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Sustainable Project Management in Denmark

Conceptualizations and Recommendations

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Abstract – Project managers play a key role in the implementation of change processes, including the transition to sustainable business practices. Despite the mandate to integrate sustainability into organizational practices in both public and private enterprises, many Danish project managers either do not view sustainability as relevant to their practice, or do not possess the necessary knowledge to implement sustainability in their practice. Scandinavian studies with specific recommendations on how to apply sustainability goals to projects currently do not exist. On the other hand, a fair amount of English-language literature on the subject has been published. To better understand if international research can be applied to Danish project management practice, we conducted a scoping review to answer two research questions: 1. How is sustainable project management conceptualized in the literature? 2. What themes exist in the literature regarding sustainable project management practice? Based on the answers to these two questions, we developed a set of recommendations for how Danish project-based organizations can conceptualize and implement sustainable project management. Initially, we collected 188 articles and reports on the subject. The number of materials was then reduced after applying several quality criteria, and the remaining 84 articles were thematically analyzed. We identified five commonly used definitions of sustainable project management and can conclude that although the concept has evolved, we cannot discern a precise and usable definition. We therefore propose a new definition of sustainable project management in this article. Based on the literature, we identified six organizational areas where sustainable project management is meaningful. On this basis, we present a series of recommendations on how project managers in Denmark and other countries can understand and tackle sustainability in a practice-oriented and meaningful way, both in relation to steering groups, their own work as project managers, project management methods, and the establishment of measurable sustainability indicators in projects.

Keywords – Sustainability, Sustainable Project Management, Sustainable Projects, Scandinavian Project Management

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1 Introduction

The green transition has become a priority for both public organizations and private companies. More than 80% of Danish municipalities have politically approved decisions to implement the UN's Sustainable Development Goals (Kommunernes Landsforening, 2023). In addition, all Danish regions have committed to a sustainability strategy, covering investments in climate-friendly solutions, such as energy renovation of buildings, green procurement, and CO2 neutral public transportation (Danske Regioner, 2024). At the national level, the Danish Parliament adopted an action plan for the UN's Sustainable Development Goals in 2021, with requirements for reporting and action plans from all ministries and agencies (Finansministeriet, 2021). And from this year (2024), all large companies must report on sustainability. The ESG reporting requirements demand specific actions, performance indicators, and standards for how sustainability can be understood, measured, and integrated into the organization's activities and projects, both for large companies and their sub-contractors (Dansk Industri, 2023). Sustainability as a theme will therefore shape managers' work in the coming years.

Some researchers argue that the Western world has a "project economy", as many organizational changes and innovation initiatives are implemented through cross-functional projects (Nieto-Rodriguez, 2021). Estimates indicate that projects account for between 30 and 40% of value creation in Western economies (Schoper et al., 2018). This means that new initiatives and strategic actions such as sustainability will be implemented as projects in many organizations. It is therefore relevant to examine how project managers can work with sustainability in their practice.

The field of project management has been recognized in Denmark since the mid-1970s, marked by the inception of the country's first National Project Management Association (Fangel, 2023). Danish project managers are at the forefront of major projects across various sectors, including construction, renewable energy, IT, and healthcare, all of which demand specialized knowledge, strategic planning, adept execution, and the management of a global workforce and stakeholders. Cultural factors that contribute to effective project management in Denmark include a strong focus on collaboration, open communication, and flat hierarchical organizational structures (Lundahl et al., 2023). According to the Hofstede Insights culture model, Denmark scores very low on the power distance dimension, reflecting the fact that "Danes do not lead, they coach, and employee autonomy is required" (Hofstede Insights, 2024). Denmark also scores high on the individualism dimension, indicating a general preference for self-directed work (Battistella et al., 2023). The country's cultural profile might indicate that sustainable project management practices emerge from the project manager's own initiatives and values rather than from a top-down directive from a strategic organizational level, which may be the cases in cultures with high power distance and collectivism scores. However, there is no research to corroborate this hypothesis.

Most Danish project managers are equipped with vocational or higher education degrees, often stepping into project management roles after gaining experience in their initial careers. Commonly, they hold certifications from

renowned international frameworks such as Prince2, IPMA, PMI, and Scaled Agile (VIA UC, 2024). However, certification organizations for project management seem to be behind when it comes to sustainability. Although Prince2, PMI, and IPMA have added some high-level principles for sustainability in their certification materials in recent years, their approach seems like an afterthought. It is thus difficult to find specific methodological guidance for project managers who are tasked with sustainability mandates. On the Danish Project Management website, one can currently read shorter articles (in English) about sustainable project management, but models and conceptual frameworks that span across a project manager's work with sustainability in a manageable, yet thorough way, are lacking. The Global Project Management framework may be a viable standard for sustainable project management but is not well known in Denmark.

We noted in an initial literature search in the fall of 2023 that there is no published Danish (or Scandinavian) research on sustainable project management. The English-language literature contained a variety of different answers to what sustainable project management entails, without consensus on a common definition of the concept. We also could not find guidance on how a project manager translates the organization's sustainability strategy into their own practice. Therefore, we initiated a systematic investigation into what the literature contains of perspectives on sustainable project management and sustainable projects. The overall purpose of our research was to clarify whether sustainable development means we need to rethink project management as a discipline, or whether sustainability can be added to existing practices?

We formulated two main research questions (RQs) as the basis for the study:

1. How is sustainable project management conceptualized in the literature?
2. What themes exist in the literature regarding sustainable project management practice?

The first RQ was established to uncover the various definitions of the concept of sustainable project management, with the aim of understanding whether sustainable practice is a new competency that project managers need to acquire in the coming years, or whether the concept indicates a completely new way of practicing project management. Second, we wanted to uncover the areas of project management that are relevant for sustainable practices. The analysis of the two research questions leads to a set of recommendations for how project-based organizations in Denmark can conceptualize and implement sustainable project management.

The study was conducted as a scoping review with the inclusion of peer-reviewed journal articles and project management-specific materials from credible sources, most of which were published outside Scandinavia. The articles were collected through various databases and subsequently sorted and thematically analyzed, without the use of AI.

2 Theoretical Foundations

Project management literature dates to the 1950s and has over time converged on the understanding of a project as "temporary organizations established to carry out targeted activities" (Lundin & Söderholm, 1995, p. 444). Additionally, the focus of international research has been to concretize the original classical definition of project management, already used from the mid-50s as "the application of a set of tools and techniques to manage the use of various resources to achieve a unique, complex, one-off task within time, cost, and quality constraints" (Olsen, 1971, cited by Atkinson, 1999, p. 337). This original definition of project management is often referred to as the *project triangle*, which illustrates the success criteria for a project manager as the ability to deliver on time, within the allocated budget, and with the desired quality.

In the late 1990s, project management researchers started to question the project triangle, criticizing it for being too narrow and linear a view of success criteria. With this starting point, some researchers tried to conceptualize project management more holistically and pluralistically (Svejvig & Andersen, 2015). In the specific research on success criteria in projects, Shenhar et al. (2001) contributed additional dimensions to project success in the form of customer satisfaction and the long-term development of the business, which in essence was a precursor to sustainable project management thinking.

Despite efforts to view project success more holistically, most textbooks still refer to the project triangle as the guiding framework for project management. For example, the project triangle is seen in the commonly used Danish textbook "Power in Projects" (Olsson, 2023) and in the globally best-selling textbook "Project Management" by Larson and Gray (2021). Neither of these authors, however, addresses the concept of sustainable project management. Project management as a practice – across industries – is still largely based on the traditional understanding that projects live, are managed, and measured on behavior and results within a defined period. But since sustainability as a concept calls for a long-term and holistic development perspective that extends beyond the lifespan of a single project, we can therefore conclude that either sustainable project management is a paradoxical concept that cannot easily be translated into practice, or sustainability requires us to rethink project management as a practice.

Project management has existed as a practice as far back as the time of the pyramids in Egypt but only emerged as a separate research field in the 1950s based on new systematic work methods in the American military (Abbasi & Jaafari, 2018). Since then, the research field has exploded, so that today there is a large theoretical foundation, which according to Svejvig (2021) can be categorized into four main types: the normative, the descriptive, the predictive, and the practice-focused theory. As indicated in the table, the different research approaches to project management are based on different epistemological perspectives and corresponding methodological approaches.

Table 1: Overview of research approaches to project management (adapted from Svejvig, 2021)

	Normative	**Descriptive**	**Predictive**	**Practice-focused**
Focus	Focuses on rational structures and their management	Focuses on describing social systems	Focuses on predicting relationships between variables	Focuses on describing processes in local situations
Epistemological orientation	Positivism and pragmatism	Interpretivism	Positivism	Pragmatism
Methodological orientation	Theoretical, development of typologies, models, and tools	Inductive, qualitative methods, small samples	Deductive, highly structured with large data sets to predict accuracy	Exploratory, action learning

According to Svejvig (2021), the research on sustainable project management is predominantly normative, and there is not yet a solid basis for describing or predicting practice to a greater extent. As a starting point, we align ourselves with the normative approach in a literature study, as our purpose was to uncover and summarize existing literature. However, it is our hope that we can contribute to moving research in a more practice-focused direction.

3 Delimitations

We chose to not analyze industry-specific guidelines for project managers. There is no doubt that sustainable project management is a more recognized practice within industries such as construction and civil engineering, compared to, for example, the public sector or IT companies (Mannaz, 2023). Furthermore, we did not distinguish between project management practices in different countries, but instead excluded articles from cultures that, according to Hofstede's cultural profiles, are considered significantly different from Denmark, including Asia, the Middle East, and South America (Hofstede Insights, 2024).

4 Methodology

There are various types of literature reviews that involve systematic approaches to data collection and analysis. A scoping review aims to provide an overview of the existing literature within a specific subject area. This type of

literature review is particularly suited to clarifying concepts and research themes, which can subsequently be used for more systematic studies and research (Snyder, 2019). We chose to conduct a scoping review following the guidelines from Arksey and O'Malley (2005), according to whom this approach is appropriate when:

- A systematic and comprehensive review is not possible (e.g., due to limited resources), and
- The subject field is emerging, which is the case with sustainability in project management.

A scoping review thus aims to provide an overview of the existing literature within a specific subject area. This type of literature study is particularly suited to clarifying concepts and research themes, which can subsequently be used for more systematic studies and research (Snyder, 2019). Since the purpose of our first RQ was to examine how the concept of sustainable project management is defined in the literature and then uncover directions for project managers working with sustainability, we considered a scoping review to be an appropriate method.

The advantage of a scoping review is that it can provide an overview of key themes in the literature in a relatively short time, with limited use of resources. The disadvantage of this method is that not all relevant literature is included, and nuances that may be important for answering the RQs can be overlooked (Arksey & O'Malley, 2005; Snyder, 2019). We approached the literature study qualitatively with the addition of limited descriptive counts in terms of the number of articles, inclusion and exclusion rationales, distribution of topics, etc., which may have introduced bias and a lack of detail in the analysis. We found it appropriate to supplement the missing practice-oriented research literature but acknowledge that certain – especially Danish - materials may be influenced by the authors' affiliation with the consulting industry. Specifically, we included materials that were not peer-reviewed but dealt with project management practices and were published by expert authors, including project management certification organizations and specialists.

The process we followed was inspired by Snyder (2019), who suggests a simple four-step model for conducting a literature review:

1. Design the review
2. Conduct the review
3. Extract and analyze data
4. Structure, visualize and write the findings.

We divided step 3 into two sub-steps but otherwise followed the process with the following additions and incorporation of principles for scoping reviews.

4.1 Step 1: Design the Review

We formulated two research questions that directed article collection and subsequent analysis.

4.2 Step 2: Conduct the Review

This step entailed collecting articles. We wrote a simple search string to uncover recent and relevant articles in English:

- sustain* AND (“project manage*”) AND YOP=2019-2023

A similar search string was created to search for articles in Danish. We searched VIA University College’s library and Google Scholar for materials published between 2019-2023. We independently skimmed abstracts and saved articles that we initially assessed as relevant to our RQs. Collected articles were saved as PDF files using a naming convention and saved in a Teams folder. In total, 315 articles were saved, after which duplicates (148 in total) were removed. Subsequently, literature references in the remaining articles were skimmed to locate additional materials (a total of 21), including some articles published before 2019. The final number of articles identified in the first selection round was thus 188.

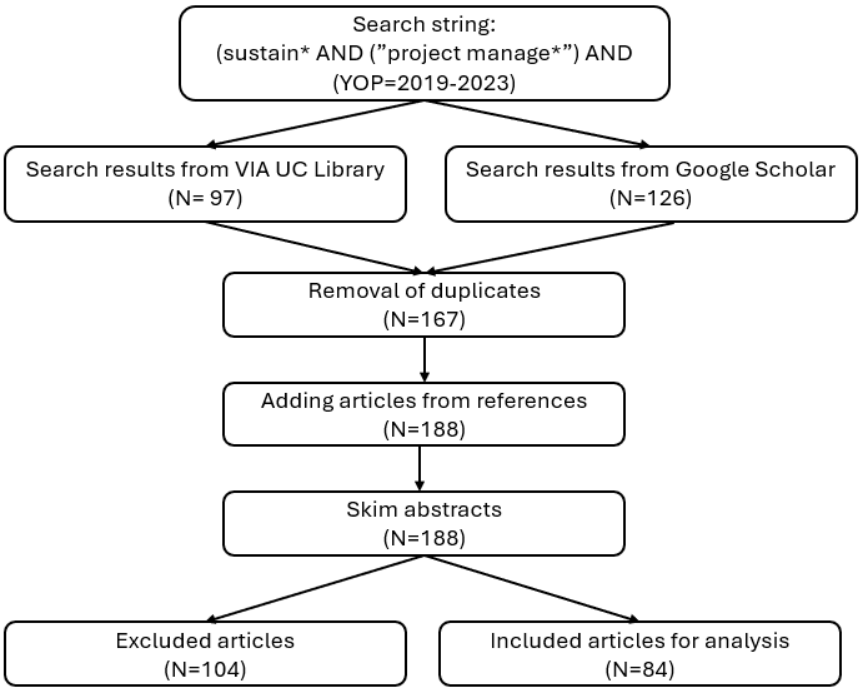
4.3 Step 3a: Select Articles for Analysis

Due to the high number of articles collected in Step 2, we found it necessary to further reduce the number to focus our analysis on the most relevant materials. The reduction of articles occurred after skimming the articles based on the following inclusion criteria:

- Direct relevance to RQ1 or RQ1 or both, *and*
- Published in a peer-reviewed academic journal, or in a credible practice-oriented publications, or on project management organizations’ websites, *and*
- The topic of sustainability in project management was treated independently of industry, to avoid definitions and directives only relevant for, e.g., the construction industry (see also the “delimitation” section above), *and*
- Contributed new empirical (qualitative or quantitative) data or new insights and frameworks (e.g., literature study resulting in taxonomy or comprehensible tables).

Of the 188 articles we collected, 84 were selected for further analysis after the above criteria, while 104 were rejected. To minimize bias in the selection process, we each noted reasons for rejection and reviewed those we had marked differently to achieve agreement on inclusion. The entire article selection process is summarized in Figure 1.

Figure 1: Flow chart indicating article identification and inclusion process



4.4 Step 3b: Analyze Relevant Articles

The articles deemed relevant for analysis were reviewed by each of us to enable thematic analysis with the greatest possible validity and minimal bias. Initially, we documented the following information for each of the 84 articles:

- Publication year
- Language
- Relevance for RQ 1
    - We documented definitions of sustainable project management
- Relevance for RQ 2
    - We documented areas of project management practices where application of sustainable practices were noted to allow for thematic analysis
- Research method

Articles for inclusion were published in the years indicated in Table 2.

Table 2: Number of articles by publication year

Publication Year	Number of Articles Selected for Analysis
20xx-2018	7
2019	19
2020	5
2021	13
2022	19
2023	21
Total	**84**

Of the 84 articles, 80 were written in English. Only four relevant materials were written in Danish, including one book, one non-scientific report, and two web articles written by experts. None of the 80 English-language articles were based on Scandinavian project management practices. We could therefore confirm our assumption that by the end of 2023, there was no Danish research in the field.

Finally, it is worth noting the type of studies, judging by research method. Less than half of the materials were based on original empirical data, none of which was based on Scandinavian projects, while one third of the articles were literature studies, and the rest were conceptual articles. This confirms our initial assessment of the literature as lacking empirical evidence that can be easily transferred to Danish project contexts.

4.5 Step 4: Analyze Relevant Articles

After our respective assessment of articles with respect to relevancy for RQ 1 and RQ2, we met to compare our notes and decide how to handle articles where there was divergence in our understanding regarding relevance for RQ1 and RQ2. Together, we then

1. documented and grouped definitions of sustainable project management (RQ1), and
2. performed an inductive thematic analysis aimed at uncovering themes related to sustainable project management practices (RQ2).

A thematic analysis is a detailed and nuanced account of qualitative data. A theme is defined as a common topic, idea, or pattern of meaning that repeatedly emerges in the collective data material and reflects something interesting or important about the data or the problem formulation (Braun & Clarke, 2006). In our article analysis, we specifically looked for themes representing approaches to and recommendations for practicing sustainable project management. We approached the thematic analysis iteratively and continuously grouped themes that were logically coinciding or comparable, aiming for a clear analysis result. Results of the analysis are presented next.

5 Results

Results are discussed by research question.

5.1 Conceptualization of Sustainable Project Management (RQ1)

Given that sustainability in a project context is a relatively new phenomenon and not yet well integrated into project management practices, there are, as expected, various definitions and conceptualizations of the term "sustainable project management" in recent literature. The World Commission on Environment and Development (WCED) issued its report “Our common future in 1987, aka “Brundtland Report”. Although it did not mention projects specifically, the report did define sustainable development as “‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (p. 47). With this definition in mind, sustainable project management can be defined as “adopting project strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing human and natural resources that will be needed in the future” (Mohammad & Pan, 2022, p. 203). Variations based on the Brundtland report exist in Aarseth et al. (2017), Aghajani et al. (2023), Albert & Mickel (2019), Blak Bernat et al. (2022), Cerne & Jansson (2019), Dziadkiewicz et al. (2022), Garcia (2023), Gomes Silva et al. (2022), Madureira et al. (2022), McGrath & Kostalova (2023), Shah & Naghi Ganji (2019), and PMBOK 7th edition (PMI, 2021). WCED-based definitions do set a direction for sustainable project management, but they do not provide a specific basis for assessing and incorporating project management measures that ensure future generations.

By distancing himself from capitalism's pursuit of economic growth, John Elkington (1994) invented the concept of the *triple bottom line* to make the sustainability agenda set forth by the World Commission more concrete. The three 'bottom lines' encompass the company's economic, social, and environmental value creation/ loss. Translated to projects, sustainable project management with focus on the triple bottom line can be defined as “the organizing principle of value generation that allows aligning the necessary elements, under the project approach, to achieve the expected results in the social, economic, and environmental framework” (Moreno-Monsalve et al., 2023, p. 2). These three bottom lines are sometimes referred to in project management literature as the 3P's: Planet, People, Profit. Similar definitions can be found in Armenia et al. (2019), Bochtler et al. (2023), Ferrarez et al. (2023), Gachie (2019), Kostalova and McGrath (2021), Kumar and Ramkumar (2022), Madureira et al. (2022), Malik et al. (2021), Mannaz (2023), Mansell et al. (2019); Martens and Carvalho (2017a, b), Moreno-Monsalve et al. (2023), Nordjysk Projektledelse (2023), Poon and Silvius (2019), Silvius and Schipper (2019, 2020), and Ueasangkomsate (2019). Sustainable project management in the 3P version is primarily about defining performance indicators for each of the three bottom lines throughout the project's lifetime. But since projects are time-limited, it can be difficult for a project manager to follow and measure the project's results, after they have been delivered to the customer. However, not all

authors believe that one must measure the results. Some Danish authors, including Vest Hansen (2023) referred to Ingildsen and Thorkildsen (2023), who defined sustainable project management as 'the methods, principles and approaches used to manage and implement projects in a way that takes into account environmental, social and economic factors' (para 2). This definition implicitly indicates that considerations for the 3 P's are sufficient to practice sustainable project management but does not explain which specific considerations should be taken, or how these should be prioritized. In addition, this definition does not take the outcome of the project into account when assessing sustainability.

Adding two more “Ps” to the conceptualization of sustainable project management, some authors differentiate ‘sustainability *by* the project’ from ‘sustainability *of* the project’. The former refers to considering the sustainability of the product or outcome of the project, whereas the letter refers to adopting project sustainable processes and practices (Huemann & Silvius, 2017). Authors using this definition thus proposes sustainable project management encompasses both internal processes and outcome-based assessments of sustainability (Aarseth et al. (2017), Carvalho and Rabechini Jr. (2017), Ismayilova and Silvius (2021), Locatelli et al. (2023), Magano et al. (2021a, b), Shah and Naghi Ganji (2019), Silvius and Marnewick (2022), Tornjanski (2023), and Vivek et al. (2023)). Like the 3P definition, the process-product way of thinking about sustainable project management reflects a major weakness in that that it does not specify how, as a project manager, one can ensure sustainability after the project is completed.

Silvius and Schipper (2014) were among the first project management researchers to unfold the process-product mindset, making it more concrete. They did this by considering involvement of and value creation for the project stakeholders and defined sustainable project management as “The planning, monitoring and controlling of project delivery and support processes, with consideration of the environmental, economic, and social aspects of the lifecycle 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” (p. 79). Authors supporting this definition include Barendsen et al. (2021), Barneveld and Silvius (2022), El Khatib et al. (2020), Ismayilova and Silvius (2021), Keshavarzian and Silvius (2022), Magano et al. (2021a), Sabini et al. (2021), Silvius (2019, 2021), Silvius and Marnewick (2022), and Zakrzewska et al. (2022). Although Silvius and Schipper expanded the concept of sustainable project management from being limited to either the triple bottom line or the product-process idea, to a holistic mindset about integrating both perspectives, it still is unclear how this can happen,

The final and most comprehensive definition of sustainable project management originates from Green Project Management (GPM), an organization founded in 2009 with the goal of educating and certifying project managers worldwide about sustainable practices. In 2013, GPM committed to the UN's 17 sustainable development goals (SDGs) and has since published project management standards based on these. The latest version, The Global Standard for Sustainable Project Management Version 3.0, also called the *P5*

standard, combines the triple bottom line idea with the process-product idea, In the P5 standard, sustainable project management is defined as “the application of methods, tools, and techniques to achieve a stated objective while considering the project outcome's entire lifecycle to ensure a net positive environmental, social, and economic impact” (GPM, 2023, p. 87). The GPM definition has only recently been adopted by researchers, such as dos Santos et al. (2023). GPM does not specifically mention stakeholders, but indirectly stakeholders play a major role in the P5 standard, which is built as an ontology, i.e., a model with basic assumptions, concepts, and relationships. A basic assumption in the P5 standard is that a project's activities, results, and deliverables influence the 3 three bottom lines, and that these effects stem directly from decisions about the product and from project management practices.

5.2 Themes in Sustainable Project Management Literature (RQ2)

As mentioned above, the 84 articles included for review were thematically analyzed. This inductive process resulted in six themes, which are summarized in Table 3. It is worth noting that we cannot pinpoint a clear connection between conceptualizations of sustainable project management and themes.

Table 3: Themes in the Sustainable Project Management Literature

Theme	Main points
Organizational sustainability strategies and policies	A branch of the sustainability literature deals with the project manager's mandate and the strategies and policies being communicated from the organization's top. It is mentioned in some articles that a strategy and framework for sustainable project management should fall to the organization's project management office to ensure that all project managers have a uniform understanding of organizational sustainability strategy and associated activities.
The Project Manager's values, competencies, and actions	The competencies of the project manager and their own approach to sustainability can have a positive sustainability effect on the decisions made in projects. The competencies that a sustainable project manager must possess, in addition to the more mechanical measurements and reporting, are often referred to as the inner sustainability.
Methods for sustainable project management and sustainable project outcomes	Recommendations for specific processes and work methods that can contribute to sustainable project management and project outcomes. Sustainability in the project, for example, concerns the organization's project model, which aims to create a common framework and a common terminology for project work.
Performance indicators for project success	Assessing the sustainability of a project and its management means that the project's results, both during and after the project's lifetime, are incorporated into the organization's sustainability assessments and internal/external reports. This task requires data collection to continuously make sustainable decisions and report on status and progress. Typically, it is recommended to measure a range of KPIs, which according to the triple bottom line thinking can be divided into: - Indicators for social sustainability - Indicators for environmental sustainability - Indicators for economic sustainability. Furthermore, it is recommended to measure the sustainability of the product at the customer after the project is completed, to cover the entire lifecycle.
Stakeholder involvement	Researchers who base their work on the process-product mindset advocate for the involvement of stakeholders in all phases and processes of the project. Articles within this branch of the sustainability literature are thus focused on identifying nodes where stakeholder input can have a positive effect on project outcomes. Specifically, this can be done through co-creation, collaboration, and process facilitation involving the project's stakeholders.
Typologies/frameworks for sustainable project management	This category of articles deals with the development of various typologies and terminologies, typically based on a literature study. We assess that these articles primarily address other researchers, but some of the models may possibly serve as inspiration for organizations that are unsure how to approach the sustainability task in a project context.

Synthesis for each of the six themes follows below.

Theme: Organizational Sustainability Strategies and Policies

Projects that encounter organizational structural barriers and lack of support from management or sponsor around sustainability efforts do not have

good chances of succeeding with these (Sabini & Alderman, 2021). Ueasangkomsate (2019) found that projects in organizations with a business strategy driven by sustainability principles and policies have a greater chance of achieving environmental goals compared to projects from organizations with unclear or unambitious goals for their sustainability efforts. In fact, several researchers believe that projects cannot succeed in creating sustainable results unless the organization's management has adopted sustainability as a business strategy (Chawla et al., 2018; Cerne & Jansson, 2019; Shah & Naghi Ganji, 2019). Favari (2020) wrote that the individual project manager cannot drive sustainability agendas without full backing from the project sponsor, "Decisions on sustainability must be set at a strategic level and then, cascaded to professionals managing the tactical level, otherwise not even the best project managers having the highest competence on sustainability will have the power to implement sustainability principles" (p. 17). Conversely, Locatelli et al. (2023) said that project managers with their unique knowledge of project work and stakeholders have both a responsibility and an opportunity to influence the organization's approach to sustainability: "Project management knowledge can make policy and decision-makers aware of which projects to pursue and how projects may collaborate to generate better value and sustainable outcomes" (p. 5).

If an organization has a sustainability strategy, projects can operate from common sustainability goals and adopted practices, such as ethical behavior, stakeholder involvement, and decision-making based on a balanced assessment of economic, social, and environmental factors (Chawla et al., 2018). Therefore, project managers in the future should aim for a wider range of goals from all bottom lines, marking a significant shift from decades of project management practice driven by the classic success parameters of time, budget, and quality (Sabini et al., 2019). Tornjanski (2023) went as far as calling future project managers "strategic change agents" for sustainable practice. Aarseth et al. (2017) pointed out that when projects are shaped in a sustainable organizational culture, sustainability must be a principle for the negotiations and decisions made with internal and external stakeholders in an atmosphere of openness and cooperation about common goals. This means in practice that organizational sustainability strategies must form the basis for close and transparent relations with project partners, which may mean parting with traditional business principles, such as protection of own knowledge and competition for scarce resources (Ivanov et al., 2020). Kostalova and McGrath (2021) suggested that project maturity in the future should be viewed based on sustainability criteria, which may mean that projects that are not assessed as mature in terms of sustainability are not implemented in the organization.

Some researchers (Mohammad & Pan, 2022; Silvius, 2021) have suggested the organization's sustainability strategy can advantageously be implemented through a project management office (PMO). However, Silvius (2021) noted that there are not many good examples of how a PMO can serve as the link between the strategic level and project managers in relation to sustainability; a point also highlighted by Toljaga-Nikolić et al. (2022). Barneveld and Silvius (2022) suggested that organizations make a strategic effort to lift sustainability competencies for both the project office, project sponsors, and

project managers. A common language about the company's approach to sustainability can thus help to form a definite sustainability culture and a "mindset" that rubs off on projects and project managers (Aghajani et al., 2023; Blak Bernat et al., 2023b).

Theme: The Project Manager's Values, Competencies, and Actions

Several authors give project managers a central role in the sustainable transition. Silvius (2019) believed that sustainable project outcomes are entirely dependent on the project manager's own effort. Magano et al. (2021a) wrote: "The project manager developed awareness of the project's positive and negative societal impacts and assumed responsibility for the project's impacts by minimizing negative impacts while boosting positive contributions" (p. 2). According to Blak Bernat et al. (2023b), project managers must adopt a sustainability mindset to assume responsibility for sustainable project management practices. However, the authors did not elaborate on how this can occur. Both Whyte and Mottee (2022) and Sabini and Alderman (2021) mentioned that sustainable project management inherently reflects a paradoxical endeavor, as projects have an end date, whereas the outcomes of the project live on. Project managers must therefore consolidate the project's short-term goals with the lifespan of the product, of which they have little control. Magano (2021b) suggested that sustainability is an individual trait, stemming from a person's attitude towards sustainability. A study conducted by Poon and Silvius (2019) showed that if both the project manager and project participants had positive attitudes about the project's results being sustainable, the chances increased that this would happen. Gachie (2019) pointed out that the entire project team must adopt a sustainable mindset to meet economic, social, and environmental goals. The degree of formal power associated with a project manager position can very according to culture. Scandinavian work cultures are characterized by a high degree of employee influence (Lundahl et al., 2023), which makes is less meaningful to assign full responsibility for the project's overall sustainability results to a single project manager. Concluding that project sustainability relies solely on the project manager also contradicts the notion that sustainability requires a joint and coordinated organizational effort, where all stakeholders are co-responsible for achieving goals (Bulmer et al., 2022; Favari, 2020; Sankaran et al., 2021).

Several researchers investigated where the motivation to actively support sustainable development in projects came from, based on the assumption that the executing links of the organization's sustainability strategies - including projects - had the greatest influence on whether the goals were achieved. Sustainability as a personal value may be part of the answer. Nearly half of the respondents in studies conducted by Silvius and Schipper (2020) and Marnewick et al. (2019) mentioned that they supported the World Commission's (1987) definition of sustainability and felt morally obligated to act with this purpose in mind in their work as project managers. Other project managers reacted strongly to attempts at "greenwashing" by stepping into the role of sustainability activist and thereby influencing practices in projects in a sustainable direction (Sabini & Alderman, 2021; Silvius & de Graaf, 2019).

Some authors attempted to establish a set of sustainability competencies that project managers should possess in the future. According to Obradovic et al. (2018), project managers needed to integrate sustainability into three competency areas: human competencies, method and tool competencies, and strategic competencies. Tornjanski (2023) mentioned that sustainable project management requires emotional intelligence, good collaboration skills, and innovation. In a report on project management in Denmark, it is mentioned that project managers need to be able to speak *the language of sustainability*, meaning that the project manager must be knowledgeable about the most important sustainability concepts and terms (Mannaz, 2023). A complete list of necessary sustainability competencies does not exist, but there is inspiration to find in various project management standards. For example, PMBOK version 7, mentions sustainability under various "knowledge areas" (Albert & Mickel, 2019), and the GPM P5 standard presents – as mentioned previously, an ontology for sustainable project management practices (GPM, 2023).

Theme: Methods for Sustainable Project Management and Sustainable Project Outcomes

Ingildsen and Thorkildsen (2023) offer one of the few Danish perspectives on methods for practicing sustainable project management. Their approach is based on expanded use of well-known project management tools and methods, such as risk management and stakeholder analysis, coupled with an awareness among project managers of the responsibility to promote sustainable results and processes. In the same vein, Mannaz (2023) conclude in their report of project management practices in Denmark that project managers must integrate traditional methods and tools with the sustainability agenda, although they do not explain how this can be done. Similarly, Cabeças and Marques da Silva (2021), McGrath and Kostalova (2023), and Zakrzewska (2022) all emphasize the importance of incorporating sustainability into common project management methods and tools such as goal hierarchies, communication plans, and risk analyses. On the other hand, Favari (2020) advocated for specific sustainability activities that should be integrated into the organization's project model. He suggests that project managers develop a sustainability plan and maintain a sustainability log. Other authors, including El Khatib et al. (2020), Kumar and Ramkumar (2022), and dos Santos et al. (2023), also recommend project decisions should be made with sustainability goals in mind, possibly using a rating system that integrates specific considerations for sustainable practice, economic gain, and the social aspects of project execution. Several authors mention life cycle analyses (LCAs) as a useful tool in this regard (dos Santos et al., 2023; Garcia, 2023; Nordjysk Projektledelse, 2023).

It is worth noting, however, that several authors challenge the idea that padding traditional methods and tools with the term “sustainability” is a sufficient approach to sustainable project management. In other words, it may not be sufficient to supplement common project management methods with sustainability activities or reports. The reason is that traditional project management methods and tools were developed based on the basic assumption that

project success is measured from the project triangle (costs, plan, quality). Blak Bernat et al. (2023b), Sawadogo et al. (2022) and Ferrarez et al. (2023) all concluded that both project management as practice and project management methods should be rethought and reinvented from a sustainability perspective, which is no insignificant task. Mansell et al. (2019) wrote, “We must rethink the definition of project success by demonstrating impact across the triple bottom line… at all levels and stages of a project” (p. 8). Bochtler et al. (2023) added, “The integration of sustainability in project management tremendously increases the complexity in all project stages and it stands in contradiction to some already established practices, nevertheless the need to transform the traditional methodology is now evident” (p. 3).

There is broad agreement in the literature that sustainability should be a priority from project day 1 to achieve the greatest possible effects (Barendsen et al., 2021; de la Cruz López et al., 2021; Malik et al., 2021; Toljaga-Nikolić et al., 2020). On the other hand, there are no cases or examples in the literature of new project management methods and tools that have successfully replaced the old ones. Koch-Ørvad et al. (2019) suggested an experimental approach, while both Gomes Silva et al. (2022) and Zakrzewska et al. (2022) advocated for agile projects as the most effective way towards the development of new and sustainable methods. Zhang et al. (2023) suggested project managers should use software that can monitor sustainability indicators and help promote proactive actions and sustainable results.

A couple of authors mention that project managers and project participants lack education and knowledge about sustainability, which slows down the green transition in many organizations (Govinderas et al., 2023; Madureira et al., 2022). Upskilling both project managers and project participants in sustainability may thus be required to develop new sustainable project management methods and tools.

Theme: Performance Indicators for Project Success

Several authors propose specific and measurable sustainability indicators that can give organizations and project managers insight into whether their efforts toward sustainable practices are going in the right direction. The point is the own adage of *what gets measured gets done* (Koke & Moehler, 2019). Another reason for collecting project data related to sustainability is the ESG reporting mandate, which - in some organizations - require project managers to produce relevant data for annual reports. According to Chaudhary and Dakshina Murthy (2019), “Every project system must have a comprehensive set of sustainability indicators. The project managers should track progress and adjust as required in project activities achieving sustainability along with the triple constraints related to the project” (p. 3).

In line with this recommendation, several authors (Botchler et al., 2023; Carvalho et al., 2017; Martens & Carvalho, 2017a, b) suggest a number of different KPIs for each of the three bottom lines (economic, social, environmental). Others supplement with indicators that are not correlated to specific bottom lines, but deal with stakeholders (Blak Bernat et al., 2023a; Martens & Carvalho, 2017a; Moreno-Monsalve et al., 2023; Xue et al., 2018), resource

use, or purchasing practices (Carvalho et al., 2017; Stanitsas et al., 2021). The list of performance indicators in the literature is quite long, so we will not reproduce the various suggestions in this article and instead refer to cited authors for inspiration. Project managers are told to measure KPIs that correlate with the organization's strategy and sustainability goals, and act accordingly to achieve project success. Ika and Pinto (2022) suggested that project success in the future be calculated based on four indicators, which represent a rethinking of the three dimensions of the traditional project triangle from a sustainability perspective and a new dimension, which they call "green efficacy" (p. 845). Unfortunately, it is not clear how this indicator must be calculated.

Theme: Stakeholder Engagement

As we discuss above, some conceptualizations of sustainable project management require active engagement of the project's impact on stakeholders within and outside the organization (eg., Aarseth et al., 2017; Sabini et al., 2019). One of the most frequently mentioned benefits of stakeholder involvement is that they become aware of the organization's sustainability strategy and the project's sustainability goals, which can contribute to improvements and sustainability initiatives throughout the supply chain (Shah & Ganji, 2019). dos Santos et al. (2023) pointed out that demand for sustainability in projects and project management can stem from external stakeholders. Project organizations may therefore need to quickly adapt if they are to survive and meet requests from customers, suppliers, partners, and other stakeholders to conduct sustainable projects that result in sustainable products (Chawla et al., 2018). Several authors focus on how project managers can involve stakeholders in a more systematic and thorough manner than before. According to Silvius and Schipper (2019), it is important that projects are managed in a transparent, responsible, and ethical manner, so stakeholders are not misled, or the project is not subjected to greenwashing (Cerne & Jansson, 2019; Sabini & Alderman, 2021). Greenwashing occurs when a company or organization wants to appear greener than it is, which can impose ethical dilemmas onto project managers, among others (Friedrich, 2023).

Dziadkiewicz et al. (2022) recommended that project managers involve all stakeholders across political and strategic motives in the planning of sustainability integration, to uncover and manage potential conflicts in advance. However, a discussion about whether the project manager has or should have the mandate to engage in conflict resolution between the project's stakeholders and make decisions that have potentially negative economic or sustainable consequences, is missing from the literature. This may indicate that the authors have not considered the consequences of delegating implementation of sustainability to individual project managers, without organizational support and guidelines. Both Keshavarzian and Silvius (2022) and Ivanov et al. (2020) argued it is the project manager's responsibility to prepare the organization for sustainable practices through stakeholder involvement, which potentially place unreasonable pressure onto project managers.

Theme: Typologies / Frameworks for Sustainable Project Management

The last theme in the literature on sustainable project management covers models and typologies. Most articles are conceptual and based on either literature studies or the authors' own experiences (Armenia et al., 2019; Friedrich, 2023; Holm, 2023; Silvius, 2019; Silvius & Schipper, 2019; Silvius & Marnewick, 2022; Uribe et al., 2018; Vivek et al., 2023). As far as we can discern, none of the models have been empirically tested, which undermines their credibility and relevance in different project contexts. Mohammad and Pan (2022) expanded the focus slightly by presenting a model with accompanying process flow diagrams that involve the organization and portfolio management, which is a step forward compared to looking at projects in isolation. But their model is also based on others' experiences and is not empirically validated. The best model we have found is published by Sankaran et al. (2021). This model proposes a path for sustainable project management, starting with organizational-level policies and governance principles, considerations of process and product sustainability, as documented by impacts to the three bottom lines. However, this model also needs to be validated and possibly simplified.

We also included the common project management certification frameworks, as one can reasonably expect them to be at the forefront of sustainable project management practices. However, this is not the case. Both IPMA, Prince2, and PMI mention sustainability in a superficial manner that appears as hasty additions. None of these certification organizations have thus rethought or considered fundamental changes to the project management profession based on the sustainability mandate. We mentioned the GPM P5 standard in connection with conceptualizations of sustainable project management, and this framework is also, in our estimation, the best alternative to the more well-known certifications. The GPM P5 standard is published by Green Project Management and can be considered an ontology for sustainable project management practice. The comprehensive standard is based on a model that integrates the project and process thinking with the other three P's: People, Planet, and Prosperity. The model includes a comprehensive set of activities that can be integrated into the project manager's practice. The GPM P5 standard is normative in the sense that it tells project managers which sustainability initiatives they should start, but not how.

6 Discussion and Recommendations

The literature on sustainable project management can be described as largely normative and dominated by meta-studies. There is no consensus on what sustainable project management is, or what it entails. In addition, there is an acute lack of empirical data, especially in a Scandinavian context. Therefore, we cannot draw on project managers' real-life experiences to conceptualize or describe sustainable project management. As Sankaran et al. (2021) points out, there is growing attention to sustainability in organizations, but project managers are often poorly prepared to handle sustainability-related tasks. Projects have traditionally been defined as time-bound initiatives with fixed

schedules, budgets, and resources, which means that project managers have been measured on success within these boundaries. We believe that the sustainable transition requires a break with the traditional perception of projects as narrow and short-term efforts with economic profit realization as its primary purpose. A break with the common project triangle as the project manager's main point of reference is needed to add sustainability as an integral part of project success criteria. Project managers and steering groups currently face a gap between sustainability goals and traditional project management tools and methods. Organizational sustainability principles and strategies for social and environmental responsibility must play a central role in project decisions in the future, including which projects to initiate. With this starting point, steering groups can shape and guide sustainable behavior in project management and involve stakeholders beyond the project's end date. The first step is to agree on what sustainable project management is and then upskill project managers on how they can practice sustainable project management.

6.1 Defining Sustainable Project Management

Uncovering the most frequently used definitions of sustainable project management in the literature shows that the concept has evolved over the past 10 years. Still, there is no consensus on which definition is most useful for project managers. Where the Brundtland report focuses on future generations, the triple bottom line and process-product definitions limit sustainability to a project's lifetime. Silvius and Schipper (2014) proposed a more dynamic approach involving stakeholders, while Green Project Management presents a comprehensive project management standard that focuses on integrating decisions related to sustainability throughout a project's lifespan. However, none of the five definitions are, in our opinion, adequate to guide sustainable project management. We therefore propose a new definition that integrates central ideas from the other five perspectives and adds specific considerations related to sustainable project management practice. In addition, we include the life cycle perspective, which extends beyond the project's lifetime:

Sustainable project management is a systematic and ethical practice that ensures 1) integration of sustainability goals and principles in project processes, and 2) incorporation of sustainability goals and principles in the project's results through documentation of the product's total contribution in its lifetime in relation to environmental, social and economic bottom lines.

In this definition, *systematic* implies methodical and thorough integration of sustainability in project processes, at all relevant organizational levels, with the involvement of all relevant stakeholders at the right times. *Ethical* refers to project managers having to include sustainability considerations on par with considerations of economy, time, and quality when planning, making decisions and measuring success.

6.2 Recommendations for Project Managers

If the mandate from the organization is to work strategically with sustainability in projects, the project managers' mandate to make sustainability-related decisions must be clarified. The task of integrating sustainability into the project may befall a project management office, if it exists. The PMO or the project manager should consider drawing up a sustainability plan that describes how the project will ensure sustainability during and after its lifetime. Involving both internal and external stakeholders in the preparation of a sustainability plan can have the following advantages:

- Sustainability is integrated in the project's and the product's lifetime
- Expectations for sustainability efforts are clarified and coordinated with an expressed governance structure
- All parties of interest contribute with specific knowledge and ideas
- Project members and their stakeholder develop a common language for talking about sustainability.

Regardless of whether the organization has a project office, we recommend that an action plan be drawn up, which partly describes the scope of the sustainability mandate, success criteria, decision-makers, and partly explains how and in which phases sustainability is handled. Conflicts and paradoxes are expected to arise when project managers and the steering group must prioritize goals and efforts in relation to the three bottom lines.

Our scoping review revealed that a project manager's personal opinions about sustainability can drive organizational decision-making in a sustainable direction (Aghajani et al., 2023; Blak Bernat, 2023b; Sawadogo et al, 2022; Magano et al., 2021). Mannaz (2023) argued that project managers who act as green ambassadors can help organizations implement sustainability strategies. In the same vein, Whyte and Mottee (2022) concluded that project managers whose are passionate about sustainability have a good chance of engaging stakeholders in a dialogue regarding sustainability, which can contribute to positive change. We therefore recommend that both project managers and project participants reflect on their personal values and consider developing and using methodological and strategic competencies and insights to help improve project results from a sustainability perspective.

Sustainability as a topic and project success criterion should be integrated into the organization’s *project model*, which typically serves as a framework for all project work. In addition to a description of the project's processes or phases, milestones, and project management basis, the project model typically consists of

- Detailed descriptions of governance, processes, activities, methods, and tools
- Templates and standards for quality, reporting, etc.

Applying sustainability principles, methods, and tool to relevant parts of the project model can be an extensive endeavor. The GPM P5 standard, for example, covers a total of 49 areas of specific project management measures across both the project's and the resulting product's lifecycle. We recommend

starting with the most critical project processes and activities and integrating sustainability into those from the beginning of new projects. An iterative or experimental approach to implementing sustainability-related practices, tools, and methods will allow for incremental adjustments. It is, of course, important that the organization pays attention to the effectiveness of sustainability initiatives in projects to achieve the greatest possible learning and long-term effect.

The classic project triangle is no longer a sufficient reflection of project success for sustainable project management. An assessment of the sustainability of a project means that project managers and their steering committees must consider the outcomes of the project in sustainability assessments and ESG reports. This endeavor requires the involvement of stakeholders and experts who can help assess sustainability after the project has been delivered. An important tool is lifecycle analyses (LCAs), which have not traditionally been part of a project manager's toolkit. LCAs measure environmental impacts of a project's product or service and enable project managers and organizational decision-makers to identify and focus on areas for improvement, make informed choices, and design more sustainable alternatives.

Project managers who must provide data for the company's ESG reports or otherwise measure sustainability efforts of the project need to establish a set of performance indicators for each of the three bottom lines. As mentioned, several authors describe which data can be collected to guide sustainable project management. Typically, KPIs that enable status and progress reporting from the project are needed. We recommend that project managers and steering committees initially select a limited number of parameters within each of the three bottom lines and expand as sustainability becomes a more integral part of project practices.

7 Conclusion

With sustainability on the agenda in both private and public sector organizations, project managers will soon be required to implement new sustainability-related initiatives, methods, tools, and practices. Our scoping review confirms a high level of international research interest in the topic of sustainable project management, although we were unable to find any published studies based on Scandinavian project management practices. In addition, more than half of articles reviewed were literature studies or conceptual studies, and there is a lack of empirical evidence and cases. We also lack insights into how different industries tackle the sustainability mandate, particularly those that are knowledge-based. We detect a certain academic competition to develop the most popular model without much regard to whether it is developed based on empirical research. Many of the articles that propose models or typologies for sustainable project management practice were written without systematic data collection involving project managers. From that perspective, we can state that the research has gone a bit into self-spin. There is therefore a great need for empirical studies that can contribute with practitioner experiences and directions regarding sustainability in project contexts.

Based on Svejvig's (2021) categories of project management research, we wish for more descriptive, predictive, and practice-focused studies of sustainable project management. Descriptive research could, for example, focus on examining how project managers perceive the sustainability mandate and what initiatives organizations have implemented to strengthen the sustainability of projects and subsequent results. In terms of predictive research, we would like to see studies that attempt to establish connections between concepts and thereby document the effect of sustainable project management initiatives. Furthermore, we hope that research on sustainable project management practice in Danish and other Scandinavian organizations, both public and private. We miss cases and emerging practice recommendations within a broader set of industries.

In this article, we identified commonly used definitions of sustainable project management in the literature. All of them require translation to project management practice. We proposed a new definition, which we believe is more precise and directive for project managers working with sustainability initiatives. In addition to uncovering definitions, the articles we selected for review were thematically analyzed to identify ways in which project managers can work with sustainability. Based on the thematic analysis, we derived several recommendations for steering committees and project managers who must integrate sustainability into their practice. We recommend that sustainability should be a central part of the criteria for project success – both in terms of the project's execution and in terms of the project's results. This will mean that project managers need to be upskilled in developing and applying, for example, life cycle analyses and thinking in value chains beyond the project's short-term activities. Despite at least one comprehensive standard (the GPM P5 standard), sustainable project management practice is a new discipline that will ultimately change the way projects are led and executed in many industries.

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