporting period planned for 2019 that only 26 organizations can provide data for measuring 137 indicators out of the 241 (56.8%). It is a good sign that some businesses have already started integrated sustainability aspects in their plans and strategies. It is clear that several issues of the three dimensions of sustainable development should be recognized as having the same importance level because the SDGs must be implemented entirely as integrated rather than in a fragmented way, as the sustainable goals and targets are interlinked. Vital as this is, the efforts have been concentrated, especially on integration between the goals and targets.

5 Conclusion

In the perspective of the SDGs, it is obligatory for the private sector to support the implementation procedures, considering the social, economic, and environmental aspects. Nevertheless, the effective and practicable partnership among public and private sectors is the approach to create valuable opportunities and tackle the challenges toward achieving the SDGs in the assigned time, in order to succeed. Therefore, it becomes imperative that the private sector starts to modify their plans and develop strategies that could align with SDGs requirements. Indeed, the private sector has taken actions to advance SDGs via several voluntary initiatives that have already been implemented, such as CSR, circular economy, and other environmental voluntary initiatives on how this sector can provide its contribution to attaining the SDGs by 2030. Many researchers declare that the private sector holds powers to afford performing on the SDGs. Some recent studies uncovered that the companies that are CSR certified found their activities oriented toward SDGs. Other studies revealed that some companies themselves have initiated to understand their obligations and activities on their sustainability reporting.

For achieving SDGs, the private sector is facing several challenges such as lack of influential leadership; lack of harmonious partnerships (effective and practicable partnership among public and private sectors); shortage of investments, the dearth of implementation; measurable indicators with effective data collection; the exhaustiveness and complexity of interlinkages among the goals and their targets; lack of monitoring, and evaluating methods for assessing the progress of implementation; and the indicator specifications and target monitoring. As a matter of fact, there is an urgent need for a reliable group of indicators to assist the private sector in monitoring the activities' impacts based on the environmental aspects related to the SDGs, in order to provide measurable data on the progress and the achievement of SDGs. The indicator specifications and target monitoring need continuous improvement. Hence, for gaining real and tangible results, the SDGs should be in line with the state's national strategies and plans. On the other hand, it is essential to understand the sequential connection among the SDGs, which will assist in specifying the prerequisite goal before planning to implement any other goal because some goals cannot be attained before the achievement of their prerequisite goal.

The private sector consists of a wide diversity of fields and complex activities. Therefore, if the 17 SDGs are entirely but unevenly related to the private sector, all of them are related to all companies. Importantly, companies are supposed to direct their attention toward SDGs, which are related to their significant economic, social, and environmental aspects, and include them in the plans, strategies, and the management. Moreover, the private sector is required to adopt a wider holistic method for sustainable economic growth without affecting the society and environment, such as circular economy. This field needs further research for the development of effective frameworks that clarify how to integrate the role of the private sector with the SDGs in a manner that could facilitate feasible, practical, and efficient implementation. Moreover, quantitative studies need to be conducted that analyze the benefits of the implementation to reach the targeted SDGs, in order to tackle the sustainability challenges in this sector in future.

For improving, the reporting process inclusion of the SDGs indicators is recommended as a benchmark for measuring the progress, facilitating data collection and monitoring, and strengthening the cooperation and coordination among the public and private sectors. Besides that, it is recommended to update and reformulate efficient regulations in line with SDGs requirements.

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