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SUSTAINABILITY IN PROJECT PORTFOLIO MANAGEMENT STANDARDS

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Consideration of the different dimensions of sustainability in project management requires their integration at all levels of the organization that carries out the projects, from the strategic management to the management of each one of the projects. Project portfolio management is considered as a bridge that links the gap between strategy and project management so the integration of sustainability at this level has a significant impact. The present paper analyzes the aspects and principles related to sustainability present in the main standards of project portfolio management. In this way, the Management of Portfolios (MoP), the international standard ISO 21.504:2022 Project, programme and portfolio management – Guidance on portfolio management, the Individual Competence Baseline (ICB) for Portfolio Management and The Standard for Portfolio Management (fourth edition) are analyzed and compared.

Keywords: sustainability; standards; portfolio management

LA SOSTENIBILIDAD EN LOS ESTÁNDARES DE DIRECCIÓN DE CARTERAS DE PROYECTOS

La consideración de las diferentes dimensiones de la sostenibilidad en la gestión de los proyectos requiere su integración en todos los niveles de la organización que lleva a cabo dichos proyectos, desde la dirección estratégica hasta la dirección específica de cada uno de ellos. La dirección de la cartera de proyectos se considera como un puente que une la brecha entre la estrategia y la gestión de proyectos, por lo que la integración de la sostenibilidad en este nivel tiene un impacto significativo, a la vez que resulta más eficaz que si se plantea únicamente a nivel de proyecto. El presente trabajo analiza los aspectos y principios relacionados con la sostenibilidad presentes en los principales estándares de la dirección de carteras de proyectos. Para ello se analizarán y compararán la norma internacional ISO 21.504:2022 Guía sobre gestión de Carteras, los Fundamentos de la competencia individual (ICB) para gestión de carteras de IPMA, el estándar del PMI para gestión de carteras y el estándar de Axelos (PRINCE2) de Gestión de carteras.

Palabras clave: sostenibilidad; estándares; dirección de carteras



1. Introduction

The consideration of sustainability in project management has become increasingly important in recent years. It is no longer enough to focus solely on the economic benefits of a project; its environmental and social impacts must also be taken into account. This requires the integration of sustainability at all levels of the organization that carries out the projects, from strategic management to the management of each individual project.

To achieve this integration, project portfolio management has emerged as a crucial tool. It acts as a bridge between strategy and project management (Khalili-Damghani and Tavana, 2014; Ghannadpour *et al.*, 2020; Mohammad and Pan, 2021), ensuring that sustainability is a key consideration in all aspects of project management. This, in turn, has a significant impact on the success of the organization and the sustainability of its projects.

From a revision of literature (Silvius *et al.*, 2017) define sustainability as a set of nine principles or dimensions that collect and establish the impact of these principles on project management:

- Sustainability is about balancing or harmonizing social, environmental and economic interests.
- Sustainability is about both short-term and long-term orientation.
- Sustainability is about both local and global orientation.
- Sustainability is about values and ethics.
- Sustainability is about transparency and accountability.
- Sustainability is about stakeholder orientation.
- Sustainability is about reducing risks.
- Sustainability is about eliminating waste.
- Sustainability is about consuming income, not capital.

(Schipper & Silvius, 2018) derive at a new formulation of the objective of sustainable Project Portfolio Management being: “the maximisation of economic, environmental and social value of the portfolio in the short and long-term for all affected stakeholders, by balancing the projects within the portfolio in consideration of the firm’s capacities and consequently creating a sustainable business model in a transparent and ethical way.”

But is the importance of sustainability in project portfolio management evident in the main standards of the field? The present paper analyses the aspects and principles related to sustainability present in the main standards of project portfolio management. In this way, the Management of Portfolios (MoP) (OGC, 2011), the international standard ISO 21504:2015 Project, programme and portfolio management – Guidance on portfolio management (ISO, 2022b), the Individual Competence Baseline (ICB) for Portfolio Management (IPMA, 2015a) and The Standard for Portfolio Management (fourth edition) (PMI, 2017a) are analyzed and compared.

2. Analysis of Portfolio Management standards

In order to investigate the research questions introduced before, we conducted an analysis of Portfolio Management standards. This analysis was carried out to identify concepts related to the principles or dimensions of sustainability.

The following four standards have been chosen for the analysis based on their relevance and authority in the field of portfolio management:

1. Management of Portfolios (MoP) published by the Office of Government Commerce (OGC) in 2011 (OGC, 2011). This standard is selected because it provides a comprehensive framework for portfolio management, offering guidance on principles, practices, and techniques. Originally it was a government standard, which gives it greater credibility and is widely recognized.
2. ISO 21.504:2022 Project, programme and portfolio management – Guidance on portfolio management (ISO, 2022b): The international standard published by the International Organization for Standardization (ISO) in 2022 is included due to its global relevance and acceptance. This standard offers guidance specifically focused on portfolio management, ensuring a standardized approach to the discipline.
3. Individual Competence Baseline (ICB) for Portfolio Management (IPMA, 2015a): Published by the International Project Management Association (IPMA) in 2015, this standard is chosen for its emphasis on individual competence in portfolio management. It provides a framework for assessing and developing the necessary skills and competencies of portfolio managers.
4. The Standard for Portfolio Management (fourth edition) (PMI, 2017a): Published by the Project Management Institute (PMI) in 2017, this standard is widely recognized and adopted globally. It offers a comprehensive guide to portfolio management practices and aligns with PMI's established body of knowledge, making it a valuable resource for practitioners.

By including these four standards in the study, a well-rounded perspective on portfolio management can be achieved, considering various frameworks, international standards, individual competencies, and industry best practices. This approach ensures a comprehensive analysis and allows for a more robust understanding of portfolio management principles and methodologies. Table 1 shows that previous organizations have significant and lengthy experience in publishing standards for project, programme, and portfolio management.

It is worth mentioning the PfM² Guide for Portfolio Management (Kourounakis, 2022) recently developed by the European Commission, which is an extension of the PM² Project Management methodology. However, it is not included in the analysis because it is very recent and still not widely implemented.

These four standards were studied analysing how they address questions related to the nine principles or dimensions of sustainability identified by Silvius (Silvius et al., 2017): Economic, environmental and social sustainability; short-term and long-term orientation; local and global orientation; personal values and ethics; transparency and accountability; stakeholder orientation; reducing risks; eliminating wastes; and consuming income, not capital. By employing a keyword-based approach, the analysis focuses on extracting relevant information from the text of these standards using specific keywords associated with each dimension. Subsequently, a comparative analysis was conducted to identify similarities and differences in how the standards addressed each sustainability dimension. This method allows for a comprehensive evaluation of how sustainability is incorporated into these project portfolio standards and provides insights into their alignment with the identified dimensions. A similar review was conducted previously for

programme management standards (Paneque De La Torre, Bastante-Ceca and Capuz-Rizo, 2022).

Table 1 Standards in Project, Programme and Portfolio management

Association/ Organization	Office of Government Commerce (OGC)/AXELOS	International Organization for Standardization (ISO)	International Project Management Association (IPMA)	Project Management Institute (PMI)
Project	Managing Successful Projects with PRINCE2 (Axelos, 2017)	ISO 21.502 Project, programme and portfolio management (PPM) - Guidance on project management (ISO, 2020)	Individual Competence Baseline (ICB) for Project Management (IPMA, 2015c)	A guide to the project management body of knowledge (PMBOK Guide) (PMI, 2021)
Programme	Managing Successful Programs (MSP) (AXELOS, 2020)	ISO 21.503 PPM - Guidance on programme management (ISO, 2022a)	ICB for Programme Management (IPMA, 2015b)	The Standard for Program Management (fourth edition) (PMI, 2017b)
Portfolio	Management of Portfolios (MoP) (OGC, 2011)	ISO 21.504 PPM - Guidance on portfolio management (ISO, 2022b)	ICB for Portfolio Management (IPMA, 2015a)	The Standard for Portfolio Management (fourth edition) (PMI, 2017a)

3. Results

In this section the results obtained from the analysis of Portfolio Management standards are presented. As a summary, Table 2 shows the aspects (principles or dimensions) of sustainability covered by each standard reflecting the degree to which they have been treated considering the following gradation or classification: the aspect is not mentioned in the standard, the aspect appears in the standard as a minor consideration, the aspect is specifically discussed by the standard and examples are provided, the aspect is considered very relevant in the standard, and the aspect receives a quantitative treatment in the standard.

3.1. Economic, environmental and social sustainability

In the case of the OGC standard (OGC, 2011), although the explicit use of the term "sustainability" is limited, it is important to note that sustainability is implicitly addressed in the document. The concept of sustainability is indirectly discussed through examples related to community strategy, demonstrating the consideration of sustainable practices within strategic decision-making processes. Additionally, the inclusion of "environmental analyses" and the utilization of the PESTLE approach (Political, Economic, Sociological, Technological, Legal and Environmental), which encompasses environmental factors, further emphasizes the importance of environmental sustainability in the standard.

Contrasting with the OGC standard, the ISO standard (ISO, 2022b) presents a more explicit acknowledgment of sustainability. While the term "sustainability" is mentioned once, it is identified as a constraint on the portfolio. Moreover, the standard highlights the significance of aligning portfolio components with sustainable practices as an

example of values to be upheld. This recognition of sustainability as a constraint and the emphasis on aligning with sustainable practices indicate a deliberate consideration of economic, environmental, and social sustainability within the ISO standard.

The PMI standard (PMI, 2017a), known for its comprehensive approach to portfolio management, establishes sustainability as one of its core principles, particularly within the context of governance. This integration of sustainability into governance demonstrates the recognition of sustainability as a fundamental aspect of portfolio management. Furthermore, the standard emphasizes the importance of sustainability in portfolio stakeholder engagement activities, underscoring the need to address economic, environmental, and social sustainability concerns while engaging with stakeholders. The identification of environmental rules and environmental risks as key considerations further highlights the commitment to addressing environmental sustainability within portfolio management.

Finally, the ICB for portfolio management (IPMA, 2015a), which focuses on competences, provides extensive coverage of the sustainability concept. The frequent mention of the term "sustainability" (19 times) underscores its significance within the standard. The document establishes strong connections between sustainability and various competence elements, including strategy, compliance, standards and regulations, culture and values, personal integrity and reliability, and procurement. Moreover, the competence element of "results orientation" is specifically linked to social and environmental aspects, demonstrating the integration of economic, environmental, and social sustainability considerations throughout the competency framework.

By examining these four standards in-depth, it becomes evident that while the OGC standard may have limited explicit mention of sustainability, it still addresses sustainable practices through examples and the consideration of environmental factors. Conversely, the ISO and PMI standards explicitly incorporate sustainability as a core principle and recognize its importance within portfolio management. Lastly, the IPMA standard extensively explores sustainability, making strong connections between sustainability and various competency elements. Collectively, these standards provide a solid foundation for addressing economic, environmental, and social sustainability within portfolio management practices.

3.2. Short-term and long-term orientation

The ISO standard (ISO, 2022b) explicitly recognizes the importance of establishing objectives for different time periods, ranging from immediate to long term. This demonstrates a clear long-term orientation within portfolio management. Moreover, the standard highlights how the long-term vision of the portfolio contributes to the achievement of strategic objectives. This emphasis on long-term planning aligns with the principle of considering both short- and long-term impacts in decision-making processes.

The OGC standard (OGC, 2011) also acknowledges the long-term orientation inherent in portfolio management. It explains that portfolio management facilitates more informed cost reduction by providing a comprehensive view of the impact of cuts, considering both short- and long-term implications. This understanding reflects the significance of balancing short-term cost reduction efforts with long-term sustainability goals.

The PMI standard (PMI, 2017a) delves deeper into the relationship between short- and long-term impacts, trade-offs, and environmental considerations. It emphasizes that these factors have a fundamental influence on the selection or completion of portfolio components. By explicitly integrating environmental considerations and recognizing the trade-offs between short- and long-term outcomes, the standard showcases a comprehensive approach to balancing immediate needs with long-term sustainability goals.

The IPMA standard (IPMA, 2015a) provides explicit clarity on the connection between

long-term orientation and sustainability. It highlights that sustainability involves considering the long-term outcomes and effects of behavior. Additionally, the standard emphasizes that negotiation competence should aim for sustainable solutions that deliver the best long-term results for all parties involved. This recognition further strengthens the link between long-term orientation and sustainable practices within portfolio management.

By synthesizing the perspectives of these four revised standards, a solid argument emerges, demonstrating the consistent inclusion of a long-term orientation within portfolio management practices. The ISO, OGC, PMI, and IPMA standards collectively emphasize the establishment of objectives for different time periods, the long-term vision of the portfolio, the consideration of short- and long-term impacts, trade-offs, and the integration of environmental and sustainability considerations. This comprehensive treatment of short- and long-term orientation within the standards underscores the importance of balancing immediate needs with long-term sustainability objectives in portfolio management.

3.3. Local and global orientation

The ISO standard (ISO, 2022b) does not explicitly address the local and global orientation of portfolio management. Similarly, the OGC standard (OGC, 2011) only briefly mentions global and local growth opportunities as part of an example. While there are no further references to local and global orientation in these particular standards, it is crucial to consider that the absence of explicit mention does not necessarily indicate a lack of consideration for local and global aspects.

Conversely, both the PMI standard (PMI, 2017a) and the IPMA standard (IPMA, 2015a) highlight the global nature of the project and portfolio management profession. They recognize the diverse backgrounds, cultures, and origins of professionals in the field. Furthermore, the standards acknowledge that organizations frequently engage in projects, programs, and portfolios that cross borders, emphasizing the need for a global orientation in portfolio management practices.

The PMI standard (PMI, 2017a) further illustrates this global aspect by providing an example from the nuclear power industry. It demonstrates how organizations implement risk management practices differently based on local regulations, while maintaining a general approach of zero tolerance for threats associated with nuclear materials. This example highlights the necessity of considering local regulations while maintaining a global perspective in managing risks across different geographical contexts.

Overall, while the ISO and OGC standards may not explicitly discuss local and global orientation, it is important to consider that these aspects may be implicitly addressed or aligned with broader principles within the standards. In contrast, the PMI and IPMA standards explicitly recognize the global nature of the profession and emphasize the need for a global orientation in portfolio management. The PMI standard further illustrates the integration of local regulations within a global risk management approach. This combination of explicit and implicit considerations across the standards supports a solid argument for acknowledging the importance of local and global orientation within portfolio management practices.

3.4. Personal values and ethics

(OGC, 2011) mentions personal values as part of the organizational energy, suggesting that individuals' values are linked to the purpose of the organization. While this reference acknowledges the importance of personal values, it does not explicitly delve into the ethical dimension or provide guidance on ethical decision-making within portfolio management.

On the other hand, (ISO, 2022b), (IPMA, 2015a) and (PMI, 2017a) establish a stronger

connection between values and ethics in portfolio management. These standards recognize that values and ethical principles play a crucial role in governance, strategy development, and the selection and alignment of portfolio components.

According to (ISO, 2022b), portfolio management aligns portfolio components with organizational values, including sustainable practices and ethical principles. This indicates a broader recognition of the significance of ethical considerations and sustainability in portfolio management.

Furthermore, (PMI, 2017a) goes a step further by emphasizing the existence of their Code of Ethics and Professional Conduct. This demonstrates their commitment to promoting ethical behavior and ensuring that practitioners adhere to a set of ethical guidelines.

In the case of (IPMA, 2015a), the standard dedicates an entire element of competence to 'culture and values.' This element describes how individuals should approach influencing the culture and values of the organization and the wider society in which the portfolio is situated. Additionally, values and ethics are introduced in other elements of competence such as 'self-reflection and self-management,' 'personal integrity and reliability,' and 'relations and engagement.' This comprehensive integration of values and ethics across multiple competency areas underscores their importance in portfolio management.

By considering these factors, it becomes evident that (ISO, 2022b), (IPMA, 2015a) and (PMI, 2017a) place a stronger emphasis on personal values and ethics in portfolio management compared to (OGC, 2011). They explicitly acknowledge the role of ethical principles in decision-making, provide guidance through codes of conduct, and integrate values and ethics into various aspects of competence. This broader and more explicit recognition of personal values and ethics enhances the ethical foundation and professionalism of portfolio management practices.

3.5. Transparency and accountability

(OGC, 2011) explains that adopting a portfolio management approach enhances transparency and accountability. While this statement acknowledges the positive impact of portfolio management on transparency and accountability, it does not delve into specific mechanisms or guidelines for achieving these principles.

On the other hand, (IPMA, 2015a) recognizes the value of transparency in finding acceptable solutions during conflicts and crises. This implies that transparency plays a critical role in promoting fair and equitable resolutions. Additionally, (PMI, 2017a) emphasizes that transparent communication is valuable for optimizing resource utilization and engaging stakeholders. The standard further asserts that transparency and accountability are fundamental principles to be followed in portfolio management. This demonstrates a stronger commitment to transparency and accountability as essential aspects of effective portfolio management practices.

In contrast, (ISO, 2022b) does not explicitly mention transparency as a principle to be considered in portfolio management. It provides limited explanation regarding the accountability of decision makers to take actions as directed by the owners. However, there is no explicit mention of accountability in relation to the ecological aspects of a project portfolio. In contrast, (IPMA, 2015a) highlights the importance of accountability for social aspects through corporate social responsibility. This approach promotes a positive impact on the environment, consumers, employees, communities, stakeholders, and society as a whole.

By considering these aspects, it becomes clear that (IPMA, 2015a) and (PMI, 2017a) place a stronger emphasis on transparency and accountability compared to (OGC, 2011) and (ISO, 2022b). They recognize the importance of transparent communication,

accountability in decision-making, and the positive impact of corporate social responsibility. These standards provide guidance and principles that promote transparency and accountability throughout the portfolio management process.

While (OGC, 2011) acknowledges the benefits of adopting a portfolio management approach, it does not provide specific guidance or mechanisms for achieving transparency and accountability. Similarly, (ISO, 2022b) does not explicitly address transparency as a principle and provides limited information on accountability, especially in relation to ecological aspects.

Overall, the stronger emphasis on transparency and accountability in (IPMA, 2015a) and (PMI, 2017a) enhances the ethical foundation and professionalism of portfolio management practices. Their recognition of these principles as fundamental aspects of portfolio management contributes to more effective decision-making, stakeholder engagement, and positive social impact.

3.6. Stakeholder orientation

According to (ISO, 2022b), stakeholders, including those directly involved in the organization and projects, should be managed and engaged. The standard acknowledges the importance of identifying other stakeholders as well. However, it does not provide detailed guidance on how to effectively manage and engage stakeholders.

In contrast, (OGC, 2011) dedicates a section specifically to stakeholder engagement, emphasizing the objective of ensuring that stakeholders' needs are identified by proactively involving them in the design and development of projects. This highlights the importance of stakeholder input and participation in shaping project outcomes.

Similarly, (PMI, 2017a) recognizes stakeholder engagement as a strategic activity that enables values such as transparency, responsibility, accountability, and fairness. The standard highlights that external stakeholders expect their interests and concerns to be adequately considered in the implementation of the portfolio. Moreover, (PMI, 2017a) acknowledges the potential sensitivity of portfolio information and the need for precautions to limit access to certain stakeholders who may negatively impact an organization's performance of strategic objectives. This demonstrates a strong awareness of the need to protect sensitive information while engaging stakeholders effectively.

In the case of (IPMA, 2015a), stakeholder management is reserved as an element of competence within the practice area. The standard defines stakeholders as all individuals, groups, or organizations participating in, affecting, being affected by, or interested in the execution or the result of the portfolio. This broad definition emphasizes the inclusive nature of stakeholder management, recognizing the significance of involving all relevant parties in the portfolio management process.

Considering these aspects, it is evident that (OGC, 2011), (PMI, 2017a), and (IPMA, 2015a) prioritize stakeholder management and engagement in their respective standards. These standards emphasize the proactive involvement of stakeholders, the consideration of their needs and concerns, and the recognition of the potential impact stakeholders can have on the portfolio's success.

While (ISO, 2022b) acknowledges the importance of managing and engaging stakeholders, it provides less specific guidance on how to achieve effective stakeholder orientation compared to the other standards. (OGC, 2011), (PMI, 2017a), and (IPMA, 2015a) dedicate more attention to stakeholder engagement, ensuring their voices are heard and their interests are taken into account throughout the portfolio management process.

Overall, the stronger emphasis on stakeholder management and engagement in (OGC, 2011), (PMI, 2017a), and (IPMA, 2015a) enhances the collaborative nature of portfolio

management practices. By involving stakeholders, considering their needs, and protecting sensitive information, these standards promote more inclusive decision-making, improved project outcomes, and stronger relationships with stakeholders.

3.7. Reducing risks

(ISO, 2022b) briefly mentions risk management based on the risks policy defined by the portfolio. However, it does not explicitly address social and environmental risks or their reduction. The lack of explicit mention suggests that these standards may not provide specific guidance on identifying and managing social and environmental risks within the portfolio management context.

Similarly, (OGC, 2011) does not explicitly mention social and environmental risks in its dedicated section on risk management. This further supports the observation that the standard may not place significant emphasis on addressing these types of risks in the portfolio management process.

On the other hand, (PMI, 2017a) recognizes the importance of environmental and human factors as risk factors. The standard explicitly includes sustainability as one of the risk management principles, highlighting the need to consider environmental aspects in risk assessment and mitigation. The emphasis on transparency and integrity in risk management principles aligns with the goal of addressing social and environmental risks.

Additionally, (PMI, 2017a) acknowledges that external factors, including environmental issues, can impact risks at the portfolio level. While these factors may have a lesser direct influence compared to the program or project levels, the standard recognizes their potential relevance to overall risk management.

However, the standard's mention of risk aversion and the potential resistance to change does not explicitly consider social or environmental risks. It is worth noting that addressing social or environmental risks often involves significant changes and adaptations, which may conflict with risk-averse approaches.

In the case of (IPMA, 2015a), the inclusion of 'Risk and opportunity' as a practice element of competence suggests the importance of considering risks and opportunities in portfolio management. However, like the other standards, it does not specifically refer to social or environmental risks.

Overall, the standards (ISO, 2022b), (OGC, 2011), (PMI, 2017a) and (IPMA, 2015a) differ in their treatment of social and environmental risks in the context of portfolio management. While (PMI, 2017a) explicitly recognizes environmental factors and sustainability as integral to risk management principles, the other standards do not provide explicit guidance on addressing social and environmental risks in the portfolio management process.

To further enhance portfolio management practices, it is advisable for standards to explicitly incorporate guidelines and considerations for identifying, assessing, and mitigating social and environmental risks. By integrating these aspects into the standards, organizations can better manage risks that arise from social and environmental factors, contributing to more comprehensive and sustainable portfolio management practices.

Table 2 Principles of sustainability covered in each standard

	Management of Portfolios (MoP) (OGC, 2011)	ISO 21.504:2022 Project, programme and portfolio management – Guidance on portfolio management (ISO, 2022b)	Individual Competence Baseline (ICB) for Portfolio Management (IPMA, 2015a)	The Standard for Portfolio Management (fourth edition) (PMI, 2017a)
Economic, environmental and social sustainability				
Short-term and long-term orientation				
Local and global orientation				
Personal values and ethics				
Transparency and accountability				
Stakeholder orientation				
Reducing risks				
Eliminating wastes				
Consuming income, not capital				

not mentioned

appears as a minor consideration

specifically discussed and examples are provided

considered very relevant

receive a quantitative treatment

3.8. Eliminating wastes

Although none of the studied standards explicitly refer to waste elimination, several sections within the standards indirectly promote the efficient use of resources, which aligns with the principle of waste elimination.

Starting with (ISO, 2022b), the standard explains how portfolio managers can optimize resources through various activities such as balancing supply and demand, de-scoping, cancelling, or rescheduling. While waste elimination is not explicitly mentioned, the focus on optimizing resources indicates a desire to avoid unnecessary waste and inefficiency.

Similarly, (OGC, 2011) identifies more efficient resource utilization as one of the benefits of portfolio management. The standard emphasizes the importance of understanding the demand and supply of resources, matching them effectively, and closing any gaps. Although waste elimination is not directly addressed, the emphasis on efficient resource management implies a desire to minimize waste.

In (PMI, 2017a), waste elimination is not explicitly mentioned, but the standard emphasizes that organizations cannot afford to waste valuable resources. By linking portfolio management to strategy, the standard aims to balance resource usage and maximize the value delivered through portfolio components. This focus on maximizing value suggests a commitment to minimizing waste and optimizing resource utilization.

Additionally, (IPMA, 2015a) includes the practice elements of competence called 'Resources' and 'Procurement,' which are directly related to the acquisition and use of resources in portfolio management. The standard highlights the importance of defining a strategy for acquiring and using resources to optimize portfolio performance. Although waste elimination is not explicitly mentioned, the emphasis on optimizing resource utilization implies a desire to minimize waste and inefficiency.

Furthermore, (IPMA, 2015a) suggests that disposal, inventory management, and other relevant functions are often considered as indirect procurement. This recognition indirectly acknowledges the importance of properly managing resources throughout their lifecycle, including their responsible disposal to minimize waste.

While waste elimination is not explicitly mentioned in the studied standards, the principles and practices outlined in (ISO, 2022b), (OGC, 2011), (PMI, 2017a), and (IPMA, 2015a) demonstrate a commitment to optimizing resource utilization and avoiding waste. By fostering efficient resource management, these standards indirectly promote the principle of waste elimination in portfolio management.

To further enhance waste elimination practices, it would be beneficial for the standards to explicitly incorporate guidelines and considerations for identifying and reducing waste within portfolio management processes. By integrating waste reduction principles, organizations can minimize inefficiencies, enhance sustainability, and optimize resource utilization, ultimately improving the overall performance and value delivered through portfolio management.

3.9. Consuming income, not capital

According to Silvius et al. (2017), sustainable project management encompasses the consideration of economic, social, and environmental capital, aiming to preserve the organization's capacity for future production. Although none of the studied standards explicitly mention the principle of consuming income, not capital, they emphasize the importance of resource capacity and capability, which aligns with this principle.

Both (OGC, 2011) and (ISO, 2022b) highlight the responsibility of the portfolio manager to ensure that sufficient resource capacity and capability are available to effectively manage the portfolio. By considering resource capacity, these standards indirectly address the concept of consuming income rather than depleting capital. The focus on

resource capacity implies a need to maintain a sustainable level of resources to support ongoing operations and future initiatives.

In line with this, (PMI, 2017a) explains how various analyses, such as supply and demand, are conducted to understand the capacity and capability of human, financial, assets, and intellectual capital. This understanding is crucial for the selection, funding, and execution of portfolio components. While the standards do not explicitly mention the exhaustion of people's ability to produce or generate work, they emphasize the need to assess and align resources effectively, which indirectly supports the principle of consuming income, not capital.

Furthermore, (IPMA, 2015a) contributes to resource management by identifying the quantity and skills of required and available resources for portfolio components. The standard also emphasizes the development of plans to address identified resource constraints and skills gaps. Although the standards do not explicitly address physical or mental exhaustion, the focus on resource planning and addressing constraints implies a recognition of the importance of preserving resource capacity and avoiding excessive depletion.

While the standards do not explicitly state that organizations must not exhaust people's ability to produce or generate work, their emphasis on resource capacity and capability highlights the significance of responsible resource management. By considering resource capacity and avoiding excessive depletion, organizations can maintain a sustainable approach that aligns with the principle of consuming income, not capital.

To further strengthen this principle within portfolio management standards, it would be valuable for future iterations of the standards to explicitly address the need to balance resource utilization to prevent the exhaustion of individuals and the depletion of organizational capital. By integrating guidelines and considerations for sustainable resource management, the standards can promote long-term organizational viability and success.

5. Discussion

The analysis of portfolio management standards indicates that sustainability as well as its principles or dimensions appear incipiently. Not all the standards reviewed recognize the importance of sustainability in project portfolio management. Thereby, some portfolio management standards (OGC, 2011; ISO, 2022b) fail to address sustainability while others (IPMA, 2015a; PMI, 2017a), with more recent editions, have widely integrated sustainability.

Due to the nature of portfolio management, some of the dimensions of sustainability are addressed in the studied standards. Portfolio management implies a long-term orientation, longer than project and programme management. Similarly, engagement and management of stakeholders and risk management are important activities fully developed in standards that address on one side to involve stakeholders in a proactive manner in the design and development of projects and programmes and on the other hand to identify and reduce or remove potential risks. In the same way, the studied standards justify that a portfolio management approach enhances transparency and accountability of an organisation, including the environmental and social effects of those actions carried out by the organisation. Thus, the implementation of portfolio management in an upper level could improve naturally the application of these sustainable principles in project management activities. On the other hand, the four standards cover the principle of personal values and ethics with different intensity, and this principle appears as fundamental by being part of governance, strategy and criteria to select and align portfolio components. Moreover, sustainability is considered one of these values.

Otherwise, there is not explicit reference in standards to a sustainable principle as consuming income, not capital from a social or environmental approach, although it could be related to capacity and capability management, present in all the standards.

Finally, sustainable principles such as local and global orientation or eliminating wastes are not developed by the selected portfolio management standards.

Based on the review of these standards, it is found that, even sometimes in an implicit way, they provide guidance on the aspects and principles related to sustainability in project portfolio management. They emphasize the need to consider the environmental and social impacts of projects, as well as their economic benefits. They also stress the importance of stakeholder engagement and communication in ensuring that sustainability is integrated into all aspects of project portfolio management.

The analysis and comparison of these standards provide valuable insights into the best practices for integrating sustainability in project portfolio management. The results provide valuable insights into the extent to which these standards incorporate and promote sustainable practices across various dimensions, enabling researchers and practitioners to make informed decisions regarding the selection and implementation of standards for sustainability-related initiatives. By following these standards, organizations can ensure that their projects are not only economically viable but also environmentally and socially sustainable. This, in turn, can help organizations to achieve their strategic goals while also contributing to a more sustainable future for all.

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Comunicación alineada con los Objetivos de Desarrollo Sostenible

