Achievement of Sustainable Development Goals: Integrating Sustainability in Project Management

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Abstract

This critical review draws on the increasing body of research on SDGs and sustainability in project management through the general project management literature and the relevant professional studies and reports that promote sustainability in project management. This is the first paper that takes the SDGs serious as an imperative and allows the project management profession to rise to the occasion. This review establishes a conceptual framework to systematically formulate, monitor and evalutate the projects as delivery process for SDGs, to identify appropriate tools to measure the performance of projects against the SDGs and sustainability.

Keywords: Project Management, SDGs, Sustainable Development

1.0 Introduction

The Sustainable Development agenda that is indorsed by the common global goals called 'Sustainable Development Goals (SDGs)' declared by the United Nations in 2015 has been in the centre of all development strategies of governments and development organizations around the world for the next 15 years (UN, 2015). The principal orientation of SDGs is sustainable development, originally defined as a form of development that encourages to satisfy the needs of the current generation without limiting future generations to fulfil their needs (Brundtland, 1987). This notion of sustainable development encompasses two concepts in it: the idea of 'needs', particularly the vital needs of the poor, which deserves paramount priority to be given; and the concept of limitations enforced by the state of technology and public organizations to satisfy current and upcoming needs, through a conscious evaluation of current needs and potential considering the limiting effects for needs and potential of future generation relating to resources and social impact.

Sustainable development in principle can be considered as a process of change which harmonizes the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change while enhancing both current and future potentials to meet human needs and ambitions (Brundtland, 1987; Eskerod & Huemann, 2013).

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The idea of sustainable development has recently been associated with project management and projects are seen as a vehicle of change not only within an organization but also the economy as whole (Silvius & van den Brink, 2014). This mechanism which considers projects as vehicle of change, plays a significant role in achieving sustainable business process and practices (Gareis, Huemann, & Martinuzzi, 2010). Thus, project managers are seen as change agents who can play a critical role on making the society or the economy more sustainable, by contributing to the achievement of SDGs.

Since the endorsement of SDGs by the United Nations in 2015, it has passed more than 6 years, which is a good amount of time to measure the progress made so far. Bangladesh is one of the few countries of the world which have been progressing satisfactorily according to the Sustainable Development Report 2021 (SDSN, 2021). In this consideration, the report ranked Bangladesh as one of the countries that improved most on the Sustainable Development Goals (SDG) Index since 2015. However, the global commitment for delivering SDG actions, only in few years, is falling behind, both locally and globally, compared to the ambitions and targets (Mansell, Philbin, & Konstantinou, 2019). This phenomenon regarding the achievement of SDGs is alarming and relevant for project management professionals around the globe (Swain, 2018). This is because the project management community, irrespective of sectors, will significantly deliver tomorrow's resilience and much expected development through achieving SDGs (Mansell, Philbin, & Konstantinou, 2019). As a result of this increasing role of the project management profession, project managers can impact on and affect outcomes of development interventions and thereby projects are means through which our future is created (Moehler, Hope & Algeo, 2018).

Although sustainability is frequently interpreted for environmental and demographic concerns, it really relates to the symbiotic relationship of ecological systems that make up our social, economic and environmental relations (UNCTAD, 2014). Recently, there has been an increasing interest in the study of sustainability both as an academic field of research and as an area of practice. The study by Granade et al. (2009) highlights that energy efficiency in the United States can annually save $1.2 trillion (about 5%) to the US economy. Likewise, an increasing number of studies concentrates on how sustainability might be achieved as a strategic imperative. Predominantly, research has emphasised the role of governments (UNCTAD, 2014), companies (Shrivastava, 1995) and the broader community (Van Berkel, 2010) to achieve sustainability. In summary, until recently, a large body of research focuses on macro-level concerns of sustainability such as climate change and usage of natural resources. However, less emphasis has been given on more practical,

micro-level issues. In particular, the role of professional institutions and knowledge workers as key intermediaries in achieving SDGs and sustainable development has received far less attention from the researchers and practitioners in the field.

The focus of this research is on the role of project management profession as a change agent in achieving Sustainable Development Goals (SDGs) for a sustainable economy and society. This is significant because project management professionals or project managers have the technical skills, capabilities and knowledge required to effectively and efficiently implement sustainability initiatives (Marcelino-Sádaba, González-Jaen, & Pérez-Ezcurdia, 2015). In the same way that engineers have been involved in developing sustainable 'green' technologies and accountants in developing sustainability reporting tools, so too have project management professionals been responsible for the development and diffusion of sustainability practices. The role of project managers in this context is particularly important as an increasing trend towards 'projectification' (which is defined as the reorganization of tasks and activities as projects) and thus places project managers in a prominent economic and societal position (Sánchez, 2015). This research aims to contribute to our understanding of the importance of project managers in achieving SDGs for building a more sustainable economy and society. As such, this research focuses on how the project management profession has contributed to the development, acceptance, adaptation, and rejection of sustainability principles and practices in regard to building a more sustainable economy and society.

The research conducted by Silvius & Schipper (2014) captures the growing interest in sustainability and project management. The study reflects the increasing importance of project management profession as part of the "projectification" of society, while highlighting the centrality of project management skills, competences and techniques in delivering sustainability (Silvius & Schipper, 2014). Economic activity is increasingly being organized as projects, and therefore, making these projects and their results more sustainable can be the foundation for achieving sustainable development (Silvius & Schipper, 2014). Accordingly, a growing debate amongst academics and practitioners has focused on the issue of sustainable projects (Martens & Carvalho, 2017). As part of the drive toward sustainable projects, project management has developed some new methodologies, tools and techniques (for example, the GPM P5 Standard for Sustainability in Project Management and the Project Management Global Sustainability Community of Practice) which foreground a concern with sustainability (Alvarez-Dionisi, Turner & Mittra, 2016).

The importance of project management professionals is, from a theoretical perspective, not limited to their functional and technical roles as implementers of

sustainable projects, and rather refers to the wider institutional role that professions exercise in achieving radical change. This is significant because delivering sustainability often requires challenging assumptions and practices which are established and profoundly institutionalized in order to create and institutionalize new organizational models and functional arrangements (Moehler, Hope & Algeo, 2018). Changing institutional practices, for instance, relates to the duration's shift in the project lifecycle. Although the delivery of final product or service is the normal project end, the objectives of the project management process are beginning to consider the utilization of the project investment beyond the completion of project activities (Gareis, 2005). This paradigm shift in project lifecycle relates to the notion of sustainability. The conception of sustainability subsequently arise in the need to contribute to the optimization of the business case of the investment initialized by the project, manage the project complexity and project dynamics, and continuously adjust the project boundaries. More explicitly, achieving sustainable development and building a sustainable economy and society through projects is not an exclusively technical matter; however, it involves institutional change (Scott, 2008). Therefore, this research proposal, theoretically, relates to the increasing debate around the institutional work of the project management profession, concentrating on both the purposeful and everyday forms of agency through which professions contribute to creating, maintaining and disrupting organizations (Lawrence, Suddaby, & Leca, 2009).

The central research question that drives the research is: what is the role of project management in achieving SDGs and sustainability? To answer this research question, two recursive sub questions are: SQ1 - what is the influence of professional bodies with regard to institutionalizing sustainability practices into project management tools and techniques? SQ2 - how do project management professionals contribute to implementing sustainability practices within projects? The two sub questions are recursive in the way that project management professionals contributing to implement sustainability practices is also an outcome of the approach used by professional institutions.

2.0 Methodology

This critical review draws on the increasing body of research on SDGs and sustainability in project management through the general project management literature and the relevant professional studies and reports that promote sustainability in project management. The main question that this research focusses is the role of project management in achieving SDGs and sustainability. The process of answering the research question started from establishing the role of sustainability integration in project management as a choice or a professional responsibility followed by

offering a conceptual framework for project managers to use in order to achieve SDGs effectively. The study therefore performed a systematic literature review (Tranfield et al., 2003), with the analysis of the publications that discuss the integration of sustainability and the fitting of SDGs into project management.

The recent major literature reviews on the topic include Silvius (2017) which highlight the emerging trend of sustainability in project management in achieving sustainable development; Aarseth et.al (2017) which focused on the positive link between projects and sustainable development; Armenia, Dangelico, Nonino & Pompei (2019) that reviewed the extensive literature on the integration of project management and sustainability, and proposed a new conceptual framework; and Cerne & Jansson (2019) which focused on the interface between sustainable development and project management through the critical review of its practices. It is not the intention of this research to repeat these studies, rather to use them to critically assess the extant literature according to what has been recognized as requiring further investigation.

Following the approach of Aarseth et al. (2017), the study focused on the journals that were identified as (combined) publishing most of the academic research on project management and sustainability. These are the three highest ranked project management journals: International Journal of Project Management, Project Management Journal and International Journal of Managing Projects in Business (Aarseth et al., 2017), along with the Journal of Cleaner Production, which was identified as the main source of articles on the topic (Marcelino-Sadaba et. al., 2015). Apart from these four articles, sustainability was also selected as an important journal on the topic considering its focus on sustainability and project management.

Search strings for finding relevant articles were the combination of one of the following sustainability related terms: “Sustainability”, “Sustainable development”, “Sustainable Development Goals” , “SDGs”, “Green”, and one of the following project management related terms: “Project” and “Project management”. The search strings were applied to the titles, abstracts and keywords of the articles in the five journals, using the search engines of the journal's publishers.

An initial assessment to evaluate the relevance of the publications for the study was conducted based on the title and abstract of the articles. The articles that appeared to be not relevant to the study were removed. After the initial screening, a full-text analysis was conducted. A set of strict criteria was adopted to screen papers: according to research aims, papers dealing with the integration of sustainability into the project management were exclusively included while considering the articles in

English. As a result, it excluded a considerable number of papers from the initial search results.

Following the above guideline and considering articles published from 2010 to 2019, a total of 150 articles were obtained. A selection based on analysis of the title and abstract led to a restricted set of 79 articles, which became 43 after a full text analysis: 41 papers in scientific journals and 2 conference papers. However, among these 43 articles selected for this current review, the following four are taken as the basis as these are comparatively more relevant and suitable to the topic.

Silvius (2017) reviewed 71 publications covering the period between 2000 and 2017 with the aim of examining whether sustainability is an emerging school of thought in project management while identifying certain clues to define the sustainability school of thought: seeing projects in a societal perspective, having stakeholder management approach, applying triple bottom line (TBL) criteria for project's business case and success and taking a value-based approach to project management. Similarly, Aarseth et.al (2017) examined 91 articles published in the five leading journals in the field of project management and sustainability during 1995-2015. The study identified three sustainability strategies for the project managers: setting goals for strategic and tactical sustainability, including sustainability in project design and developing sustainable supplier practices, and three other sustainability strategies for both project organization and host organization: incorporating project actors promoting sustainability, developing sustainability competencies, emphasizing sustainability in project portfolio management (Aarseth et.al, 2017).

More recently, Armenia, Dangelico, Nonino & Pompei (2019) systematically selected and examined 32 publications published in the field from 1994 to 2018 to understand the recent trends in sustainability and project management practices and theory. Based on the extensive review of the sample of 32 peer reviewed publications that previously focussed on project management and sustainability, they restructured and proposed five dimensions in a new framework which are corporate policies and practices, resource management, life cycle orientation, stakeholders' engagement, organizational learning (Armenia, et. al. ,2019). Cerne & Jansson (2019) applied a projectification perspective from a multi-disciplinary approach to sustainable development in order to demonstrate how to better understand the interface between projects and sustainable development through the rigorous study of its practices. Analysing these main papers, the following critical areas of study were identified, which link to my overarching research question (RQ) and the two subsequent research sub-questions (RQ1 and RQ2):

- Sustainable Development Goals (SDGs)
- Fitting SDGs into projects and project management
    - Sustainability and project management concepts
    - Life cycle orientation
    - Organizational learning
    - Project management approaches, tools and techniques

The existing literature will be reviewed critically through the lens of these five key areas to firstly establish whether the integration of sustainability in projects and project management for achieving SDGs is merely a choice or an important professional responsibility for project managers, and then to propose a conceptual framework for project managers which will enable them to meaningfully contribute to the achievement of SDGs and sustainable development.

3.0 Literature Review

3.1 Sustainable Development Goals (SDGs)

The United Nation's SDGs were agreed among all governments to deliver a better and sustainable future. These global goals aim to address, in a participatory manner, the global challenges including poverty, inequality, environmental degradation, climate change, and peace and justice. This orientation of SDGs brings sustainability into the development paradigm. All these global goals are interrelated, and the overarching ambition is to 'leave no one behind' in the accomplishment of the sustainable development agenda. However, the doubt of not meeting the targets of SDGs is the most significant global and local challenge of today (Mansell, Philbin, & Konstantinou, 2019). This further highlights the potential for project managers to play a pivotal role in the achievement of SDGs. Before discussing how projects can contribute to SDGs achievement, it is logical to explain why this is important and how SDGs or sustainable development has evolved into today's position with the balance of social, economic, and environmental priorities, in more recent terms, People, Profit and Planet (Sosik and Jung, 2018).

In 1987, Our Common Future, commonly known as Brundtland Report (Brundtland, 1987), was released by the United Nations (UN), which defined sustainable development as mentioned in the earlier section (section 1) for the first time as UN body. Since the Brundtland's formative Report (1987), the concept of sustainable development has increasingly evolved to focus more on the goal of "socially inclusive and environmentally sustainable economic growth" (Sachs, 2015; p.5). In 1992, the United Nations Conference on Environment and Development published

the Earth Charter, which urged for a just, sustainable, and peaceful global society in the 21st century. Later the world leaders reaffirmed the principles of sustainable development by adopting the Millennium Development Goals (MDGs) in 2000, which guided international development efforts over the past 15 years to reduce poverty, hunger, ill health, gender inequality, poor access to education, environmental degradation, and lack of access to clean water and sanitation (Zhang, Prouty, Zimmerman, & Mihelcic, 2016). Remarkable progress was made toward the achievement of many of the MDGs; for example, the 2015 target for improved sanitation was achieved by the 95 countries whereas the target for access to improved water was met by 147 countries (UNDP, 2015). However, despite the genuine progress made in achieving the MDGs, it is still the reality that about 946 million people practice open defecation, 2.4 billion lack access to improved sanitation, 663 million people live without improved water, and 1.5 billion use sewer-collection systems without treatment (Baum, Luh, & Bartram, 2013; UNDP, 2015). The most significant global response to this challenge was the ratification of the 17 sustainable development goals (Figure 1) in 2015 by all the governments to be achieved by 2030, with 169 targets and 232 indicators, replacing the MDGs (Mansell, Philbin, & Konstantinou, 2019). This brings a major revolution in the implementation of sustainability agenda both globally and locally (Sosik and Jung, 2018).

Figure 1: The Global Goals for Sustainable Development (UN, 2015)

The SDGs continue the momentum generated by the Millennium Development Goals (MDGs) that were adopted in 2000 at the United Nations' Millennium Development Summit and fit into a global development framework beyond 2015 (Clémençon, 2012). However, the SDGs differ from the MDGs because all countries,

irrespective of their developing or developed status, are expected to work towards achieving the SDGs, which was missing in the MDGs considering targets for developing countries to be achieved with finance and technology support from developed countries (Sachs, 2012). Furthermore, contrasting the MDGs, the SDGs are focused on monitoring, evaluation and accountability – across the globe, not just at national level. Therefore, it is significant that the link is made from the bottom to the top, not the other way around, representing from foundation of project level impacts that can then be monitored and assessed against the local and global SDG targets and corresponding indicators. Nevertheless, the critical linkage from national to project level seems to be missing and this gap is alarming because SDGs essentially materialize at the project level.

The recent report from the United Kingdom's Infrastructure and Projects Authority (IPA) Report 2018 rightly highlights projects as the major vehicle through which national level strategic change is delivered (Mansell, Philbin, & Konstantinou, 2019). This IPA report mentioned that IPA had oversight of 133 projects in the national portfolio, accounting for a whole life cost of GBP £423 billion and a yearly project expenditure of GBP 27 billion. This estimate represented 20% of UK's national expenditure (Morris, 2017); however, it does not account for all change projects, programs or portfolios in the UK and hence the project expenditure in all sectors was much higher (APM, 2015). This significant amount of expenditure directly impacts SDGs but currently there are insufficient mechanisms to assess how effective this is and what we need to do differently to have positive impact on SDG targets. This is especially for development projects that require massive investments from governments, which are implemented by many stakeholders working across borders and where the governance of these actors is key. This reiterates importance of project management and specifically the responsibility of the project management professionals for delivering sustainability and SDGs (Mansell, Philbin & Plodowski, 2019).

3.2 Fitting SDGs into Projects and Project Management

3.2.1 Sustainability and Project Management Concepts

The term sustainability has been used in many contexts such as SDGs, sustainable development, sustainable growth, sustainable communities, and sustainable society. Most definitions of the concept of sustainability highlight the relationship between humans and the resources they use (Voinov, 2008). According to Wimberley (1993, p. 1), "to be sustainable is to provide for food, fibre, and other natural and social resources needed for the survival of a group and to provide in a manner that maintains the essential resources for present and future generations". This definition is in line with the widely used definition of sustainable development by Brundtland

(1987) as stated in section 1. While more than 100 definitions for sustainability have been presented, most academics agree that sustainability highlights the need to make a balance between social, environmental and economic goals, also referred to as the three pillars or objectives of sustainable development (Aarseth et.al, 2017; Labuschagne and Brent, 2005).

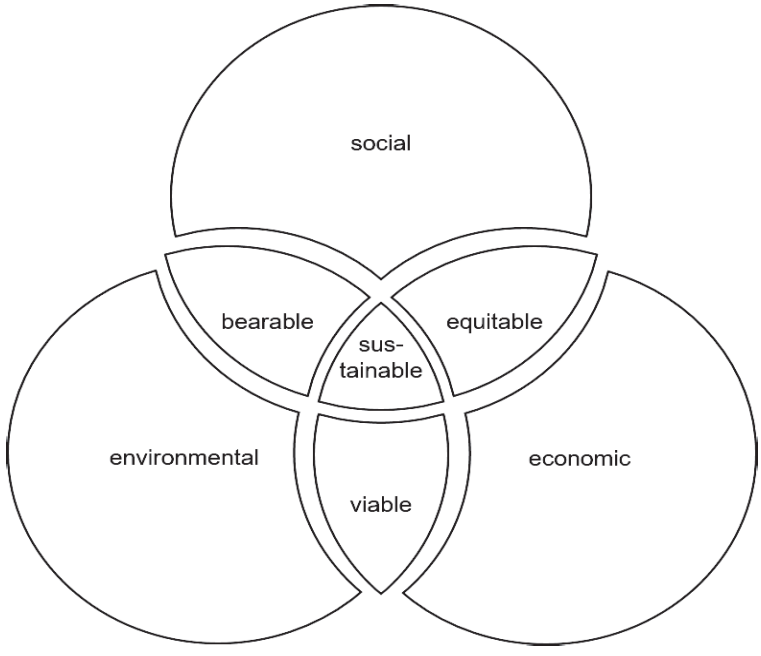

Figure 2: Triple Bottom Line in graphical presentation adapted from Elkington, J. (1997) and Koke & Moehler (2019).

The terms and definitions of project and project management are required to establish their compatibility with the basic philosophy of Sustainable Development Goals and sustainable development. These terms of project and project management are better defined by the different professional bodies that govern the project management discipline. The most prominent global professional bodies in project management are the Project Management Institute (PMI) based in the United States of America, the International Project Management Association (IPMA) encompassing mainly European project management bodies, and the Association for Project Management (APM) based in the United Kingdom.

The PMI (2018, p.542) defines a project as "a temporary endeavour undertaken to create a unique product, service or result", while the IPMA (2018) views project as a unique, transient, multi-disciplinary and organised endeavour to realise agreed deliverables within predefined requirement and constraints". The APM (2019) defines project as a unique and temporary endeavour which is undertaken to achieve an

anticipated outcome". Likewise, the term 'project management' has a range of differing explanations. The APM (2019-) highlights project management as the process through which projects are defined, planned, monitored, controlled and implemented in a way that agreed benefits are realised, whilst PMI (2018) puts forward the idea that project management is the application of knowledge, skills, methods, tools and techniques to project activities to meet the project objectives. Lastly, the IPMA (2018) advocates that project management is concerned with the effective use of methods, tools, techniques and competences to a project in order to achieve goals.

It is performed through processes and includes the integration of the various phases of the project lifecycle". It is noticeable that although these definitions of project and project management differ both in nature and content, they share basic elements. The definitions commonly reflect the transitory nature of the project through the words-temporary, transient, time-constrained. The project as a temporary organization has become the defining characteristic that distinguishes project from other business endeavours with more operational or strategic focus after it was initially articulated by Turner (1990). Another core element noticed in the definitions is that a project must be unique which was also pointed out initially by Turner (1990) while highlighting that no project will be the same. The final common element in these definitions is that a project is undertaken to accomplish a specific defined purpose by applying methods, tools and techniques. Therefore, a project must be time-bound, unique while achieving an agreed outcome with the application of a range of suitable methods, tools and techniques (Allan, 2012). Therefore, by definition, there is a contrast between project management and sustainability. When the sustainability principles, as described above, are integrated into project management to achieve sustainable development or SDGs, it is called sustainable project management (Armenia et. al., 2019; Silvius & de Graaf, 2019). Sustainable project management is characterised by several factors in contrast of traditional project management which are summarised in Figure 2.

Traditional Project Management (focuses on tactical tasks completion)	**Sustainable project management (focuses on achieving SDGs)**
Short term focus	Long term focus
Narrow stakeholder base dominated by sponsors	Current and future generations
Result/deliverable oriented	Life cycle oriented
More focus on Scope, Time and Cost known as triple constraints	More focus on People, Planet and Profit, known as triple bottom line (TBL) that balances of Social, Environmental and Economic aspects
Emphasis on output	Emphasis on outcome
Single project perspective	Portfolio management perspective

Figure 2: Contrasts between traditional project management and sustainable project management adapted from Moehler et al. (2018).

Projects and project management have emerged as a central aspect of organizational life in recent decades which are backed by a well-established set of theories, tools, and well-organised professional communities around the world (Cicmil, Lindgren & Packendorff, 2016; Hodgson and Cicmil, 2007). Projects are the basic building blocks of development. Without successful project identification, preparation and implementation, development plans are no more than wishes. Project management and project managers are pivotally positioned inside an organisation to professionally address the challenge of sustainability, particularly in the public sector projects that aims directly to achieve sustainable development (Hope and Moehler, 2014). Projects are considered instruments of change, and hence, project managers are change agents working at the forefront of implementing organisational sustainability strategies (Maltzman and Shirley, 2013; Silvius and Schipper, 2014). Therefore, it is likely that project managers are more aware of local social issues and can ensure that these issues are addressed appropriately. When it is the case that organizations or corporations lack sustainability strategies, project management advocates their execution by signposting negative effects to a high carbon footprint and diminished reputation (Crawford, 2013). Huemann & Silvius (2017) argue that project management has a critical role in contributing to sustainable development or SDGs raising the societal responsibility of the project management profession.

However, despite the increasing awareness of the importance of the role of project management for sustainable development and more specifically SDGs, it seems that the project management community is not prepared to deal with sustainability. It further appears that there is a gap between perception of importance and the actual use of sustainability in project management practice (Sankaran, Blomquist & Jacobsson, 2018; Martens & Carvalho, 2017). Similarly, Marcelino-Sadaba et. al. (2015) points out that no study has yet proposed a comprehensive set of sustainability competences that project managers must acquire to effectively contribute to the achievement of sustainable development or more recent SDGs.

3.2.2 Life Cycle Orientation to Project Management

The project manager must carry out the work of the project for the purpose of meeting the project's objectives within an agreed duration. As mentioned in section 3.2, every project has a beginning, a middle period during which activities move the project toward completion, and an ending. A standard project generally has the following major phases: initiation, planning, execution followed through monitoring and controlling, and closure. These phases, taken together, represent the path a project takes from the beginning to its end and are generally referred to as the project life cycle. This short-term approach of project life cycle contradicts with the long-term principle of SDGs and sustainable development as also highlighted in Figure 2 (Chawla, Chanda, Angra & Chawla, 2018). Any organization, either temporary or permanent, should shift

their outlook slightly away from short term economic performance towards the long-term impacts of their actions, because social and environmental effects, whether positive or negative, take time to manifest themselves (Hope and Moehler, 2015).

Organizations are increasing their interest in the impacts a project could have on the environment, society and the economy, even after the completion of project which is beyond the traditionally considered project life cycle (Yu, Cheng, Ho, & Chang, 2018). Essentially, the environmental and social effects of project activities are often not visible or appreciable in the short-term. Therefore, to promote the core meaning of SDGs and sustainable development, which is preserving the ability of upcoming generations to meet their needs, organizations must maintain a balance between short- and long-term outcomes, so implementing a life cycle orientation (Uribe, Ortiz-Marcos & Uruburu, 2018).

Hence, integrating sustainability in project and project management requires to take into account not just the life cycle of the project, rather life cycle of products or results the project produces (Labuschagne, C., Brent, A.C., 2005). Building on this idea, Yu et. al, (2018) developed a sustainability framework for projects that considered both the project lifecycle and the life cycle of products or results the project produces. The integration of sustainability principles into project and project management stretches the systems boundaries of project management in terms of a life cycle perspective (Silvius, & Schipper, 2014). For this purpose of effectively addressing sustainability issues in project and project management, project managers must first to understand the various phases of life cycles involved in a project and the products or results they produce (Sánchez, 2015). Therefore, further development of the profession of project management involves considering the professional responsibility of sustainability from a wide and full life cycle perspective within projects from resources to implementation to outcomes (Daneshpour & Takala, 2017).

3.2.3 Project Management Approaches, Tools and Techniques

Project management is increasingly evolving from a tactical level ‘tasks’ to societally-relevant ‘instruments of change’ within organizations and hence, the theories, methods, and practices of project management need to evolve accordingly (Marcelino-Sádaba, González-Jaen & Pérez-Ezcurdia, 2015; Silvius & Schipper 2019). The agile approaches to project management can be considered the initial step towards this direction, however, responsibility in project management demands for more than what is, currently, understood with agility.

The methods, tools and techniques help and guide project managers and project team to carry out their job toward project success (Besner & Hobbs, 2008). While tools

and techniques help with implementing project processes, methods offer guidelines to ensure processes are being executed appropriately to achieve project objectives (Jugdev, Perkins, Fortune, White & Walker, 2013).

Project managers, in practice, use a wide range of methods, tools and techniques which are so broad that they cannot be evaluated in this review. A study by White & Fortunue (2002) found 1210 methods, tools and techniques used by 955 project management professionals. Although the plethora of methods, tools and techniques are in use for project management, there is less evidence of assessing the appropriateness of these project management methodologies to integrate sustainability in managing projects.

However, the recent effort has been to develop an overall methodology, model, and or process for sustainable project management. A recent study by Koke & Moehler (2019), for example, investigates whether Earned Value Management (EVM), which is used to measure time, cost and scope in traditional project management, can be adapted to measure the sustainability performance in projects and finally offers the conceptual model for Earned Green Value Management (EGVM), a latest addition to the sustainable tools and techniques in project management. Furthermore, the balanced scorecard, which is an established system for performance measurement and management aiming for balancing not only financial and non-financial measures but also short- and long-term measures, presents a promising start to integrate economic, social and environmental perspectives into project management (Hansen & Schaltegger, 2016; Sánchez, 2015). Similarly, project sustainability reporting framework may also guide project managers towards achieving SDGs (Yáñez, Uruburu, Moreno & Lumbreras, 2019). In addition, GREEN Project Management (GreenPM) has been developed as a conceptual model to conform sustainability principles though out a project (Mochal & Krasnoff, 2013). Likewise, PRojects integrating Sustainability Methods (PRiSM) is another process oriented, structured methodology for project management for the broader objective of achieving sustainable development. However, GreenPM and PRiSM are commercial in nature and comparatively less mature, and hence, their appropriateness is yet to be established.

3.2.4 Organizational Learning in Project Environment

Project and project management activities provide an opportunity for continuous organizational learning. Project management standards include specific set of processes for knowledge management, making it easier to accumulate and further utilise knowledge generated by project experience (Armenia, Dangelico, Nonino & Pompei, 2019). The Project Management Body of Knowledge (PMBOK Guide) by Project Management Institute (PMI), highlights ‘historical information and lessons

learned' as part of the organizational knowledge base (PMI, 2018). Since knowledge management processes are essential in project and project management, they should be addressed and managed carefully inside the management process of the project. When effectively managed, they prevent errors and inefficiencies, thus improving the degree of project success (Todorović, Petrović, Mihić, Obradović, & Bushuyev, 2015). In line with the need to implement a sustainability approach, learning or knowledge management is critical for future development of sustainability assessment (Bond, Morrison-Saunders & Pope, 2012). One example of the central sustainability concepts is about reducing waste. Organizations based on sustainability concepts would thus learn from previous projects, from a portfolio perspective, not wasting energy, materials and resources on failed projects, and, from a single project perspective, not using such resources inefficiently (Jayal, Badurdeen, Dillon & Jawahir, 2010).

Learning through training and experience occurs also at project team level. Organizations train their teams about sustainability so that they can effectively assimilate it into projects. Team learning in a project environment is an important prerequisite for sustainability integration. Making sustainability the underlying purpose, project managers, in fact, experience more engagement, more commitment, and increased performance of the team (Deland, 2009).

4.0 Results and Discussion

4.1 Project Management Community to Realize SDGs as a Professional Responsibility

Project management professionals must utilise all accessible expertise to become experts in sustainability, to effectively communicate the underlying issues; they need to lead by example; and must change their ways of thinking towards integrating the whole chain instead of only its links (Goedknegt and Silvius, 2012; Hope & Moehler, 2014). This is a quesiton of the legitmecy if project management can be taken serious as a profession and puts forward the agenda that project managers need to become aware of their responsibility of sustainability delivery, allowing them to form their set of professional ethics. They further need to accomplish their responsibility more creatively and collaboratively and change the way they see the world around them to increase SDG impacts (Martens and Carvalho, 2017; Silvius et al., 2012). More importantly, narrowing in on the purpose of this research, it can be highlighted that a change in the project management profession towards sustainability will require developing new tools, techniques, and indicators to measure the achievement of the sustainability goals of projects (Silvius et al., 2012; Silvius & Schipper, 2019).

Integrating sustainability in projects and project management to realize SDGs requires Triple Integrated Shifts (TIS) in the way project managers see their

profession. They must consider a scope shift in the management of projects; from the classical constraints of scope, time, and cost, to managing social, environmental, and economic impacts. It requires a paradigm shift: from a predictability and controllability approach to an approach that is characterised by flexibility, complexity and opportunity as the study by Padalkar & Gopinath (2016) underscores that addressing the variability in project environment and employing the appropriate theoretic and methodological approaches are necessary. And it finally requires a mind shift: the change a project realizes is no longer a given nor exclusively the responsibility of the project sponsor, but also the responsibility of the project manager with ethics and transparency as a basic touchstone.

Sustainable Development Goals (SDGs) are necessarily broken down to projects to implement and measure the SDG progress at the national and global levels, bringing the critical role of project management as a profession and the project managers as the key change agents. It is clearly noticeable in the literature that projects and project management are considered the main instrument to achieve sustainable development especially SDGs. Although the professional bodies have the influential role with regard to institutionalizing sustainability practices into project management tools and techniques, the project management standards promoted by the major professional bodies such as PMI, IPMA and APM have poorly addressed the sustainability agenda and thus project management professionals are necessarily to assume the responsibility for a more sustainable society and economy (Silvius & Schipper, 2014; Eid, 2009). The project management community is therefore required to realize, accept, and deliver their responsibility in achieving SDGs. Therefore, integrating sustainability in projects and project management is no longer a choice, rather it is a professional responsibility that the project management profession needs to act upon as an urgent basis to realize the global goals by the postulated timeline of 2030.

4.2 Project Management Conceptual Framework to Realize SDGs

The achievement of the Sustainable Development Goals by 2030 is one of the most significant global Grand Challenges in today's world and this posits the project management professionals to play a key role, perhaps the most important role, in making a positive impact on the SDGs. The term Grand Challenge is used predominantly by the scholars to qualify and structure responses to the most complex problems of immense magnitude and impact (Head and Alford, 2015). The concept of Grand Challenges was first coined in 1989 when the United States White House Office of Science and Technology Policy (OSTP) used it in public documents and since then it has developed a formalised definition of Grand Challenges as ambitious but achievable goals that harness science, technology, and innovation to solve significant problems at national or global levels (OSTP, 2013).

This definition implies that practical and action oriented solutions are necessary to have impact on the national or global policy context. Therefore, the term of Grand Challenges captures ideas that are equally relevant to academicians and practitioners. They are also, by definition, both ambitious, and also achievable. Furthermore, the definition points out the need for measurement and impact to demonstrate meaningful progress. The US Government definition also suggests that the Grand Challenges are defined in a way that enables multi-disciplinary communities to collaborate together to find new effective solutions. In this regard, the definition has evolved since Mertz's (2005) focus on the specific community, to a broader group of stakeholders that includes policy makers, sponsors, and the project teams (Omenn, 2006). Therefore, project managers will logically take a leading role in this, particulalrly in preparing and implementing tangible action plans in order to improve performance in the SDG targets.

The recent study by Sakhrani et al. (2017) has identified five characteristics of Grand Challenges: (a) articulated by stakeholders, (b) specific, (c) ambitious but feasible, (d) framed in a manner that suggests the use of specific methods or disciplines, and (e) have the potential for broad impact. These characteristics are useful for examining how the project management professionals can respond to the Grand Challenges of the SDGs. Section 3.1 of this study has explained why this is important to measure SDG success and how sustainable development has evolved into a 'three-legged stool' that balances economic, social and environmental priorities. Section 3.1 has further highlighted that currently there is a gap since the evidence illustrates that the golden thread from project to national or global level, is missing. The core issue is that measurement of SDG impacts at project level is not currently working despite the endorsement of the SDGs by all the governments around the world. The problem stems from a fundamental misunderstanding of the interdependent relationship between business and society. The failure to appreciate this interdependence has led to sustainability being overlooked, both as a strategic opportunity for competitive advantage by firms and as a source of significant business risk. If businesses, and the projects that drive the changes needed, are to deliver their full part of SDGs by 2030, a new approach is needed.

The idea of 'Creating Shared Value' (CSV), first developed by leading business strategist Professor Michael Porter of Harvard Business School (Porter and Kramer, 2006, 2011) is a unifying theory that can help rethink projects and project management by highlighting impact across the triple bottom line (Elkington, 1994) of all SDGs. Project management community can do this by adopting CSV because it recognises the interdependence between society and business, moves society and business away from zero-sum competition to positive-sum competition, enables new ways for business to create competitive advantage that are more resilient against

sustainability risks and mimicry by other firms, combines traditional corporate social responsibility (CSR) and business operations into new integrated, and company-specific, strategies for creating shared value. Undertaking CSV as the strategic framework, the SDGs cease to be an additional external cost on businesses but instead become the key input for transformational business strategies that enable both business and society to flourish, even in uncertain or challenging times. The project management profession has a unique role to play in this transformation process by ensuring that projects' success is defined in the right way from the start, and that CSV opportunities are taken at all stages of the project lifecycle.

The conceptualization of the principles of sustainability integration in projects and project management found in the literature has been adapted to offer this new project management conceptual framework to meet the Grand Challenges of SDGs. This new conceptual framework shows key dimensions of sustainable project management and the way they contribute to achieving the SDGs. The five dimensions of this framework, adapted from the literature, are sustainability scoping, sustainability breakdown structure, extended life cycle orientation, team motivation, and sustainability monitoring and reporting. These integrated dimensions represent key factors for the effective integration of sustainability into projects and project management to realize SDGs. These five dimensions need to be kept in mind from the formulation of projects since sustainability depends much on how projects are formulated.

4.2.1 Sustainability Scoping

In realizing SDGs and sustainable development, project managers need to initially define sustainability, which is probably the most important step, because blunders made here consistently promulgate through the entire process of project implementation and management. The integration of sustainability in project management stretches the scope of projects and their management (Silvius, 2017). This underscores the importance of the accomplishment of this step systematically. The project managers must ensure that sustainability focuses on the project context and benefits to the implementing organisation. Project scope can be either the internal scope (when the focus is on the execution and management of a project) or the external scope (when the focus is on project's results) (Schipper and Nedeski, 2013). The process of defining scope, either internal or external, uses a project charter as input (PMI, 2017) and thus, sustainability principles should be included in the project charter, particularly in the business case, for instance by incorporating sustainability statements, and environmentally and socially responsible objectives (Tharp, 2013; Maltzman and Shirley, 2012). The project manager needs to essentially understand the project context in order to appropriately identify the indicators, which are relevant not only to the project but also to the organisational strategy, and hence must be mentioned explicitly in the business case (Carboni et al., 2013; GPM Global, 2014; Rahman, 2019).

4.2.2 Sustainability Breakdown Structure

The idea of sustainability breakdown structure (SBS) is to integrate sustainability principles in the traditional work breakdown structure (WBS). One way to do it, as suggested by Mochal and Krasnoff, (2013) is to remove sustainability from the regular project activity and then separately add it to the WBS. Similarly, the sustainability Breakdown Structure can also be developed as part of a sustainability management plan, which can follow the SDG pillars, for their methodology to identify appropriate sustainability indicators (Haner, 2013). Unlike traditional WBS, lowest level packages of SBS contain indicators, rather than activities. According to Kim et al. (2015), sustainability in WBS can be reflected on the lowest work package level. Likewise, the GPM P5 standard recommends observing each work package to ensure sustainability while using sustainability management plan that includes sustainability objectives (GPM Global, 2014).

Driven by the organisational strategy or sustainability statement, a sustainability management plan should be developed for the project in order to achieve its sustainability objectives. The defined objectives are then systematically broken down in the sustainability breakdown structure to have indicators relevant to the project and organizational strategy at the lowest level (Koke & Moehler, 2019). The objectives are related to project deliverables instead of work packages, and consequently, lowest level sustainability breakdown structure elements are expected to intersect with higher level WBS units. However, data collection and dissemination happen on the work package level. The reason why the approach does not adapt on lowest WBS level is that if there are changes to one indicator, it may have direct or indirect effects on the other. This makes simple usage complex, not least for creating control accounts.

4.2.3 Extended Life Cycle Orientation

Since sustainability deliverables are reflected in the actual work, this results in the project being scheduled as usual with necessary time and cost for realising sustainability objectives being accounted for. Some scholars (Labuschagne and Brent, 2005; Maltzman and Shirley, 2012; Silvius et al., 2012) advocates for a life cycle approach which surpasses the delivery and duration of the project. Long-term orientation is significant for realizing sustainability in projects and project management (Silvius et al., 2012). The project manager should understand that the outcomes and impacts of the project deliverables are critical and hence, they should give these critical aspects precedence over the project processes.

To sustain and ensure project benefit realization following project handover, the project manager should have the exit plan including lagging indicators which are not measurable as direct outcomes during the project period. These lagging indicators

should be assigned to the host organization as the permanent entity. Mochal and Krasnoff (2013) suggest that a Project Management Office (PMO) is the suitable entity to take charge of the project team to continue and sustain the long-term impacts of the project after its handover.

4.2.4 Team Motivation for Sustainability

The project manager should have the key strategies for motivating the project team towards sustainability in order to achieve SDGs. Firstly, it is critical to define the long-term purpose of sustainability in projects and project management. Thinking about the environmental, social, and economic purpose that any organization serves enables employees to latch onto that higher purpose and use the organization as a means to express their values, which in turn, creates meaning in and at work. Secondly, equipping team members with knowledge and competence for sustainability essential for sustainability results. To strengthen the can-do belief among project team, it is important to educate them about sustainability as well as to create systems and processes that make it easier for them to integrate sustainability into actions. Sustainability initiatives often require specialized knowledge and expertise - such as communicating to suppliers about sustainable sourcing or using an eco-efficiency tool to evaluate a new product. Furthermore, it is required for the project manager to make every team member a sustainability champion. Leadership is key to embedding the sustainable business model and the process typically starts with the project manager getting his/her leadership team on board the ship. However, it is not enough to have sustainability champions at the top - they must be cultivated at all levels and geographies of the organization or the project. Another important way of embedding sustainability in a project environment is to engage team members in the co-creation of sustainable practices. And an effective way to do this is to act on employee initiatives. The project manager can get interesting and useful ideas when they bubble up from the bottom.

Every person wants his or her working life to have a higher purpose that goes beyond doing a job and earning an income. In fact, many people spend most of their waking hours in workplaces that fall short of providing this. Organizations or team leader that can resolve the tension people feel between their personal values and the best interests of the business will benefit by having a highly engaged and productive workforce which is proud to play a part in bringing positive change to communities around the world.

4.2.5 Sustainability Monitoring and Reporting

Measuring and communicating progress on key sustainability indicators always attracts people's focus as we typically want to succeed in the dimensions we are measured on.

Therefore, monitoring and reporting sustainability is critical for the achievement of the sustainability agenda of any project or organization. A sustainability report is defined as a report published by an organization about the economic, environmental, and social impacts caused by its everyday activities. A sustainability report presents the organization's values and governance model and demonstrates the link between its strategy and its commitment to a sustainable global economy.

Sustainability reporting can help organizations to measure, understand and communicate their economic, environmental, and social and governance performance, and then set goals, and manage change more effectively. A sustainability report is the key platform for communicating sustainability performance and impacts – whether positive or negative. Benefits for sustainability reporting can include: increased understanding of risks and opportunities, influencing long term management strategy and policy, streamlining processes, reducing costs and improving efficiency, benchmarking and assessing sustainability performance with respect to laws, norms, codes, performance standards, and voluntary initiatives, avoiding being implicated in publicized environmental, social and governance failures.

In summary, the project management conceptual framework to meaningfully realise SDGs and sustainable development can be presented as follows:

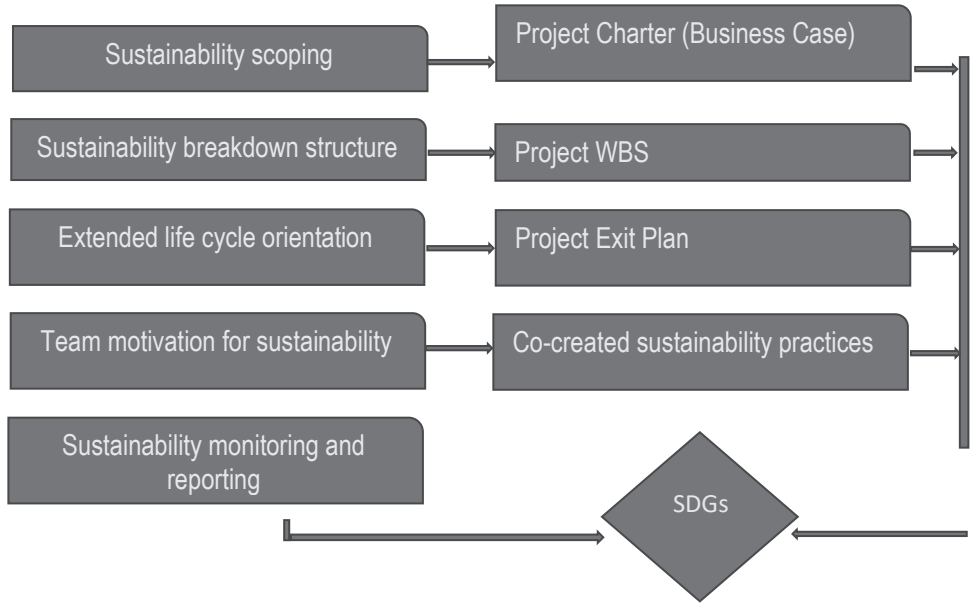

Figure 3: Project management conceptual framework for achieving SDGs

5.0 Conclusion

This paper examined the role of sustainable project management to realize sustainable development more specifically the sustainable development goals (SDGs). To examine the current paradigm, a review of the literature was undertaken to develop a deeper understanding of the challenges faced by the project management community to move toward sustainable project management to realize SDGs. To achieve this goal, five areas of sustainability and project management were identified: SDGs, sustainability and project management concepts, life cycle orientation to project management, project management methods, tools and techniques, and organizational learning in project environment. Following a careful review of the literature from both project management and sustainability perspectives, the discussion has suggested that the integration of sustainability principles in projects and project management is no longer a choice, it is rather a professional responsibility that the project management profession needs to carry out in order to realize the global goals by the postulated timeline of 2030.

This review first established that integrating sustainability is a professional responsibility of the project management community; the study then proposed a new conceptual framework to project management that project managers can use to effectively contribute to the achievement of sustainable development goals which is currently lacking. This is the first paper that takes the SDGs serious as an imperative and allows the project management profession to rise to the occasion. This review establishes a conceptual framework to systematically formulate, monitor and evalutate the projects as delivery process for SDGs, to identify appropriate tools to measure the performance of projects against the SDGs and sustainability.

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