

26th IPMA World Congress

Sustainability in Project Management Competences

A.J. Gilbert Silvius^{ab*} & Ron Schipper^b^a*HU University of Applied Sciences Utrecht, Padualaan 101, 3584 CH Utrecht, The Netherlands*^b*Van Aetsveld Projects and Change Management, Prinses Marielaan 2, 3818 HM Amersfoort, The Netherlands*

Abstract

Sustainability is one of the most important challenges of our time. How can we develop prosperity, without compromising the life of future generations? Companies are integrating ideas of sustainability in their marketing, corporate communication, annual reports and in their actions.

The concept of sustainability has more recently also been linked to project management. Studies show that considering sustainability should not be regarded a responsibility of just the project sponsor or executive, also the project manager has a strong influence on the sustainability aspects of a project.

Mary McKinley stated already at the 2008 IPMA World Congress that “The further development of the project management profession requires project managers to take responsibility for sustainability”. This paper builds upon this vision, by exploring the concept of sustainability and its impact on the competences of the project manager (based on the ICB3). It aims to provide guidance on how the standards of project management competencies should integrate the concepts and principles of sustainability.

© 2012 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of IPMA

Keywords: Project Management; Sustainability; Competences

1. Introduction

Sustainability is recognized by the United Nations as one of the most important challenges of our time (Glenn and Gordon, 1998). The pressure on companies to broaden its reporting and accountability from economic performance for shareholders, to sustainability performance for all stakeholders has increased substantially (Visser, 2002). Some authors even imply, that a strategy focused solely on shareholder value, is not longer viable (Kennedy, 2000). Following the success of Al Gore’s ‘inconvenient truth’, awareness seems to be growing that a change of mindset is needed, both in consumer behaviour as in corporate

* Corresponding author. Tel.: +31 88 481 6335. E-mail address: gilbert.silvius@hu.nl.

policies. How can we develop prosperity without compromising the life of future generations? Proactively or reactively, companies are looking for ways to integrate ideas of sustainability in their marketing, corporate communications, annual reports and in their actions (Hedstrom et al., 1998; Holliday, 2001).

Sustainability, in this organizational context, can be defined as “Adopting business strategies and activities that meet the needs of the enterprise and its stake-holders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.” (International Institute for Sustainable Development and Deloitte & Touche 1992). The concerns about sustainability indicate that the current way of producing, organizing, consuming, living, etc. may have negative effects on the future. In short, the current business processes of organizations are not sustainable. Therefore, these processes need to change. And they need to change in a sustainable way.

A frequently used practice of realizing change in organizations is by creating temporary, task oriented organizations called projects (Lundin and Söderholm, 1995; Turner and Muller, 2003). Therefore it makes sense to link the concept of sustainability to project management (Association for Project Management, 2006; Gareis et al., 2011; Oehlmann, I. (2011); Silvius et al., 2012). Mary McKinley stated already at the 2008 IPMA World Congress that “The further development of the project management profession requires project managers to take responsibility for sustainability” (McKinley, 2008). This paper builds upon this vision, by exploring the concept of sustainability and its impact on the competences of the project manager (based on the ICB3). It aims to provide guidance on how the standards of project management competencies should integrate the concepts and principles of sustainability.

The paper analyzes how sustainability is addressed in the ICB3, how the competence descriptions can be improved and what competences are lacking. With the proposed additions, project managers will be well equipped to cope with current and future challenges of sustainability.

2. The concepts of sustainability

The balance between economic growth and social wellbeing has been around as a political and managerial challenge for over 150 years (Dyllick and Hockerts, 2002). Also the concern for the wise use of natural resources and our planet emerged already many decades ago, with Carson’s book “Silent Spring” (Carson, 1962) as a launching hallmark. In 1972 the ‘Club of Rome’, an independent think tank, published its book “The Limits to Growth” (Meadows et al., 1972). In the book, the authors concluded that if the world’s population and economy would continue to grow at their current speeds, our planet’s natural resources would approach depletion. The Limits to Growth fuelled a public debate, leading to installation of the UN ‘World Commission on Development and Environment’, named the Brundtland Commission after its chair. In their report, the Brundtland commission defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). By stating that “In its broadest sense, sustainable development strategy aims at promoting harmony among human beings and between humanity and nature”, the report implies that sustainability requires also a social and an environmental perspective, next to the economical perspective, on development and performance.

The visions that none of the development goals of economic growth, social wellbeing and a wise use of natural resources, can be reached without considering and effecting the other two, got widely accepted (Keating, 1993). In his book “Cannibals with Forks: the Triple Bottom Line of 21st Century Business”, identifies John Elkington, this as the ‘triple bottom line’ or ‘Triple-P (People, Planet, Profit)’ concept: Sustainability is about the balance or harmony between economic sustainability, social sustainability and environmental sustainability (Elkington, 1997).

This triple bottom line has grown to be one of the key elements, or principles, of sustainability. But from the definitions described above, more principles can be derived. For example Dyllick and Hockerts (2002) identify three “key elements of corporate sustainability”: Integrating the economic, ecological and social aspects into the firm’s strategy, Integrating short-term and long-term aspects and Consuming the income and not the capital. Gareis et al. (2011) define sustainability with the following principles: economic, social and ecologic orientation; short-, mid- and long-term orientation; local, regional and global orientation; value orientation. The recently launched ISO26000 guideline on social responsibility mentions accountability, transparency, ethical behavior, respect for stakeholders’ interests, respect for rule of law, respect for international norms of behavior and respect for human rights as ‘principles’ of sustainability.

After considering these sets of elements or principles, Silvius et al. (2012) conclude six principles of sustainability. These six principles are:

Sustainability is about balancing or harmonizing social, environmental and economical interests

In order to contribute to sustainable development, a company should satisfy all ‘three pillars’ of sustainability: social, environment and economic. The dimensions are interrelated, that is, they influence each other in various ways. Organizations can have a more reactive approach to this principle and aim to ‘balance’ social, economic and environmental aspects of their operations, by trading off the negative environmental and/or social effects of doing business for a somewhat lower economic benefit. For example, compensating CO₂ emissions by planting new trees or compensating unhealthy work pressure with higher salaries.

Organizations can also have a more proactive approach to sustainability, and aim for products, services and operations that create ‘harmony’ of social, environmental and economic aspects. This approach is not about compensating bad effects, but about creating good effects.

Sustainability is about both short-term and long-term orientation

A sustainable company should consider both short-term and long-term consequences of their actions, and not only focus on short-term gains. Firms listed on the stock market may especially be tempted to focus on short-term gains, trying to increase performance from quarterly report to quarterly report, and thereby losing long-term vision. This principle focuses the attention to the full lifespan of the matter at hand.

An important notion with regards to this principle is that the economical perspective, because of discounting of future cash flows, values short-term effects more than long-term effects. In economic theory, an immediate cash flow holds more value than a future cash flow, thereby emphasizing the value of short-term benefits. However, social impacts or environmental degradation because of business decisions, may not occur before the long-term.

Sustainability is about local and global orientation

The increasing globalization of economies effects the geographical area that organizations influence. Intentionally or not, many organizations are influenced by international stakeholders whether these are competitors, suppliers or (potential) customers. The behavior and actions of organizations therefore have an effect on economical, social and environmental aspects, both locally and globally. “In order to efficiently address these nested and interlinked processes sustainable development has to be a coordinated effort playing out across several levels, ranging from the global to the regional and the local” (Gareis et al., 2011).

Sustainability is about consuming income, not capital

Sustainability implies that nature's ability to produce or generate resources or energy remains intact. This means that the source and sink functions of the environment should not be degraded. Therefore, the extraction of renewable resources should not exceed the rate at which they are renewed, and the absorptive capacity of the environment to assimilate waste should not be exceeded (Gilbert et al., 1996). The economic equivalent of this principle is common knowledge in finance and business. Financial managers know that a company which does not use its income to pay for its costs, but instead uses its capital, will soon be insolvent.

The principle may also be applied to the social perspectives. Organizations should not 'deplete' their worker's capacity to produce or generate labour or knowledge by physical or mental exhaustion. In order to be sustainable, companies have to manage not only their economic capital, but also their social and environmental capital.

Sustainability is about transparency and accountability

The principle of transparency implies that an organization is open about its policies, decisions and actions, including the environmental and social effects of those actions and policies. This implies that organizations provide timely, clear and relevant information to their stakeholders so that the stakeholders can evaluate the organization's actions and can address potential issues with these actions. The principle of accountability is logically connected to this proactive stakeholder engagement. This principle implies that an organization is responsible for its policies, decisions and actions and the effect of them on environment and society. The principle also implies that an organization accepts this responsibility and is willing to be held accountable for these policies, decisions and actions.

Sustainability is about personal values and ethics

As discussed earlier, a key element of sustainability is change: change towards more sustainable (business) practices. As argued by Robinson (2004) and Martens (2006), sustainable development is inevitably a normative concept, reflecting values and ethical considerations of society. Part of change needed for more a sustainable development, will therefore also be the implicit or explicit set of values that we as professionals, business leaders or consumers have and that influence or lead our behaviour. GRI Deputy Director, Nelmar Arbex, puts it simple and clear: "In order to change the way we DO things, we need to change the way we VIEW things" (Silvius et al., 2012).

These sustainability principles provide guidance for the analysis of the impact of the concepts of sustainability in project management competencies standards in the following paragraphs.

3. Project Management Competencies and Standards

Standards form an important building block of any profession (Crawford, 2007). They capture the body of knowledge that provide guidance for individuals and organizations practicing the profession and for the development of professionals. For projects and project management, several standards can be identified. Some relate to the process of performing or managing projects, some to the competences or qualifications of the project manager and some to the organization that commissions projects. This paper focuses on the integration of the concepts of sustainability in project management competencies, as one of the 'building blocks' of the project management profession.

Standards for project management competences, e.g. scheduling, risk management, quality management, etc., first emerged as part of the standards of the International Council on Systems Engineering (INCOSE). However, the first integrated standards for project management competences did not appear until the mid '90s (e.g. AIPM, IPMA). In 1997, IPMA launched the first version of its 'International Competence Baseline' (ICB®). An improved second version followed in 1999 and a third one, the ICB® Version 3.0, in 2006. In the development of the ICB®, competences addressing the behavioural and change aspects of projects and the context of projects, got increasing attention.

Today, the ICB® Version 3.0 is the most widely used international standard for project management competences. It is frequently used by organizations as a framework for assessing and developing project managers. The ICB® Version 3.0 breaks project management competence down into 46 competences in the following categories (International Project Management Association, 2006):

- Technical competences (20 competences) which cover the project management processes;
- Behavioural competences (15 competences) which deal with the personal skills of the project manager and his/hers relationships with stakeholders of the project;
- Contextual competences (11 competences) which cover the interaction of the project with its context (projects, programs, portfolios and the permanent organization).

Another frequently used competences framework is the Project Management Competence Development (PMCD) Framework from PMI. The *PMCD Framework* identifies three 'dimensions' of competence (Project Management Institute 2007):

- Knowledge: this refers to what the project manager knows about project management;
- Performance: this refers to what the project manager is able to do or accomplish while applying their project management knowledge;
- Personal: this refers to how the project manager behaves when performing the project or related activity.

The *PMCD Framework* describes the generic competences needed in most projects, most organizations and most industries. In some industries there may be specific competences needed, for example specific domain knowledge or knowledge of regulatory and legal requirements. Also specific organizational knowledge may be required, for example about policies, procedures, internal organization or culture. Overall the *PMCD Framework* therefore identifies five 'units' of competences. Actually, the *PMCD Framework* mentions 'Knowledge' as a separate unit of competence, but also suggests that knowledge is logically included in all four other units.

When both standards are studied, an overlap between the ICB® Version 3.0 and the *PMCD Framework* can be discovered at a conceptual level. The analyses was done rudimentary for the purpose of choosing one of the two competence descriptions and the result is showed in Figure 1 (Please note that the *PMCD Framework* competence unit 'knowledge' is treated as implicit in the other *PMCD Framework* units of competences).

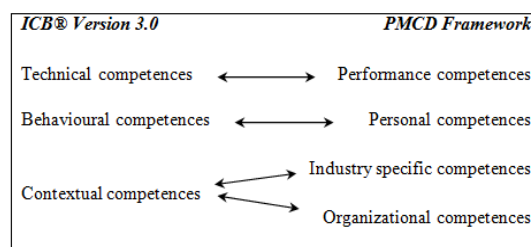


Figure 1. Conceptual comparison of the ICB® Version 3.0 and the PMCD Framework (Silvius et al., 2012).

From both standards and their comparison the following observations can be made:

- Both frameworks consider a competence as the combination of knowledge, skills and personal attitudes required to be successful in a certain function or to complete a certain task or goal.
- In both standards, these three components (knowledge, skills and attitudes) are interwoven: the knowledge of the project management process, the personal skills required for applying this knowledge and the behaviour while applying.
- Both frameworks recognize internal aspects of managing the project (technical competences / performance competences), personal competences of the project manager (behavioural competences / personal competences) and external aspects (contextual competences / industry specific and organisational competences).

As the two frameworks show a strong resemblance in their identification of relevant categories of project management competences, and as the ICB® Version 3.0 is the most internationally used standard for project management, we adopted the ICB® Version 3.0 as standard for our analysis of the integration of the concepts of sustainability.

4. Sustainability Competencies

Taking a responsibility for sustainability requires adequate competences. Sustainability is a complex and holistic concept and it is necessary to understand what competences integrating sustainability in the project and in the project management processes, would require of a project manager. Based on an analysis of the impact of sustainability on project management processes, Eid (2009) and Silvius et al. (2012) conclude that the impact of sustainability on projects and project management is can be distinguished in content related impact and process related impact. A 'sustainable' project manager therefore needs to be competent on both these perspectives.

On first glance, the ICB® Version 3.0 has little mentioning of the word 'sustainable': competence 2.04 Assertiveness talks about "sustainable relationships to the interested parties" (International Project Management Association, 2006: p.94) and competence 3.09 Health, Safety, Security, Environment talks about "security and sustainability" (International Project Management Association, 2006: p.32). The content of sustainability, however, is addressed under the key word of "project context". This starts in competence 1.3 Project Requirements & Objective, where the conformity to the context conditions is required in addition to achieving the project objectives. The context is later specified in several of the contextual competences: 3.05 Permanent Organization; 3.06 Business; 3.07 Systems, Products & Technology; 3.08 Personnel management; 3.09 Health, Safety, Security, Environment. In 3.07 Systems, Products & Technology and 3.09 Health, Safety, Security, Environment the subjects within sustainability (e.g. the systems life cycle management) are well addressed. Also the responsibility (permanent organizations) and some processes (e.g. internal and external audits) and tools (Environmental Impact Study) are mentioned. Also the reference to ethics in competence 2.15 implies that at least some social aspects are taken into consideration. Other references to the social aspects of sustainability can be found in element 3.08 Personnel management and 2.14 Values appreciation.

Based on an analysis of the coverage of sustainability in the ICB® Version 3, Knoepfel (2010) concludes that "A specific, complex sustainability situation can be managed with a cluster of the .. ICB competence elements", however, "sustainability management should be more explicitly treated".

The following section confronts the three categories of project management competencies of the ICB® Version 3.0, with the six principles of sustainability identified in paragraph 2. The principles will be used

to determine the strength of, or influence of, each competence on realizing sustainability in the project result or process.

Sustainability in the technical competences

Silvius et al. (2012), conclude that especially the principles 'Harmonizing social, environmental and economic interests', 'Both short term and long term orientation' and 'Local and global orientation' provide a logical extension of the aspects and actors to be considered in the project. This extension will also reflect in the technical competences required for managing these processes, like risk & opportunity, interested parties, scope & deliverables, quality, control and reports.

The principles 'Consuming income, not capital' and 'Personal values and ethics' can be understood to apply to materials applied in the project, but also to the project organization (e.g. not 'exploiting' team members to an unacceptable level), suppliers and sub-contractors (e.g. 'fair' purchasing) and the purchasing process (e.g. non bribery). Logically this will reflect in competences like project organization, resource management, procurement & contract, etc.

The principle 'Transparency and accountability' logically relates to competences that involve the information and communication within and around the project, like control & reports, communication, cost & finance, information & documentation.

From this analysis, it should be concluded that the impact of sustainability on the technical competences of project management is substantial. On the one hand this conclusion may be surprising, because sustainability seems more of a contextual influence, but on the other hand it could be expected that the principles of sustainability may affect all aspects of projects and project management.

Sustainability in the behavioural competences

The ICB® Version 3.0 already includes values appreciation and ethics as behavioural competences, which makes the connection to the principle 'Personal values and ethics' very obvious. But values and ethics should be expected to influence also other competences, like negotiation, conflict & crisis, leadership, reliability, etc. The value 'Transparency and accountability' may logically influence the competence of openness since it may require a very 'open' personality to be able to be open, transparent and accountable to stakeholders.

The sustainability value 'Consuming income, not capital', also relates to the behavioural competences of the project manager. It implies that he or she has an eye for the pressure put upon team members and manages the team in a 'sustainable' way. Given the more 'personal' nature of the other behavioural competences, the other sustainability principles seem to have a more limited impact.

Based on this analysis, we classify the impact of sustainability on the behavioural competences as substantial, but mostly reflected in how the project is done and managed and not so much in what is done.

Sustainability in the contextual competences

With the competence health, security, safety & environment, the ICB® Version 3.0 includes a competence that clearly relates to the 'people-planet-profit' concept of sustainability. But the principles 'Harmonizing social, environmental and economic interests', 'Both short term and long term orientation' and 'Local and global orientation' should be expected to influence more competences. For example: systems, products & technology, business, legal, permanent organization, portfolio orientation, etc. Following the arguments explained earlier, the principles

‘Consuming income, not capital’ and ‘Personal values and ethics’ can be understood to apply to the competence personnel management.

Reflecting on this analysis, we classify the impact of sustainability on the contextual competences as substantial, especially with regards to the content related impact.

Summarizing the analysis and conclusion above, Table 1 shows the impact of sustainability on the different project management competence categories (Silvius et al., 2012).

	Sustainability principles					
	Harmonizing social, environmental and economical interests	Both short term and long term	Local and global	Consuming income, not capital	Transparency and accountability	Personal values and ethics
Technical competences	High impact	High impact	High impact	High impact	High impact	High impact
Behavioural competences				High impact	High impact	High impact
Contextual competences	High impact	High impact	High impact	<i>Moderate impact</i>		<i>Moderate impact</i>

Table 1. Impact of sustainability on project management competences.

This table shows that the content oriented sustainability principles, like ‘Harmonizing social, economic and environmental interests’, ‘Both short term and long term orientation’, ‘Local and global orientation’ and ‘Consuming income not capital’, have their impact mainly on the technical and contextual competences. This makes sense, because the contextual and technical competences correspond with the ‘why’ and ‘how’ questions of the project. The more moral oriented principles, ‘Transparency and accountability’ and ‘Personal values and ethics’ have their impact mainly on the technical and behavioural competences of the project manager. Also this makes sense because the technical competences cover managerial activities like organizing and reporting. And the behavioural competences refer to the person of the project manager and his/hers behaviour.

5. Missing Competencies

Another question is whether there the integration of sustainability leads to new project management competences. Are certain competences missing in the ICB® Version 3.0?

Consulting skills

The British Association for Project Management (2006), as well as Russell (2008) and McKinlay (2008), recognized that the project manager is well positioned to have a strong influence on the sustainability of the project and its result and that the project manager may, or should, apply this influence in order to make organizations more sustainable. This role of influencing the stakeholders of the project and the members of the project team is a role that typically requires advising or consulting skills, more than managerial skills. Behavioural competence 2.10 Consultation of the ICB® Version 3.0 talks about seeking consultation, as well as the ability to consult or advise others, but this competence would require more elaboration in order to cover the body of (knowledge and) skills that the consulting profession recognizes. It

should therefore be concluded that the integration of sustainability in projects and project management would require project managers to also develop competence in consulting and that this competence should be included in the project management competence standards.

Sustainability knowledge

On a more cognitive level, it should be expected that the project manager should also develop more knowledge about sustainability aspects. The ICB® Version 3.0 mentions as one of the competences ‘Health, security, safety and environment’. This competence should be expected to have a broad coverage of sustainability aspects, but lacks a more explicit mentioning of the sustainability aspects following from the principles of sustainability recognized in paragraph 2. For example Maltzman and Shirley (2010) elaborate on the knowledge of environmental aspects that a ‘green’ project manager should possess.

The sustainability principles will likely also expand the set of stakeholders of the project. Typical ‘sustainability stakeholders’ may be environmental protection pressure groups, human rights groups, nongovernmental organizations, etc. In order to perform the project successfully, the project manager needs to acquire the buy-in of the stakeholders. This would require that the project manager has conceptual and operational knowledge about the knowledge domains of the now extended stakeholders group. Examples of these knowledge domains may include waste handling, opportunities for digital communication, energy use, criteria for decent work and recycling techniques.

Handling complexity

It should be expected that the ongoing technological progress and the need for a more balanced approach to economic, environmental and social development may cause a new spur in the development of the project management profession (Silvius et al., 2012). Based on the analysis of the impact of sustainability on projects and project management we can therefore conclude that the complexity of projects and project management will most certainly increase. Integrating sustainability considerations provides new perspectives and a more holistic view on project outcomes, business cases, risks and stakeholders. It is the job of the project manager to take these new perspectives into account; a job that therefore increases in complexity. For project management competences this means that the project manager should develop competences like being able to work in uncertainty.

With regards to ‘missing’ competences, we should conclude that it makes sense for the future-proof project manager to develop adequate consulting skills, build expertise in the aspects that determine the sustainability impact of the project and handle complexity in and around projects. Next to technical advice on sustainability aspects, the project manager, being the specialist on change, should also be capable of advising on the change aspects of the project. And since influencing the content of the project may be best done in the early stages of the project, it would make sense for organizations, to involve the project manager already then.

6. Values and attitude

From the analysis of project management competences in the previous section, we concluded that the principles of sustainability are partly covered in the most used competence standards and we suggested some additions in terms of knowledge and skills. But competences consist of three elements: knowledge, skills and ‘core personal characteristics’ (Crawford, 2005), such as motives, traits and self-concept

(Spencer and Spencer, 1993). So what does integrating sustainability means for these personal characteristics of the project manager?

The competence descriptions of ICB® Version 3.0 address personal characteristics and motives in terms of the behaviour a project manager demonstrates, but lack a vision on where this behaviour originates from. This source is the value-system of the individual project manager. A value system is the image a person has on the world with convictions connected to them. Convictions about what is good or bad, important and not important. When life conditions change and there are reasons to think different, then people also change.

Viewing the world from a sustainable perspective requires adopting or developing a new value system. The individual project manager can develop a new value system when he or she accepts a certain responsibility for sustainability, both as an individual and as a professional. Accepting responsibility changes behaviour. As an individual this change could include preferring more sustainable products and services, or using voting power within the democratic process. As a project management professional, this change may include taking initiative in 'putting sustainability on the agenda' in discussions with the project team, the project's sponsor and other stakeholders. Adopting or developing new value systems, thereby drives change within companies and society.

This corresponds with the trend that the project manager's role shifts from a technical and result orientation, towards a more goal and context orientation (Heerkens, 2001; Foti, 2001).

7. Conclusion

Sustainability is one of the most important challenges of our time. How can we develop prosperity, without compromising our wellbeing or that of future generations? More and more companies recognize this and take responsibility for their role in this challenge. Projects realize changes that are required for the sustainable development of organizations. It therefore makes sense to explicitly formulate how sustainability impacts the required competences of the project manager.

This paper explored the concept of sustainability and its impact on the competences of the project manager, based on the ICB® Version 3. The paper showed that the competence description of the ICB® Version 3, cover several aspects of sustainability, but lack a full and explicit integration of the concept of sustainability. Our analysis provided specific suggestions for additions to the competence descriptions, as well as suggestions for missing competences. This provides guidance for the further development of the ICB standard of project management competencies..

Another conclusion of from our analysis should also be that the project manager, and his team members, can indeed play a key-role in the sustainability aspects of the project, both from a content as from a process perspective. Sustainability in projects is not just the responsibility of the program manager or the project sponsor. However, a condition for acting in this role is that the project manager is competent in recognizing and understanding the sustainability aspects of the project. *The project manager that doesn't understand sustainability, also cannot act upon it!*

References

- Association for Project Management. (2006). *APM supports sustainability outlooks*.
- Carson, R. (1962). *Silent Spring*, Houghton Mifflin, Boston.
- Crawford, L. (2005). Senior management perceptions of project management competence, *International Journal of Project Management*, 23, pp. 7–16
- Crawford, L. (2007). Global Body of Project Management Knowledge and Standards, in Morris, P.W.G. & Pinto, J.K. (eds.) *The Wiley Guide to Managing Projects*, Wiley.
- Dyllick, T. and Hockerts, K. (2002). Beyond the business case for corporate sustainability, in *Business Strategy and*

the Environment, vol. 11, pp.130-141.

Eid, M. (2009). *Sustainable Development & Project Management*, Lambert Academic Publishing, Cologne.

Elkington, J. (1997). *Cannibals with Forks: the Triple Bottom Line of 21st Century Business*, Capstone Publishing Ltd. Oxford.

Foti, R. (2001). Forecasting the Future of Project Management, *PM Network*, 15(10): 28-31.

Gareis, R., Huemann, M., Martinuzzi, R-A., Sedlacko, M. and Weninger, C. (2011). The SustPM Matrix: Relating sustainability principles to project assignment and project management, EURAM11, Talinn.

Gilbert, R., Stevenson, D., Girardet, H. and Stern, R. (Eds.), (1996). *Making Cities Work: The Role of Local Authorities in the Urban Environment*, Earthscan Publications Ltd..

Glenn, J. C. and Gordon, T. J. (1998). *State of the Future: Issues and Opportunities*, The Millennium Project, American Council for the United Nations University, Washington, DC.

Hedstrom G., Poltorzycki S. and Stroh P. (1998). Sustainable development: the next generation, *Sustainable Development: How Real, How Soon, and Who's Doing What?*, *Prism*, 4: 5–19.

Heerkens, G.R. (2001). How to become the successful project manager of the future - be business savvy!, PMI Seminars and Symposium Proceedings, Project Management Institute, Newtown Square, PA.

Holliday C. (2001). Sustainable growth, the DuPont way, *Harvard Business Review*, September, pp.129–134.

International Institute for Sustainable Development and Deloitte & Touche (1992), *Business Strategy for Sustainable Development: leadership and accountability for the 90s*, International Institute for Sustainable Development, Winnipeg.

International Project Management Association (2006), *IPMA Competence Baseline version 3.0*, International Project Management Association, Nijkerk, the Netherlands.

Keating, M. (1993). *The Earth Summit's Agenda for Change*, Centre for our Common Future, Geneva.

Kennedy, A. (2000). *The End Of Shareholder Value: Corporations At The Crossroads*, Basic Books, New York.

Knoepfel, H. (2010). Sustainability and Competence Elements, in Knoepfel, H. (Ed.), *Survival and Sustainability as Challenges for Projects*, International Project Management Association, Zurich.

Lundin R.A. and Söderholm A. (1995). A theory of the temporary organization, *Scandinavian Journal of Management*, 11, 437–455.

Maltzman, R. and Shirley, D. (2010). *Green Project Management*, CRC press, Boca Raton, FL.

Martens, P. (2006). Sustainability: science or fiction?, in *Sustainability: Science, Practice, & Policy*, 2 (1), pp. 1–5.

Meadows, D. H., Meadows, D. L., Randers, J., and Behrens, W. W. (1972). *The Limits to Growth*, Universe Books.

McKinlay, M. (2008). *Where is Project Management running to...?*, Keynote address at the 22nd World Congress of the International Project Management Association, Rome.

Oehlmann, I. (2011). *The Sustainable Footprint Methodology*, Lambert Academic Publishing, Cologne.

Project Management Institute (2007), *Project Manager Competency Development (PMCD) Framework*, Second edition, Project Management Institute, Newtown Square, PA USA.

Robinson, J. (2004). Squaring the circle: on the very idea of sustainable development.”, in *Ecological Economics*, vol. 48, no. 4, pp.369–384.

Russell, J. (2008). Corporate social responsibility: what it means for the project manager, in *Proceedings of PMI Europe Congress, Malta*, Project Management Institute, Newtown Square, PA.

Silvius, A.J.G., Schipper, R., Planko, J., van den Brink, J. and Köhler, A. (2012). *Sustainability in Project Management*, Gower Publishing.

Spencer L.M.J. and Spencer S.M. (1993). *Competence at work: models for superior performance*, 1st ed., Wiley, New York.

Turner, J.R. and Müller, R. (2003). On the nature of the project as a temporary organization, in *International Journal of Project Management*, vol. 21, no. 3, pp.1–8.

Visser W.T (2002). Sustainability reporting in South Africa, *Corporate Environmental Strategy*, 9(1), pp.79-85.

World Commission on Environment and Development (1987). *Our Common Future*. Oxford University Press, Oxford.