

# Applying the P5 Standard for Sustainability: Enriching Project Leadership

EJ van Rooyen

University of Limpopo, South Africa

---

**Abstract:** Modern-day project management seeks to balance the time-cost-scope triple constraint forces associated with project execution, whilst accommodating risk and optimising the value and benefits, that the milieu brings to a project's doorstep. It is here where the P5 Standard may become a handy tool for a project leader to pursue sustainability. The P5 Standard focuses on the impact of processes and impacts that projects may have on the natural environment, society, the corporate bottom line and local economy; all in the interest of *people, planet, prosperity, process and products*. This Standard seeks to align to the 2030 Agenda for Sustainable Development by integrating all aspects relating to a project with the 17 sustainable development goals (SDGs). In this paper, the P5 Impact Analysis is described and examples from a practitioner's point of view are cited for clarification. The point is made that the P5 may be a handy tool with which to enrich project leadership. It should be considered that currently, the P5 is the product of much empirical endeavour and as such academic and strong theory is limited. This article therefore delves into sources that emanate from practice and it is hoped that the P5 may find its way into the scholarly discourse. The narrative also forms part of an extended research endeavour along the shorelines of project management sustainability leadership.

**Keywords:** Environmental bottom line, Leadership, Risk management, P5 Standard, Sustainability

---

## 1. Introduction

Project management doesn't require introduction and neither does leadership within projects demand any motivation. However, a disproportionate emphasis on the triple constraints of time, scope and cost in development projects has become inimical, whilst a more multifarious and accountable approach towards the natural environment and social equity is vital (Van Rooyen, 2016). The world cannot afford a continuation of old-style environmentally and socially unkind projects management; an approach which reflects a propensity for exploitation, degradation and bottom line-driven considerations (Fox & Van Rooyen eds., 2004). The risks associated with unsustainable project management need to be managed and fortunately recent project management technology allows for a methodology termed the *P5 Standard for Sustainability*, which envisages a world retreating from the precipice of a disaster. In this paper, this methodology is presented concisely. The intent is creating an awareness for sustainability. Therefore, a brief description will be forwarded to address the following: clarification of relevant concepts and terms; leadership and African development; the relationship between PRISM and the P5 tool; the P5 analysis; and the sustainability management plan. It is hoped that African scholars,

public sector officials and project officials in general will become aware of this technology and be enticed to consciously seek opportunities to apply P5 in project management endeavours on the Continent. The research conducted for this paper draws from extensive experience gained from *practical* project execution as well as from a literature survey and scrutiny of recent technologies relating to sustainable project execution practice. This research paper forms the *first* part of an extended research endeavour that is intent on identifying appropriate technologies which may assist to enhance project sustainability and enrich project leadership by presenting a practitioner's perspective of the P5 Standard and associated aspects and concepts.

## 2. Relevant Concepts and Terms

The following section annotates key concepts (as identified in the Abstract), which require adequate understanding in order to comprehend the P5 Standard and its application to projects. In the introduction, mention was made that the intent with this paper is to advance the 5Ps in projects management and to create and enhance an awareness of sustainability; consequently, the particular nuances enshrined in the above introductory notes warrant clarification:

Firstly, sustainable project (management) execution may be defined as:

*"...the planning, monitoring and controlling of project delivery and support processes, with consideration of the environmental, economical and social aspects of the life-cycle of the project's resources, processes, deliverables and effects, aimed at realizing benefits for stakeholders, and performed in a transparent, fair and ethical way that includes proactive stakeholder participation." (What is sustainable project management? [s.a.]).*

Secondly, project management for sustainability, by extension observes the principle sentiment enshrined in the aforementioned definition, yet with the additional caveat that all decisions, processes and procedures associated with the project, should actively pursue *sustainability* as a result. Therefore, seen from this perspective the two are merely (important) sides of the same coin. In addition, to emphasise the concern for *sustainability* in project management, the PMI (Project Management Institute) declares as follows:

*"Since the adoption of ISO 14001, which exists to help organization minimize how their operations impact the environment and comply with applicable laws, the subject of sustainability though project management had remained nebulous at best had been a lack of continuity among organizations who desire to use project management as a mechanism to impart change." (What is sustainability? [s.a.]). Therefore, in pursuit of more clarity regarding this concept from the commentary delivered above, key elements of sustainability in projects management may be identified (Dyllick & Hockerts as quoted in Silvius, Van der Brink & Kohler, 2012):*

- Sustainability integrates economic, environmental and social aspects of a project;
- Sustainability integrates short-term and long-term aspects associated with the execution of a complete project; and
- Sustainability in project management should involve taking into account the full life-cycle of a particular project.

The above cursory points serve to clarify the reason why these issues are of significance and portray

the issue under research in this paper. It should be accentuated that all projects carry risks. Irrespective of the different project management approaches that are followed, the element of risk assessment and risk mitigation are intermittent throughout the project process. According to the PMBOK (Project Management Body of Knowledge) (Project Management Institute) risk management forms the backbone of successful project management practice. Every project should have a risk management plan, which informs all the other plans and make-up of the project charter (Sustainable project management, [s.a.]). In fact, risk management forms part of the so-called PMBOK-knowledge areas (Project Management Body of Knowledge), which capture the essence of information that project managers and their associates should have in order to execute a project to closure. Project risk management directs a process concerned with identifying, analysing and responding to all forms of risk (including non-sustainable activities and impacts as a result of project execution or project legacy) (PMBOK Guide, 2017).

*Thirdly, leadership* is a term often used to describe the modalities associated with "guiding people to achieve common goals in a wide variety of settings" (Portny, 2007:254). In a project context, leaders and managers contribute to ensure that the triple bottom line – the project management triumvirate – (inclusive of the elements of the iron triangle – Figure 1 *Infra*) are achieved (Van Rooyen, 2016: 226) and (The GPM P5™ Standard for Sustainability in Project Management, 2016:7). Smit, Cronje, Brevis and Vrba (2013: 310) introduce leadership as a process where leaders direct staff behaviour towards reaching an organisation's mission and goals. In other words, leaders focus on translating a vision into a reality by encouraging project team members and associates to perform towards goals and objectives attainment. It is within this milieu that leaders and leadership are important; the P5 principles require leadership among project decision makers - who ideally should be conversant with the P5 Standard - to seek avenues to enhance sustainability of projects in the execution of project management design, project-related practices and impact mitigation processes (Sustainable project management [s.a.]) and (The GPM P5 Standard for Sustainability in Project Management, [s.a.]).

The above definitions are not necessarily different or unique to other definitions of leadership but are

**Table 1: The Project Management Process**

1. <b>Project Initiation</b> - Phase 1 - During initiation, a stakeholder brief and is done, the and the project is defined.
2. <b>Project Planning</b> - Phase 2 - A "baseline plan" is created. Project stakeholders will evaluate and comment.
3. <b>Project Execution</b> - The performance of the project team should be extensively measured during this part of the process.
4. <b>Project Monitoring and Controlling</b> – Ensuring that resources are well-attributed
5. <b>Project Closure</b> - All contracts to be concluded, all accounts need to be balanced, and the final reports and documentation need to be generated (all data and information need to be documented and recorded and properly archived in appropriate repositories). This phase will allow for future evaluation and reflection of the project modalities.

Source: Adapted from Project Management Processes, (s.a.)

specifically chosen to underscore that leaders need to exhibit leadership in such a way that practices are well-aligned to organisational mission statements, goals, objectives and strategies. Ehlers and Lazenby (2010) remark that leaders are recognised as the "drivers of strategy implementation". Therefore, from a sustainability point of view in particular, leadership is required to infuse those social and natural-environmental concerns and values, which may be enshrined into organisations' missions, goals and strategies, into any projects that may ensue under its control. Portny (2007:256) elucidates on the requirement for leadership by stating that project planning is a leadership issue because it is the act to "...explore the *why* of the project (a leadership issue) to help elicit people's buy-in and commitment...". Portny (2007:256) continues to differentiate that issues that are the remit of managers are "...the *what, when, and how* (management issues) to develop a feasible approach for successfully achieving the project's goals". Naturally, it may be opportune, if not ideal, that those responsible for management are also engaged in relative leadership positions with the requisite leadership acumen.

Fourthly, the P5 Standard should be explained:

"The GPM P5 Standard is a tool that supports the alignment of Portfolios, Programs and Projects with organizational strategy for Sustainability and focuses on the Impacts of Project Processes and Deliverables on the Environment, Society, the corporate bottom line and the local economy" and "The simplest way to explain P5 is that it is made of bonds between the triple bottom line approach, project processes and the resulting products or services. P5 expands on the triple bottom line theory to allow for optimal project management integration..."

(The GPM P5 Standard for Sustainability in Project Management, [s.a.]). The concepts of *triple bottom line* and *triple constraints* may be defined respectively, as: "...a method of assessing the performance of a business by taking account of social and environmental factors as well as its financial results" (Collins Dictionary) (Triple bottom line [s.a.]) and "The triple constraint theory in project management says every project operates within the boundaries of scope, time, and cost. A change in one factor will invariably affect the other two" (The GPM P5 Standard for Sustainability in Project Management, [s.a.]) and (Triple Constraint Project Management, [s.a.]). The triple constraint may also be referred to as the project management triangle. (Triple Constraint Project Management [s.a.]). By way of example, if new features are added to the project's scope, consequently more time and money should be budgeted to achieve the project objectives and overall goals. Concurrently, if a project's budget is impeded, an inverse adaption of the project's scope should be re-considered.

Fifthly, the *Project Management Process* may be described as a five-phase continuum – also known as the *PMBOK Project Management Process Group* (Horine, 2009:10), consisting of:

Lastly, the concept of *environmental bottom line* is of interest as well, when project management sustainability and sustainability leadership in project management are considered: "Environmental bottom line means managing, monitoring, and reporting your consumption of resources, including waste, and also any impacts from business practices including emissions, pollution and toxic waste." In other words, control should be exercised over the environmental bottom line to ensure that

sustainability is achieved in terms of environmental conservation and preservation – with limited physical impact and the necessary mitigation. Therefore, the objective is to lessen the impact a project/development endeavour has on the environment (Environmental bottom line, [s.a.]). The Global Reporting Initiative (GRI) (an initiative that assists businesses and governments worldwide to measure and communicate their impact on critical sustainability issues) ([www.globalreporting.org](http://www.globalreporting.org)) has developed guidelines to enable organisations and development agents to report and their conduct. (Environmental bottom line, [s.a.]).

### 3. Leadership and Development

The cultivation of leaders with exceptional character and skills is critical to development. According to Patric Awuah Jr., the founder of Ashesi University in a seminal article published in a World Economic Forum publication in 2016 (5 things Africa's future leaders should know [s.a.]), a new generation of leaders should lead by embracing new and appropriate skills, especially those of a technical nature. This implies that technology and the associated project management capacities and leadership aptitudes are crucial. Such leaders are urgently required in all sectors on the development landscape. Future leaders should develop a strong mix of skills that should capacitate them to create change. Yet, change starts with an ability to analyse problems; Leaders who can combine their concern for the greater good with excellent, in-depth analysis which may enhance understanding of how to manage and how to deploy new technology, are required. These leaders should also be able to grasp strategic imperatives and influence project modalities accordingly. The above should also be noted from the perspective of creating "authentic African leadership" where the true *Ubuntu*-concept is revisited. Here, notions like servant leadership is likened, where respect and cooperation harmony are heralded as possible catalysts for greater levels of sustainability in project management practice.

Horine (2013:233), an experienced project manager practitioner and acclaimed scholar, maintains that in a project environment, stakeholders (who may be individuals, organisations, communities or society), should be led through servant leadership practices that follow the above mentioned problem solving attitudes and aptitudes, typified by an emphasis on integrity and ethics.

The Global Goals for Sustainable Development as illustrated in Figure 2 (*Infra*), identifies 17 goals that are to be pursued to achieve reasonable sustainability in future development. All of these goals require sustainability-sensitive project management leadership to ensure that proper direction is provided to managers and other project executors. Yet, the quest of developing leadership ability in developing countries inclusive of the quest for sustainable projects management to ensure ultimate sustainability remains difficult: the reason transpires when the difference between project management according to traditional management approaches and the ideal of attaining sustainable development are compared (Sustainability project management [s.a.]). Tables indicating the apparent dichotomy between sustainability and projects are presented – refer to the Table 2 and Table 3 on the following page (Silvius, Van der Brink & Kohler, 2010).

If Table 2 is examined, and the aforementioned approach to *leadership* and *leading* are considered, it may be postulated that a new generation of leaders should establish a leadership culture which may be a mix or crafty fusion of European, Asian, American and African leadership (influences from across the world) and leading practice, in projects execution activities, is warranted (Pretorius, 2005). The essential qualities of successful leaders throughout the world may enable a successful bridging of the gap between sustainable development requirements and project management characteristics, as described in Table 2 *Supra* and as elucidated upon in Table 3 *Infra*.

Sustainability in project management is a way to cross the triple bottom line of business with the golden triangle of projects management practice. It is in this 'cavity' in which sustainability leadership finds its niche. Responsible global citizenship requires a renewed approach towards poverty, population growth, pollution, domestic abuse incidence, moral and ethical erosion, access to education, limited access to primary health and preventative health modalities and in general equitable and reasonable access to resources (again the elements depicted in Figure 1 reminds of the complexity associated with a modern-day 'responsible' approach to projects management). The aforementioned are exacerbated by the constant rising costs of energy (fossil-type and electricity in general) and aspects, which are less-often emphasised being an aging population and governments not positioned to generating sufficient

**Table 2: Sustainability Requirements and Project Management Characteristics**

Sustainable Development	Project Management
Long term orientation	Short term focus
Considers the interests of the current generation as well as future generations	Considers the interests of sponsors and stakeholders – immediate focus
Elongated life-cycle orientated	Immediate and current Deliverables/results orientated
Seeks to balance the interests of people, planet, profit	Seeks to satisfy scope, time, budget
Increasing complexity because of the variables	Reduced complexity – focused and narrow

Source: Adapted from Silvius, Van der Brink and Kohler (2010)

**Table 3: Sustainable vs Traditional Project Approach**

Sustainable Project Approach	Traditional Project Approach
Consensus approach	Top down decision-making approach
Leaps of faith - climate change	Fact-based
Systemic approach - considering the ecosystem	Linear & mathematical analysis without a sustainability bias
Social, environmental science as base	Engineering & Science base
Business and social science judgement	Engineering - clinical - judgement
Business case (benefit) justification	Risk-based justification
Design as a journey - with possible errors	Design as a deliverable - pursuing a zero defects goal
Triple bottom line considerations	Net present value orientation
Customer ownership orientation	Possibly outsourced/contracted to external service providers
Long term	Short term

Source: Adapted from Silvius, van der Brink & Kohler (2010)

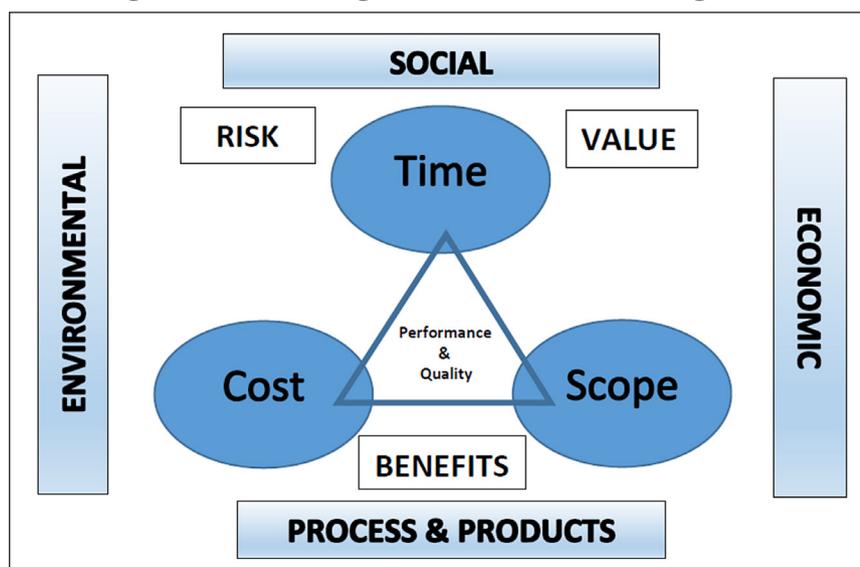
tax revenue for social support and general essential services (The GPM P5™ Standard for Sustainability in Project Management, 2016:6). The question arises as to how project management practice should be revisited to ensure accountability for the sake of sustainability and environmental preservation and conservation? This question becomes even more vexed if estimates of the increase of projects management approach to business conduct, away from operations management (a rise from 30% of global GDP in 2014 to a projected 40% by 2010), is taken into account (The GPM P5™ Standard for Sustainability in Project Management, 2016: 7). Whilst risks, values and benefits already form a central thrust in project management decision making, again a similar question arises: Is this enough to ensure greater sustainability in projects management?

According to GPM, the answer may partly be found in professionalising project management. This theory dictates that a professional project manager should by default and continuously seek to harmonise the social, environmental and economic considerations, which may be external to the project

but nevertheless find association with process and products considerations, to support the triple constraints of time, cost and scope (The GPM P5™ Standard for Sustainability in Project Management, 2016:7; The GPM P5™ Standard for Sustainability in Project Management, 2016:7-8).

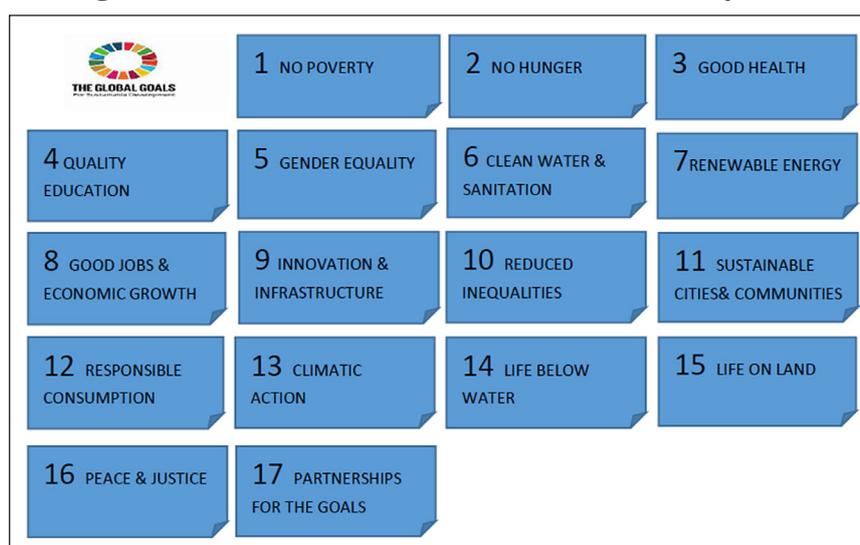
Therefore, expressed in another way the above considerations can be addressed by applying the P5 Standard to take into account *people, planet, prosperity, processes* and *products*. These five considerations are applied to the potential impact on the 17 'Global Goals for Sustainable Development' (as illustrated in Figure 2). Naturally, the P5 don't equally impact on all of the 17 Goals all the time, but is dependent on the type of project under scrutiny. In order to quantify or measure the extent of sustainability potentially engrained in a project, this exercise is executed during the beginning of a project. The objective is to earmark and prioritise sustainability risks and opportunities to enhance the project's value and the impact on the environment, society and economy, for the purposes of aligning it to an organisation's strategy.

Figure 1: Iron Triangle with P5 Standard Integrated



Source: Adapted from the GPM P5™ Standard for Sustainability in Project Management (2016:7)

Figure 2: The Global Goals for Sustainable Development



Source: Adapted from the GPM P5™ Standard for Sustainability in Project Management (2016:9)

#### 4. PRiSM and the P5 Tool

The P5 tool is performed when a project commences (launched). This may be conducted in alignment with PRiSM methodology. PRiSM refers to *Projects integrating Sustainable Methods*. It is a project management method with the ultimate goal of achieving or promising sustainable development. PRiSM methodology uses the P5 standard for sustainable development in project management. Organisations therefore manage their projects while integrating environmental sustainability into all facets their processes, thereby reducing any potential or perceived detrimental natural-environmental and social

impact (Project management, [s.a.]). Practically, the P5 Impact Analysis assists project leaders and their associates to define and prioritise risk, that may curtail sustainability and to identify opportunities from a 360\* standpoint (encapsulating to all sectors, aspects and strata of the project) to improve the project's value, the impact on its environmental, the effected and affected society/community, the economy and importantly, the organisation's strategy (The GPM P5™ Standard for Sustainability in Project Management, 2016:32). It should be noted that PRiSM extends beyond the traditional lifecycle of a project with a 5-step approach that integrates pre-project planning, adoption and integration of

**Table 4: Sustainability Management Plan P5 Matrix**

P5 Category	P5 Sub-Category	Issue	Jurisdiction	Rating	Statutory Requirement	Action
Social	Project Health & Safety	Hazardous materials	Staff not provided safety outfits/ gear	+3	Health & Safety Regulation	Issue Gear

Source: Author

**Table 5: Sustainability Management Plan P5 Mitigation Matrix**

P5 Category	P5 Sub -Category	Issue	Previous Rating	New Rating	Justification	Comments
Social	Project Health & Safety	Hazardous materials	-1	+3	Safety Code issues resolved	Follow-up on application/use of gear on a weekly basis

Source: Author

the service or product and realization of the benefits product or service (Project management, [s.a.]). Therefore, the result of the analysis serves the purpose of providing decision makers in different functional domains actionable information to influence project scope to involve social and environmentally responsible actions (The GPM P5™ Standard for Sustainability in Project Management, 2016:32); P5 is the link between sustainable development and projects. It enables an improved understanding of the impact of projects in a greater whole, and thus may assist to contribute positively to the UN's Sustainable Development Goals (*Supra*).

## 5. Performing the P5 Analysis

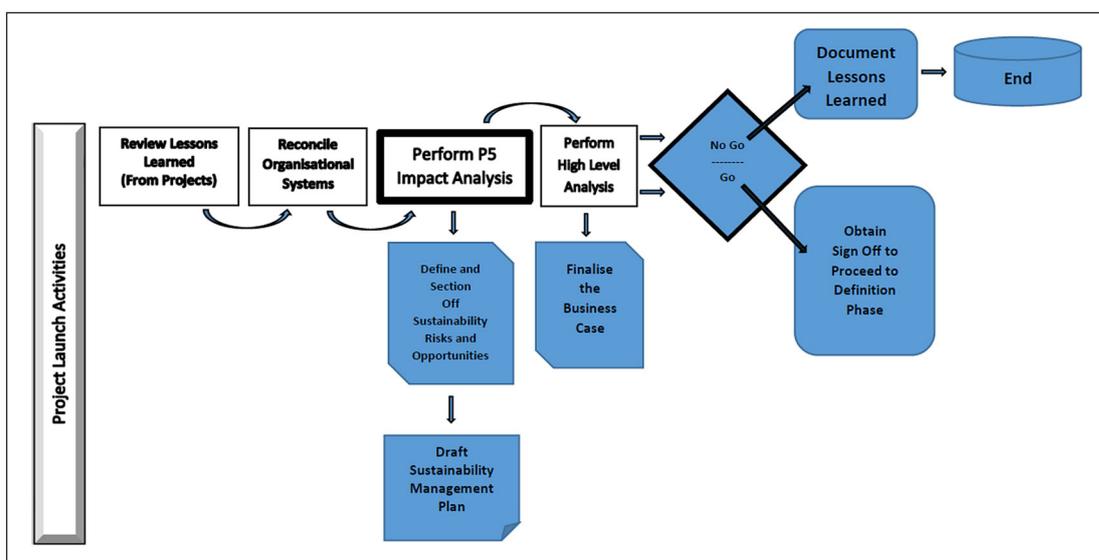
This section will provide a synoptic explanation of the mechanics of the P5 impact analysis process. It should be noted that project leaders and their associates need to thoroughly understand the business case to apply the process. Attendant hereto, a thorough grasp of the details of the project charter, relevant project requirements and importantly, the organisational goals and strategies is imperative. The narrative of all documentation relating to the GPM P5™ emphasises that "While the business case and project charter are the responsibility of the project owner to produce, process steps to gather, document and gain agreement on requirements based on the understanding of the document's organisational strategy are responsibility of the project manager..." (The GPM P5™ Standard for Sustainability in Project Management, 2016:32). An important activity when performing a P5 impact analysis is to develop a risk register. Depending on the preferred project management methodology, the design (layout) of the risk register may differ but

essentially it should contain essential information relating to different forms of risk associated with the project. As an example of a project risk ledger may be presented by referring to the PMBOK project management knowledge areas management process, which as part of its requirement should contain a Risk Management Plan, which identifies, analyses and proposes solutions or mitigations for perceived and potential project risk (Van Rooyen, 2016:230). Burke (2013) defines a risk management plan as an outline of how to complete the project within an *acceptable* level of risk – as outlined in an organisation's value statement. Therefore, it may be inferred that if an organisation entrenches a quest for sustainability as a value, a risk management plan should be in harmony therewith.

## 6. The Sustainability Management Plan

This crucial document transforms sustainability and related objectives into the essential project objectives which are needed to execute the project and against which project reporting should be done. According to this method the sustainability management plan is categorised in accordance with the P5 practices of people, planet, prosperity, processes and products. It continues to indicate the reason(s) for the inclusion, a relative scoring – in accordance with an appropriate table e.g. neutral (0) or high (+ or -3), medium (+ or -2) or low (+ or -1). Note that the lowest value is equal to the lowest impact e.g. -3 (+3 is the best possible score). Ultimately, a matrix is drawn that indicates the risk credentials, where after another matrix is drawn, which indicates the proposed mitigation modalities. These matrixes may for example appear in Tables 4 and 5.

Figure 3: The GPM PRiSM Method Launch Phase



Source: Adapted from the GPM P5™ Standard for Sustainability in Project Management (2016:32)

## 7. Conclusion and Recommendations

In the preceding discussion the P5 Standard was presented as a tool with which sustainability may be furthered in projects management. Logically, the P5 Standard methodology requires proper in-depth scrutiny to ensure applicability in different settings in organisational and project management contexts. Concomitant thereto, proper training should be afforded to current leaders and managers, as well as burgeoning leaders and prospective managers, to ensure that they comprehend and effectively apply this technology. Therefore, it is anticipated that this initial incursion into the P5 arena will incite interest among scholars, practitioners and other interested parties and that this tool may contribute to the quest for sustainable development.

## References

- 5 things Africa's future leaders should know. 2016. World Economic Forum. Available at: <https://www.weforum.org/agenda/2016/07/5-thingsafrica-future-leaders-should-know>. Accessed 4 April 2019.
- Burke, R. 2013. *Project Management Techniques*. College Edition. Book 2. 2<sup>nd</sup> Edition. South Africa: Rory Burke.
- Business Study Notes. *Project Management*. Available at: [www.businessstudynotes.com](http://www.businessstudynotes.com). Accessed 10 April 2019.
- Collins Dictionary. *Triple bottom line*. Available at: <https://www.collinsdictionary.com/> Accessed 10 April 2019.
- Econation. *Environmental bottom line*. Available at: <https://econation.co.nz/environmental-bottom-line/>. Accessed 8 April 2019.
- Ehlers, T. & Lazenby, K. (eds). 2010. *Strategic Management*. South African Concepts and Cases. 3<sup>rd</sup> Edition. Pretoria: Van Schaik.
- Fox, W. & Van Rooyen, E. (eds). 2004. *The Quest for Sustainable Development*. Cape Town: JUTA.
- Global Reporting Initiative. *Reporting guidelines*. Available at: <https://www.globalreporting.org/Pages/default.aspx>. Accessed 3 April 2019.
- GPM Global. 2002. *The GPM P5™ Standard for Sustainability in Project Management*. Release 1.5.1. USA: GPM Global.
- Horine, G.M. 2009. *Absolute Beginner's Guide to Project Management*. 2<sup>nd</sup> Edition. Indianapolis: Que Publishing.
- Horine, G.M. 2013. *Absolute Beginner's Guide to Project Management*. 3<sup>rd</sup> edition. Indianapolis: Que Publishing.
- Portny, S.E. 2007. *Project Management for Dummies*. Build and lead a winning project team. 2<sup>nd</sup> Edition. Hoboken, NJ: Wiley Publishing, Inc.
- Pretorius, B. 2005. Challenges facing business leaders in a rapidly changing South Africa. *Management Today*. 20(10):6-8.
- Project Management Institute. *A Guide to the Project Management Body of Knowledge*. PMBOK Guide. 6<sup>th</sup> Edition. USA: PMI.
- Project Management Institute. *Sustainable Project Management*. Available at: [www.pmi.org/learning/library/sustainability-project-management](http://www.pmi.org/learning/library/sustainability-project-management). Accessed 12 April 2019.
- Project Management Processes - What are they?* Oxbridge Academy. Available at: <https://www.oxbridgeacademy.edu.za/courses/project-management/process>. Accessed 4 April 2019.
- Silvius, A.J.G., Van der Brink, J. & Kohler, A. 2010. *The impact of sustainability on project management*. Asia Pacific Research Conference on Project Management (APRPM), Melbourne.
- Silvius, A J G, Van der Brink, J & Kohler, A. 2012. The Project as a Social System. Chapter 11. *The Impact of Sustainability on Project Management*. Clayton, Victoria: Monash Publishing.

- Smit, PJ, Cronje, GJ, Brevis, T & Vrba, MJ. (eds). 2013. *Management Principles*. A Contemporary Addition for Africa. 5<sup>th</sup> Edition. Cape Town: Juta.
- The GPM P5 Standard for Sustainability in Project Management*. Researchgate. From: <https://www.researchgate.net/publication/282816191> The GPM P5 Standard for Sustainability in Project Management (accessed 5 April 2019).
- Triple Constraint Theory in Project Management*. Team Gantt. From: <https://www.teamgantt.com/blog/triple-constraint-project-management> (accessed on 10 April 2019).
- Van Rooyen, EJ. 2016. *A Practical Introduction to Public Management*, edited by Draai, E, Van Rooyen, EJ & Raga, K. Cape Town: Oxford.
- What is sustainability in project management?* From: <http://brics.univ-lille.fr/> (accessed 4 April 2019).
- What is Sustainable Project Management?* From: <https://www.linkedin.com/pulse/> Accessed 15 April 2019.