Sustainable Project Management and its Governance in the Context of the United Nations Sustainable Development Goals.

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Abstract

This chapter presents research conducted by the authors of this chapter on the application of project governance to address sustainable project management. It starts with a review of the challenges faced by the current practices of project management in its move towards sustainable development. Next, we discuss our work in using systems approaches to develop a viable governance model for project governance, which can help to achieve the UN Sustainable Development Goals. We conclude with a future research agenda for scholars working in sustainable development.

Keywords: Sustainable Project Management; Project Governance; Viable Governance Model; UN Sustainable Development Goals.

Introduction

Why has sustainability become a critical issue for project management? In a guest editorial of a special issue published under the title '*Projects to create the future: Managing projects meets sustainable development*', Huemann and Silvius (2017, p. 1066) argue that '*project management has a vital role in contributing to sustainable development of organizations and society*', thus challenging the profession to rise to the occasion.

The capability of project management to support sustainable development has been gathering momentum since 2009 (Silvius et al. 2009; Gareis et al. 2013; Cerne & Jansson 2019; de Toledo et al. 2021). Unfortunately, despite the growing awareness of the role project management has to play to support sustainable development, it seems ill prepared to do so. Silvius (2017) opines that integrating sustainability appears to be a stretched goal for project management that is difficult to reach. This needs some attention; for example, with more flexible approaches to manage projects with a great deal of uncertainty that also meet an urgent need, as the world is becoming more aware of the impact of climate change.

The challenge of sustainable project management to address climate change

The 26th meeting of world leaders in Glasgow to agree on global and national targets to tackle climate change set itself a goal to secure 'global net zero by mid-century and keep warming to 1.5 degrees Celsius within reach' (COP 26, 2021).

Although the negotiations to achieve this goal have been difficult, there is a positive mood that there is increasing recognition of the need to translate pledges into action. When those actions start happening. there will be an urgent need for the project management community to step up. This will not be limited to just some sectors as everyone is affected by climate change.

Marcelino-Sadaba et al. (2015), point out that sustainability has been recognized as a challenge for project management in several sectors including construction, infrastructure, mining, energy, and new product development. All these sectors are likely to become responsible for taking action to deliver projects that will contribute to dealing with climate change.

What do the project management peak bodies say?

The need to move on adapting project management practices towards sustainable development has also been gaining support from peak bodies of project management that have been discussing this trend for some time now. The Project Management Institute has already adopted the United Nations Sustainable Development Goals (UN SDGs) as part of its strategy, anticipating its societal role. In a media release, it states that 'the climate crisis can be mitigated only with ambitious, innovative initiatives – and the *project* talent to make those plans reality' (PMI 2021). The International Project Management Association declared 2021 as the Year of Responsible Project Management, which includes paying attention to the environment. On its website it states that 'Practical experience with climate action projects is crucial knowledge in addressing this important topic of climate changes (IPMA 2016). The Association for Project Management, commenting on the trends that will shape the future, considers 2021 as akin to a perfect storm with a 'global pandemic and political upheaval playing out against a backdrop of an urgent climate crisis' (APM 2021). The construction industry is also realising the importance of sustainability and promoting the idea of a circular economy, and this is likely to spread to other sectors in which project management will be used (Sanchez & Haas, 2018).

If there is such urgency, why is it difficult for project management to adapt its processes to support sustainable development? Climate change scholars as well as project management researchers concerned about sustainability explain why it is not easy for project management to adapt to this new societal need.

Technological, institutional and organizational change

Jochen Markard (2017, p. 4), who studies technological, institutional, and organizational change processes compares a scientific endeavour to fly to the moon with addressing a complex issue like climate change. Project management, which originated from helping scientific and technological endeavours such as flying to the moon, is facing that conundrum to deal with expectations to assist in tackling climate change. The comparison shown in Table 1 presented by Markard could explain why sustainable project management would require a paradigm shift rather than an adaptation.

Table 1: The two endeavours
(Adapted from Markard 2017, p. 4)

	Flying to the moon	**Climate change**
Problem space	Clearly defined problem with some shared understanding on what it is that we are trying to achieve	Evaluative nature of the problem that is ill-defined, ambiguous, and complex, where the goals are constantly shifting
Solution space	Technical, based on science and engineering, testable, supply-side demand	Both technological and non-technological elements involved. Possibility of multiple ways to address the problem. Difficult to test solutions

		immediately. Possible unintended consequences. Generally wicked problems
Scope	National with a target of one decade	Global issues that can take decades to resolve
Actors & Coordination	The state is the primary customer; hierarchy; defined roles	A broad range of distributed actors with conflicting priorities and interests; to deal with networks and coalitions of a global nature
Instruments/Means	Public funding; research and development	Work with a broad range of policy instruments and activities from both the supply and demand side

Traditional vs sustainable project management

Silvius (2012, p. 88), who has been urging the project management field to take sustainability more seriously, compares traditional vs sustainable project management as summarized in Table 2, which paints a picture of what a paradigm change in PM may entail those bears similarities to Markard's comparison of endeavours in Table 1.

Table 2: Traditional vs Sustainable PM (Silvius et al. 2012, p. 88)

Traditional PM	**Sustainable PM**
Time, Budget, Quality	Social, Environmental, Economic
Inside-Out	Outside-In
Shareholder	Stakeholder
Process	Content
Threats	Opportunities
Path	Steps
Control	Guide
Knowing	Learning
Output	Outcome
Closed	Open

Despite the recognised need to adapt to support sustainable development, the project management field faces several challenges to achieve a paradigm shift. Jones and Lichtenstein (2008) point out that it is difficult for organizations sponsoring projects to meet the challenges of sustainable development due to other priorities. This affects projects carried out by these organizations as it is often difficult to decouple projects from other organizational activities. Despite attempts to develop a business case for including sustainability issues, such an attempt is often perceived as paradoxical in setting corporate goals (Hahn et al. 2014). Therefore, adding sustainability as a requirement to projects could pose several challenges within organizations (Bromley & Powell 2014), hindering the ability of projects to support sustainable development (Wijen 2014).

Project management researchers also explain why the move towards sustainable development poses issues to the field. Martens and Carvalho (2016, p. 24) state that 'there is a gap between perception of importance and the actual use of sustainability in project management (SPM) practice'. Marcelino-Sadaba et al. (2015, p. 14) add that a study to identify and characterize 'a set of sustainability competences that project managers must acquire is also lacking. De Toledo et al. (2021) argue that while the UN SDGs should be included in the critical success factors of projects, this will require that future project professionals should be trained in sustainable methodologies.

Quantum leaps vs baby steps

While quantum leaps in project management techniques and processes to meet the challenges of sustainable development are likely to take time, it has been proposed that changes in the way we conceptualize projects could help us to take a step forward in the journey. A recent systematic literature review conducted by Aarseth et al. (2017) on project sustainability proposes eight sustainability strategies, with three of these to be adopted by project organizations, two by project hosts (or owning companies) and three to be considered by both. These are (Aarseth et al. 2017, p. 1076):

1. Sustainability strategies to be adopted by project organizations
    a. Focusing explicitly on sustainability issues when developing project strategies, paying specific attention to areas where sustainability issues can find alignment with other issues that need addressing as well.
    b. Working with the supply chain in projects to implement sustainable practices (for example, lean construction to reduce waste, prefabrication, use of materials with reduced carbon print).
    c. Designing for sustainability in early phases of the project. Incorporating life-cycle assessments and value management to find the least cost as well as most sustainable practices.

2. Sustainability strategies to be adopted by host organizations
    a. Defining sustainable project policies based on existing laws and norms and setting up guidelines to help execute tasks that promote sustainability of projects undertaken by the host organization across all projects.
    b. Incorporating sustainability practices into technical systems supporting projects such as prefabrication and waste management systems.

3. Mutual sustainability strategies:
    a. Selecting and including of actors who can promote sustainability skills capabilities and roles into the projects.
    b. Enlarging the competencies and skill sets of project managers to make them more aware of sustainability issues
    c. Considering sustainability at project portfolio level while selecting projects.

Other project management researchers have suggested that using sustainability principles as the overarching guideline could help project management practices to move towards sustainable development (Labushagne & Brent 2005; Turner 2010; Goodknegt & Silvius 2012; Gareis et al. 2013;). A way to move projects towards a sustainability mindset is to incorporate these principles into the governance of projects (Müller 2016; Bekker & Steyn 2009). This is an area in which the authors of this chapter have been working on.

The next section describes research carried out by the authors to propose governance structures based on systems theories to support sustainable development.

A Viable Governance Model and Sustainable Project Management

The viable governance model proposed by the authors to address sustainable project management is based on a systems methodology called the Viable Systems Model or VSM. VSM is classified by Jackson (2019, p.261) as a systems approach to address organizational complexity 'driven both by the internal interaction of the parts of a system and its turbulent environment'. The need to address sustainable development is an issue that adds complexity to both organizations and the projects they deliver.

Viable Systems Model

The Viable Systems Model was developed by Stafford Beer as part of organizational cybernetics looking at organizations in neurophysiological terms using the functions of the 'brain' and 'heart' (Beer 1972; Beer 1979). Beer proposed five essential subsystems called Systems 1-5 adapted from the functions of the brain and body (heart) that can be used to render any enterprise viable. Beer used the VSM in his consultancy projects. His use of VSM to advise the government of Chile is a classic example of the use of model at a national level.

Beer's VSM uses Ashby's Law of Requisite Variety to suggest a way in which an organization can match the variety in its operations and its environment. Ashby's Law states that 'only variety can destroy variety' (Ashby 1956, p. 207). This aligns with the idea of organizational theorists who postulated that organizations must adapt to their environment to survive (Lawrence & Lorsch 1967). Applying Ashby's Law requires 'that the organization must generate at least as much variety to "control the variety in its environment"' (Lewis & Stewart 2003, p. 23). In other words, an organization is wasting resources if it has too much variety and is exposed to risks if it has too little variety. VSM is based on the premise that to control (or govern) the operations of a system (or organization) to deal with the variety, some sub-systems should be used to reduce or attenuate the variety of the parts of a system that has higher variety while amplifying those that are of low variety. A typical example of variety in the environment is 'the number of environmental laws and regulations and how frequently they are changed and updated' (Lewis & Stewart 2003, p. 33). Beer's VSM made use of Ashby's Law mainly to deal 'with an organization's response to cope with environment variety' (de Raad 1987, p. 520), which is an important consideration in the context of sustainable development.

Parts of a Viable Systems Model

The VSM model proposed by Beer helps to deal with the variety to stabilise a system (or organization) using three major components that mirror the human body (Müller et al. 2020, p. 7) as shown in Figure 1.

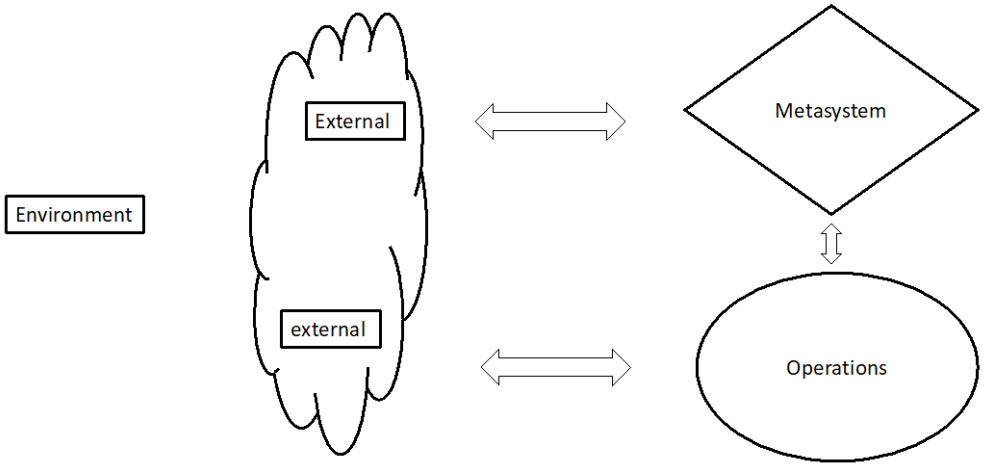

Figure 1: The main components of a Viable System
(Adapted from Müller et al. 2020)

The main characteristics of the three elements are:

- Operations (O), where the job gets done similarly to muscles or organs.
- The Metasystem (M), corresponding to the brain and nervous system, that ensures that operating units work together and are integrated in achieving the system's purpose.
- The Environment (E), which is outside the system and has implications for the system's future.

The three components shown in Figure 1 are further elaborated using five subsystems, S1 to S5, in Beer's Viable Systems Model. Figure 2 shows the five subsystems and their functions.

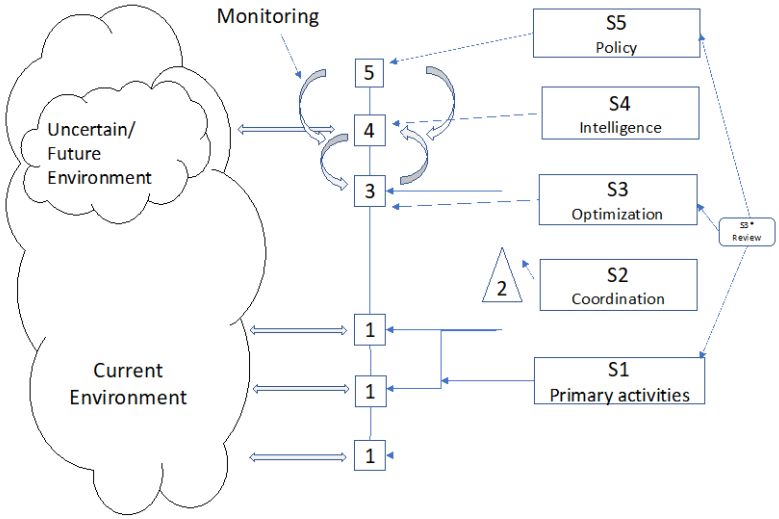

Figure 2 The five subsystems of the Viable Systems Model

Table 3 describes the functions that is played by each subsystem in an organization

Table 3 – Functions of subsystems of a VSM

Level	VSM for an Organization
S1	Primary activities by operations to meet an organization's purpose such as a production line.
S2	The systems that coordinate activities at S1 to resolve conflicts and dampen oscillations, which are often carried out by line managers. For example, balancing the load between several production lines.
S3	Optimizes the overall performance of the management system and informs policy makers at S5. Acts as a resource bargaining system for S1. These could be reports from each production line as well as a consolidated report. Audit functions at this level are shown as S3*. A quality assurance department would usually have this responsibility.
S4	While S1 to S3 are focused on the current situation, S4 is responsible to figure out what is happening in the external environment that can have an impact on the organization. It is known as the intelligence function and is often carried out by the firm's marketing department, which informs it about trends in the market that may affect business strategy.
S5	This level is responsible for policy and direction and is represented by the board and top management. It also monitors the exchanges between S3 and S4. This is where policy is set, and long-term strategies are developed informed by market intelligence gathered by S4.

Figure 3 shows how the VSM can be applied to a project.

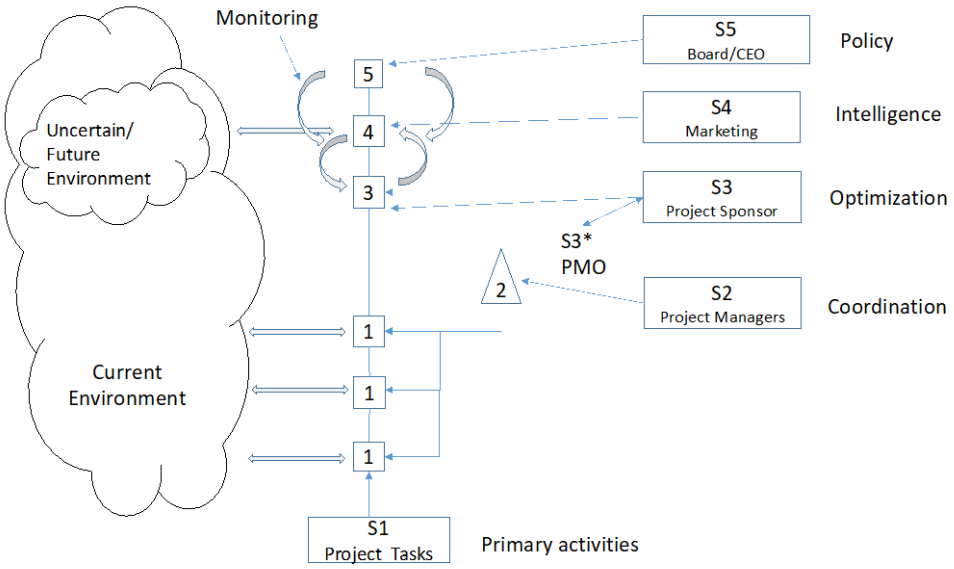

Figure 3 shows the five subsystems of a VSM applied to projects.
(Adapted from Müller et al. 2020, p. 7)

System 1 or S1 is concerned with the primary activities of the system. These can be the activities carried out to complete a project.

System 2 or S2 coordinates the activities to be performed at S1 to bring stability, and is a role played by the project manager.

System 3 or S3 ensures overall performance of the system and communicates with policy makers (or the corporate board) and acts as a resource bargainer. This is the role of a project sponsor.

System S3* collects information from the operational level directly when triggered by S3. This could be the Project Management Office or an agent responsible for auditing the project through its stages.

S1, S2 and S3 deal with the current situation and interact with the environment that affects current operation, which are normally the stakeholders of the project who may demand changes in scope from time to time.

System 4 or S4 is responsible to take an outside view to deal with threats and opportunities from the external environment. In an organization this is a scanning function and usually performed by the marketing function who are looking for signals in the market and informing the organizations about new trends as well as changes in demands.

System 5 or S5 is responsible for policy and strategy and is usually the CEO and the board.

Amplifiers and attenuators for requisite variety

The project organization can also use amplifiers or attenuators to exhibit the requisite variety. An example of this would be by transferring the project leadership function from the project manager to the team leader with the right expertise to deal with stakeholders (Müller et al. 2021). An example of attenuation is when the project organization decides to deal with some external stakeholders as a group instead of individually as they could have similar concerns. An example of this is to use a local body representing local businesses instead of dealing with each business affected by the project due roadworks interrupting their business.

Viable Governance Model

The VSM model has recently been taken up by IT projects to propose a Viable Governance Model (VGM) (Peppard 2005; Lewis & Millar 2009). They have categorized S1 to S5 differently to what has been proposed in this section to govern projects.

The authors of this chapter used the Viable Governance Model developed for a project to investigate how it can be configured for projects that could deliver the UN SDGs (Sankaran et al. 2020, p. 822). We realize that the UN SDGs are coordinated by several agencies located at UN HQ or in Regional Centers, but their roles do not seem to have been well defined on their websites or in publicly available UN documents. In applying the VGM, the authors have tried not to introduce new structures but use the existing structures and explain what they could be accountable for to meet the expectations of VSM.

Figure 4 shows the model that was developed.

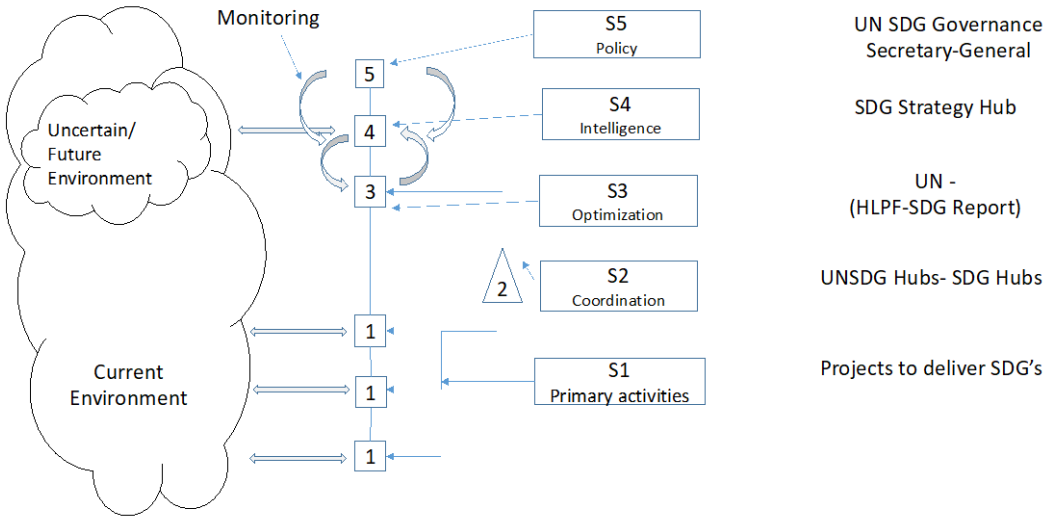

Figure 4 – VGM to support UN SDGs
Adapted from (Sankaran et al. 2020, p. 822)

The VGM model in Figure 2 uses existing bodies of the UN from levels S2 to S5. System S1 represents projects that will deliver the goals set out by the UN. S2 refers to the Business and Knowledge Hubs set up by the UN that have the capacity to play the coordination role.

However, it must choose the appropriate governance mechanism depending on the nature of the projects used to deliver the goals (Monkelbaan 2009). These mechanisms will be discussed later. S3 is the interface between S1 and S5 and carries out the audit functions. This is the function of the UN High Level Political Platform (HLPF) and the SDGs' annual reporting systems. S4 is a network of offices of the UN, NGOs, Businesses and Cities working towards implementing the UN 2030 agenda. The S4 function will also receive the support of SDG advocates who are eminent persons appointed by the UN to promote the UN SDGs around the world. S5 is the body in the UN that sets its policies and reports to the UN Secretary-General.

Five ways of governance

The governance mechanism that SDG Hubs could choose form five ways of governance that can follow different trajectories based on the context in which the goal is delivered as explained by Monkleban (2019).

1. *Sociotechnical transitions* (Geels 2002) could follow nonlinear processes to achieve social change over a long time. The SDGs can be viewed as small transitions that deliver a larger transition towards the overarching SDG goal over a long period of time. Such transitions are sociotechnical and are often studied using a multi-level framework to determine how transitions begin as 'niches', which need the support of a sociotechnical regime (comprising legislation, networks, and industries that dominate the sector in which niches are to be adopted) to meet the challenges at the societal level. The transition to electric cars to reduce global carbon emission is an example of a sociotechnical transition that has taken several years to become a reality.

2. *Meta-governance* (Meuleman 2008) by examining how governance mechanisms are used by government, markets and networks, which work with each other to drive collective action through coordination mechanisms.

3. *Polycentric governance* systems that would help with dealing with complex decision making at multiple levels such as the one needed to adapt to climate change (Monkelbaan 2019, p. 33). Polycentric governance mechanisms use processes of learning and adaptation.

4. *Network governance* (Klijn & Koppenjan 2012) deals with how initiatives that work across networks where actors work towards common goals are based on mutual advantage that can help to address 'complex, interconnected and adaptive challenges faced by SDGs' (Monkelbaan 2019, p. 33).

5. *Experimental governance* (Sabel & Zeitlin 2012) small interventions, which are reviewed to revisit the problem like an action research process. By continually questioning assumptions and practices using cyclical processes that allow revising of goals as problems, it uses open participation of all relevant stakeholders in making decisions together.

Figure 3 summarizes the various models and their characteristics:

Transition Management	**Metagovernance**
- Long-term, iterative structural change - Top-down management can enable niches - Interaction between niches, regimes, and landscape Gaps: lacks global perspective and metagovernance	- Coordination of markets-hierarchies-networks - systemic interdependency and complexity - Innovative, legitimate, and equitable approaches Gaps: lack policy dimensions and multilevel and dynamic aspects
Experimentalist Governance	**Networked governance/Polycentricity**
- Bottom-up, iterative - Complex, diffused, diverse - Foster deliberation, coherence, and participation Gaps: lacks context, regime, and multilevel dimensions	- Distributed, pluriform/diverse - Requires coherence and oversight - Process management enabling-participation Gaps: lacks meta-governance and dynamic aspects

Figure 3: Integrating Various Models
(Monkelbaan 2019, p. 43 & Sankaran et al. 2020 p. 821)

Monkelbaan (2019, p. 202) suggests that SDGs require an integrated or coherent governance model that could integrate ideas from the five types of governance discussed.

Conclusions and Further Research

This chapter has discussed some areas of concern for the project management field to adapt to the challenge of sustainable development.

The first concern is how to cope with the needs of sustainable project management in practice. One idea that we have proposed is to adopt a viable governance model based on systems theory – for example, Stafford Beer's work on the Viable Systems Model (Beer 2003). Although the UN delegates view climate change as a systemic issue that will benefit from using systems theories, project management research has not used systems theories that could help it to take a more systemic approach to address issues related to sustainability. While a Viable Governance Model has being adopted by the IT industry and by systems engineers (Keating et al., 2014), it is yet to be embraced by project management researchers and practitioners. The project management discipline needs to pursue attempts to develop standards and practices based on scientific insights as the systems engineering discipline has started to do to address complex challenges such as climate change.

Possible research agendas for future action are:

- Testing the proposed models based on VSM empirically in real projects.

- Developing a better understanding of the roles of organizations proposed in the VGM model and figuring out a way to integrate interrelated activities by several organizations as a cohesive whole working together.
- Developing a guiding theory to manage UN SDGs and their stakeholder integration.

A rethink is also required by project owners. They cannot relinquish the responsibility of sustainable project management to the project managers and their teams as sustainability is everybody's concern. One way project owners could assist here is to promote the use of the most sustainable materials and solutions for their projects instead of using the lowest cost option and incentivizing such initiatives. This will require metagovernance administered in the form of rules and regulations on how incentives are set by the national governments and international organizations such as UN or European Union.

Change is difficult to achieve unless some materials and working practices that work against sustainable development are banned. Examples of such actions is the banning of carcinogenic weed killers by farmers, which has only been achieved after they were strictly forbidden. A more contemporary example is the slow take up of electric cars even as the industry is ready to deliver them due to lack of political will. A future-oriented metagovernance considering responsibilities of governments to protect the planet is required.

Alongside this, project management researchers and practitioners should work together to make their voices heard. Active participation in global events such as the UN's COPs and similar movements is required of peak bodies of project management to influence political decision making by authorities to achieve UN SDGs. The project management community does not seem to have taken an active part in such activities but left it to the politicians, NGOs, and volunteers to fight it out. Stepping up and influencing these decision makers and demonstrating that sustainable project management is possible through our knowledge and experience is urgently needed. We know more about how project and program management practices can be adapted to help sustainable development than governments and other agencies. What good project management can achieve is often ignored by politicians.

Possible research agendas to act are:

- Better understanding of metagovernance and its role at national and global levels (cross-sectional research by political scientists and project management academics) in steering global initiatives.
- Identifying ways for the PM community to engage with policy developers, politicians, NGOs, etc.
- Developing frameworks to orient the different stakeholder groups on when, what, and why to engage in UN SDGs, and identifying their related roles and responsibilities.

The authors hope that this chapter will motivate project management researchers and peak bodies funding project management research to pursue the proposed research agendas to help move the world towards more sustainable development for the good of humanity. We owe this to future generations who will inherit the problems we have created by ignoring challenges like climate change.

As Greta Thunberg said when she addressed the United Nations in 2019: '*The eyes of all future generations are upon you, and if you choose to fail us, I say, we will never forgive you*' (Millman 2019).

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