

# Core Capabilities for Achieving Sustainable Construction Project Management

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**Abstract:** *In recent times, sustainability in construction has emerged as a major problem. It is now regarded as one of the essential tools for completing building projects successfully. However, regular planning Construction project methods still don't use modern methodologies. While aims beyond time and money are frequently not regarded appropriately, project management decisions frequently centre on one specific project with well-established goals, such as cost minimization and timeline maintenance. The contribution emphasizes a complex method for planning construction projects and shows how this method may be used for contemporary construction management, including sustainable building practices. Thus, planning is predicated on the idea that, initiatives typically don't happen as isolated incidents but rather as a collection of related projects.*

**Keywords:** Sustainability, Lifecycle analysis, Project Management, Optimization, Scheduling

## I. INTRODUCTION

For construction projects to be completed successfully, sustainability in construction has emerged as a critical component. Due to the increased focus on environmental issues by governments, non-governmental organizations, and the public, the construction sector. When organizing and completing tasks, consider environmental consideration. Research on sustainability in construction has up to this point primarily concentrated on design elements and raw materials or materials used in buildings taking into consideration, for example, their ability to efficiently use natural resources, like sun light and water, their potential to avoid harmful or hazardous emissions, as well as their suitability for reuse, refurbishing, or recycling. Building life cycles analysis demonstrates that the first phase of a building's life cycle receives most of the research attention. Sustainable building practices, on the other hand, encompass not only the design of the building but also its construction, use, maintenance, and demolition phases. The design itself must also adhere to ecological. The implementation of more sustainable corporate practices depends heavily on projects, and project management has more recently been connected to the sustainability notion. The recently published literature on this subject offers strong evidence that taking sustainability into account affects project management procedures and methods. However, project management guidelines fall short of discuss the agenda for sustainability.

## II. LITERATURE REVIEW

**Jin-Woo Bae et.al (2007)** focused by streamlining the delivery of green facilities, lean philosophy offers a solid foundation for social, economic, and environmental goals in sustainable development. This study illustrates that high degrees of building sustainability can be attained with wise and efficient project management, resulting in lower initial expenditures.

**Frank Schultmann et.al (2007)** presented the highlight of a sophisticated method for planning construction projects and show how this method may be used in contemporary construction management. Here, emphasis was placed on how important it is for construction management to take sustainability into account. Thereby, planning is based on the assumption that projects usually do not occur as single events in reality but as part of a project portfolio.

**Nazirah Zainul Abidin et.al (2009)** studied that numerous significant developers are starting to use this idea in their construction projects, demonstrating the success of the governments and numerous other organizations' initiatives to

promote more sustainable methods. To improve the momentum of sustainable practice in the industry, actions should be directed towards improving this knowledge at all levels of developers.

**Roland Gareis(2010)** told the variety of stakeholders; it is necessary to consider the multiple dimensions of investment organizations and stakeholders when defining the project scope. Stakeholder analysis that considers SD principles analyses relationships among stakeholders, covers both directly and indirectly affected parties, and analyses the effects of a project for each.

**Bourdeau et.al (2010)** says that building a sustainable development should include sustainable building as a key element. However, it appears that there is currently no clear agreement on the precise meaning of such a sentence. This very broad definition must be seen only a starting point to build a more concrete definition of the concept of sustainable construction and to precise the stakes and issues of sustainable development with regards to the construction sector.

**Anuar Alias et.al (2014)** understands the numerous studies and case studies carried out across have proven the benefits of sustainable building. The lack of an exemplary project and the fact that this topic is new to Malaysia made the project less well-liked. To resolve the problems, it is necessary to look for and implement efficient ways to carry out a sustainable building project.

**Mauro L. Martens et.al (2016)** told that they claim that "corporate sustainability (CS), which includes sustainable development and contains, like sustainable development, all three pillars: economic, ecological, and social," In order to achieve the research goal of identifying the key aspects of sustainability in project management context, the research design merges the systematic literature review (SLR) and the survey-based research.

**Saeed Bani Hashemi et.al (2017)** presented the advanced economies, issues about sustainability in the delivery of construction projects have become more prominent. However, developing nations have focused economic development overachieving sustainability standards. This study contributes to the field by presenting one of the first studies in its kind focusing on CSFs for integration of sustainability into project management practices for construction projects within the context of developing countries.

**Miao Yu et.al (2018)** have discussed to improve project quality, sustainable construction engineering highlights the importance of incorporating sustainability into project planning, monitoring, assessment, and decision-making. Project planning can have a direct impact on construction engineering's sustainability-related goals since it serves as a link between the planning and execution phases. Therefore, the key questions to be addressed are what kind of effort should be made in sustainable project planning activities and the primary function of sustainable project planning.

**Rutger T. Peenstra (2018)** studied that the Participants contend that there is sufficient information regarding sustainability, knowledge, education, and training, which results in a high relative lower score in the category of human dimension. The topic of whether the government or a governmental organization should try to influence the integration of sustainability is raised as a result. As a result, the regulatory category receives a low score.

**Na Dong et.al (2019)** studied that it is important to increase environmental protection and information technology use to increase the competitive edge of construction companies in response to market changes. This is done by conducting the sustainable evaluation for the SCPM. The adoption of the method started with the submission of a SCPM performance.

**Nurul Elma Kordi et.al (2019)** assesses the level of efforts on sustainable project planning, SPP can be employed along with indicators of project success. It has significance for sustainable project management to recognize SPP as a construct with three interconnected subdimensions. The framework would benefit all construction stakeholders towards understanding the attributes of SS that may further influence their decision making on the social aspects of their projects.

**Yang et.al (2019)** studied that the Intergovernmental Panel for Environment and Development's definition of SD is one that is more widely acknowledged, and it is essential to understand and define the idea of sustainability. Likewise, this section shows the factor analysis treatment and some discussions about it in the context of sustainability in project management.

**Ali Karji et.al (2020)** understands that despite great prior efforts, present sustainability practices in the construction sector are still far from achieving the planned green targets to fully realize sustainable construction. This study aimed to identify obstacles to sustainable construction in the United States to support these initiatives. The need to build more

facilities has intensified the inherited adverse impacts of the construction industry on the triple bottom lines of sustainability.

**Aryani Ahmad Latiffi et.al (2020)** guides the initiative toward success, they must be capable and successful leaders. The understanding of leadership abilities among project managers of sustainable building projects was investigated in this study. The results show that project managers comprehend leadership abilities in sustainable building projects at a very high level. They would be able to handle sustainable building projects successfully with such understanding.

**Bankole Awuzie(2020)** told One of the success elements derived from the data is a thorough ID definition presented with the participation of all project stakeholders right from the start. Second, as noted by respondents, early involvement of the project stakeholders showed to be crucial for project success. Then, the influences of SSA as a SCM on the performance of mortar are investigated, aiming to provide reference for the resource utilization of SSA in mortar.

**Reza Kiani Mavi (2021)** studied there are numerous ways to look at the growing significance of sustainable building project management. Mega projects in the construction industry can be crucial for maintaining economic growth but may not be environmentally sustainable due to the final product's intended purpose or the materials employed.

**Chaofeng Liang (2022)** understands the after a production process of drying, incineration, and grinding, the SSA can be used in mortar to partially replace cement, which can increase the usage of sewage sludge and decrease the consumption of cement. This study looked at the fundamental characteristics of SSA and how they affected the characteristics of mortar.

**Fatima Afzal (2022)** studied the set out to look at the organization variables affecting how well construction organizations performed in terms of sustainability. One of the most important conclusions from this study is that organizational culture (OC), business strategies (BS), and technological capabilities (TC) are the key factors that significantly influence how well construction organizations perform in terms of their commitment to social and environmental sustainability.

**Paul Ekins** understands that the conceptual flaws, the limits to growth debate has been left unresolved, with resource optimists either dismissing it as irrelevant or believing that the mere mention of "sustainable development" will somehow resolve it, and resource pessimists steadfastly maintaining their position that "indefinite growth is not possible in a finite world."

### III. CONCLUSION

The purpose of the study was to showcase a complex method for planning building projects and to demonstrate how this method applicable to contemporary building management. Here, emphasis was placed on how important it is for construction management to take sustainability into account. The method that has been presented enables the management of a project portfolio, or the management of numerous projects at once, using optimization techniques. It also provides interfaces for the integration of other criteria beyond resource limitations. If waste management and greenhouse gas emission control are used in construction projects, these limits are particularly intriguing. This method, which involves including waste management and recovery plans into the planning stage of construction projects, can be used to support sustainable standards.

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