

## ANALYSIS OF THE USE OF SUSTAINABLE MANAGEMENT IN GRAND CHALLENGE PROJECTS

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**Purpose:** analysis of the potential for introducing sustainable project management into grand challenge projects, using IT and R&D projects as examples.

**Design/methodology/approach:** qualitative research in a case study research strategy was applied. Two types of projects were studied: IT projects (here a single holistic case study was used, where the data collection technique was individual interviews), R&D projects (here a multiple embedded case study was used, where the data collection technique was diada interviews).

**Findings:** there is considerable potential in grand challenge projects to implement sustainable project management practices. However, there is currently a lack of consistency, standardisation and integration with the strategic objectives of the organisation, which limits the effectiveness of the activities. There is a need to structure the approach, adapt the practices to the specifics of the projects and promote education and awareness.

**Research limitations/implications:** small number of cases, specificity of grand challenge projects, subjective selection of cases, interpretation of data, limitations of data collection technique.

**Practical implications:** identifying recommendations for organisations implementing grand challenge projects: standardising approaches to sustainable project management, educating and raising awareness of the importance of sustainable project management, adapting processes to the specifics of projects, integrating with the organisation's strategic objectives, monitoring and reporting progress, working with partners.

**Social implications:** the direction of change in sustainable project management is now being set by individuals with the knowledge and skills to deliver projects using sustainable methods. Applying the recommendations identified from the research should allow organisations to grow economically without negative social and environmental impacts.

**Originality/value:** linking the theme of sustainable project management to the theme of project management in grand challenge projects.

**Keywords:** sustainable project management, grand challenge projects, IT projects, R&D projects.

**Category of the paper:** research paper.

# 1. Introduction

## 1.1. Explaining the importance of sustainable project management (SPM)

One of the most widely used definitions of sustainability is that sustainability is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Komisja Brundtland, 1987). In 2008, the World Congress of the International Project Management Association (IPMA) highlighted the need for project managers to take responsibility for sustainability. At the time, sustainability was still in its infancy. It was beginning to be recognised that the Earth was facing serious threats, so sustainability was necessary to ward them off. It was concluded that sustainable development required a concerted effort to build a sustainable and disaster-resistant future for the whole world (Silvius et al., 2012). In 2009, it was noted that sustainability was not being taken into account in programmes and projects, highlighted the gap that had been created and that this gap needed to be filled (Gareis, Huemann, Martinuzzi, 2013). Authors Silvius and Tharp in 2013 observed that there has been an increased interest and implementation of sustainability in projects. They concluded that the sustainability trend is interesting, but that it comes with challenges that need to be addressed. These challenges bring with them the need to accurately define the prevailing concepts in sustainability (Silvius, Tharp, 2013). Over the past decade, the definition of sustainability has changed and many organisations have had to re-evaluate the activities they undertake in order to meet the challenges and adopt appropriate practices to benefit society and the environment. It has become necessary to make changes in project management to meet the demands of contemporary management strategy (Carboni et al., 2021).

Sustainability comprises three pillars: economic, environmental, social. The intention of sustainable development is that these pillars are interlinked and influence each other. Created in 2015, the 2030 Agenda, UN member states adopted a global action plan with 17 Sustainable Development Goals (Figure 1).



**Figure 1.** Sustainable development goals.

Source: THE 17 GOALS | Sustainable Development (access: December 2024).

Organisations need to make changes in order to achieve sustainability, and change is realised through projects. The important role of projects in the transition to sustainability for companies, organisations and societies calls for a rethinking of how projects are planned, organised, implemented, managed. As a result, the concept of sustainable project management (SPM) has gained much recognition among researchers and practitioners and is being included in an increasing number of studies (Barendsen et al., 2021). Projects generate 30 per cent of global GDP, there is a need to rethink the impact, process efficiency and long-term results delivered by projects (Bednarczyk, Leśniowski, Palarczyk, 2021). Projects are closely linked to sustainable management, but the topic of practical implementation of sustainable management is only just being considered by organisations. The PRiSM™ methodology is prominent (Carboni et al., 2021). Ongoing global environmental and social changes are driving new directions in project management and the running of organisations. A sustainable management approach combines efficiency, productivity, environmental concerns and social and economic aspects. The directions of change in sustainable project management are now being set by individuals with the knowledge and skills to deliver projects using sustainable methods. The sustainable project management model used should allow organisations to grow economically without negative social and environmental impacts.

## **1.2. Introduction to the concept of Grand Challenge (GC) projects**

Grand Challenges in the literature are defined as "global problems that can be solved through a coordinated and concerted effort" (George et al., 2016) or "specific critical barriers that, if addressed, will help solve an important social problem with a high probability of global impact through widespread implementation" (George et al., 2016; Grand Challenges Canada, 2011). Grand Challenges include the world's most pressing issues, such as poverty, social protection, global pandemics, sustainability transformation, migration, human rights, urban planning, affordable housing, precarious work and livelihoods, food security and effective states (Etzion et al., 2017; Fukuda-Parr, Muchhala, 2020; Ika et al., 2020; Howard-Grenville, 2021; George et al., 2024). Addressing grand challenges typically involves intervening in both current situations and uncertain futures (Whyte, Mottee, 2022), through 'grand challenge projects' (Ika Munro, 2022; Locatelli et al., 2023). Driven by the impulse to 'save the world from the harmful threats posed by grand challenges' (Ika, Saint-Macary, 2023), policy makers are often drawn to such projects, which may be the logical next step after major policy initiatives (Sanderson, Winch, 2017). In general, grand challenge projects can be interpreted as time- and financially-limited interventions, often implemented as part of a portfolio of national development plans or programmes aligned with sustainable development. Additionally, they have an additional characteristic: the concept of a 'mega-project' contrasts with the typical definition of a project as a temporary endeavour undertaken to deliver a unique product, service or outcome. A 'grand challenge project' cannot be expected to fully solve a particular problem once and for all, as it tends to generate its own set of challenges due to its high level of

complexity and uncertainty and its focus on the long term, as well as the social, political and ethical struggles involved (see Winch et al., 2023 and Ika, Munro, 2024). In summary, grand challenge projects are characterised by: complexity and multidimensionality, long-term goals and global reach, high risk and uncertainty. In grand challenge projects, there is often a lack of standardised solutions, a need for cross-sectoral and/or international collaboration, a need to involve different stakeholders.

### **1.3. Definition of the main research problem and the aim of the analysis**

Today, the topic of sustainability is no longer just a trend, but has become a key part of our reality. Social inequalities, climate change, which are worsening, contribute to the commitment of businesses to sustainability. It requires a concerted effort by businesses around the world in building a sustainable and resilient future for all people and the planet. For sustainability to be achieved, three key elements need to be coherent: environmental, social and economic. These are interconnected and are all vitally important to achieving the wellbeing of individuals and society as a whole. Sustainable project management is an increasingly popular approach in various industries, both nationally and internationally (Carboni et al., 2021).

The aim of this article is to analyse the potential for introducing sustainable project management (SPM) into grand challenge (GC) projects. For the objective thus formulated, the following research questions were posed:

- RQ1: What is the understanding of sustainability and sustainable project management among grand challenge contractors?
- RQ2: Do differences in the type of activities of grand challenge organisations (e.g. IT, R&D) affect the implementation of sustainable project management?
- RQ3: To what extent are aspects of sustainable project management included in grand challenge projects and what is staff awareness of this?

Qualitative research was carried out to achieve the objective. Two types of projects were studied: IT projects (here a single holistic case study was used, where the data collection technique was individual interviews), R&D projects (here a multiple embedded case study was used, where the data collection technique was diada interviews). The case studies were shaped to meet the characteristics of grand challenge projects, at the same time IT and R&D projects have many consistent characteristics, including one of the most important - the uncertainty of achieving the planned results.

## 2. Methodology

As mentioned in Chapter 1, two case studies of different types were carried out for projects representing the grand challenge project type. The first case study concerned IT projects and the second case study concerned R&D projects. Table 1 presents an assessment of the organisations studied, and in particular the projects they carried out, in terms of the characteristics of grand challenge projects.

**Table 1.**

*Checking whether the IT and R&D projects are grand challenge projects*

	<b>Characteristic - complexity and multidimensionality</b>	<b>Characteristic - need for cross-sectoral and/or international cooperation</b>	<b>Characteristic - need to involve different stakeholders</b>
Single holistic case study (IT projects)	✓	✓	✓
Multiple embedded case studies (R&D projects)	✓	✓	✓

Source: own work.

IT companies are important in the modern economy and thus have a major impact on it and on the environment or society. Nowadays, by implementing environmentally and socially friendly IT practices, it is possible to achieve sustainability goals. The concept of sustainability in IT is an approach that takes into account its impact on the environment, society and the economy. The concept of sustainability and sustainable project management in the IT industry is emerging in the literature (Clinning, Marnewick, 2017), although at a slow pace, which may raise questions about the state of sustainability in the IT industry, in projects implemented in the industry and what actions are being taken in this direction.

R&D projects can also be managed sustainably (Schimpf, Binzer, 2012), and this approach is becoming increasingly popular, especially in the context of growing environmental and social awareness. Sustainable management in R&D projects means taking into account economic, environmental and social aspects at every stage of the project, from planning to implementation. For a more in-depth justification of the assessment results from Table 1, see subsections 3.1 and 3.2 of this article.

### 2.1. Single holistic case study - for IT projects

The data in this single holistic case study was collected through semi-structured interviews and analysis of internal documentation. The interviews were conducted online and were recorded. Company X, the unit of analysis, is a market-leading company providing services and technology solutions to investment and pension funds, insurance companies and banks, providing the following services: transfer agent, fund accounting and valuation, corporate accounting, IT solutions and managed services. Interviews were conducted to gather

information on the feasibility and benefits of applying sustainable project management to an IT company:

- Interview with the head of the AML department<sup>1</sup> at company X,
- two interviews with managers of various IT projects that produce software at Company X,
- interview with a director at company X.

## 2.2. Multiple embedded case studies - for R&D projects

The characteristics of the multiple holistic case study are presented in Table 2. The interviews conducted in this case study were diada type interviews, six pairs of respondents/respondents were interviewed: manager + team member. The interviews were conducted by a moderator using an instant messenger. The case studies were selected to ensure literal and theoretical replication. According to recommendations formulated by R.K. Yin, each case study should be carefully selected to assume similar outcomes (literal replication) and different outcomes but for predicted reasons (theoretical replication) (Yin, 2014). Literal replication means selecting two (or more) cases because of the predicted similarity of their outcomes. Theoretical replication is the selection of two (or more) cases due to their expected different outcomes for predicted reasons. To ensure theoretical replication, large organisations were selected for the multiple immersion case study (the number of people employed was taken as a criterion for allocating projects to this group). Public sector organisations (universities) were selected to ensure theoretical replication.

**Table 2.**

*Characteristics of a multiple holistic case study - R&D projects*

Cases examined	Description of a multiple case study - R&D projects			
	Interview	Implementing organisation	Company size	Industry
Case 1	Analysis department project team in a large organisation	Research and development projects	More than 50 people	Telecommunications
Case 2	Research project team at a public university	Research and development projects	More than 50 people	College
Case 3	A project team specialising in the management of projects from EU funds	Research and development projects	Micro, up to 9 people	Project management, consulting
Case 4	Research team in a large marketing corporation	Mainly research projects, less frequently R&D projects	Corporation, over 50 people	Marketing, consulting
Case 5	A team of academics dedicated to a large ecology and the environment	Mainly research projects, less frequently R&D projects	Over 50 persons	College
Case 6	Team at a market research company	Mainly research projects, less frequently R&D projects	10-49 persons	Market research, marketing

Source: own work.

<sup>1</sup> AML is anti-money laundering and counter-terrorist financing.

### **2.3. Type of data analysis adopted in the case studies carried out**

In qualitative case study type research, different types of data analysis can be used to allow in-depth interpretation of the information collected. The case studies conducted used thematic analysis of the data. Thematic analysis involves identifying and interpreting patterns (themes) in the data. The researcher codes the data to create thematic categories, which are then analysed to understand the key themes in the study. It is useful when the aim is to understand the main themes or narratives present in the case study.

## **3. Feasibility of using SPM in GC projects**

### **3.1. Results for single holistic case study - for IT projects**

#### *3.1.1. Description of results (IT projects)*

Company X has joined the UN Global Compact Network Poland and undertakes sustainable development initiatives that have an impact on the environment. Company X's group of companies is convinced that development is always based on creating a responsible business guided by best practices that accompany daily work, which are reflected in ESG principles. Company X's ESG programme is implemented through designated principles relating to the environment, social responsibility, corporate governance.

The company undertakes initiatives to promote greater environmental responsibility. In the X corporate group, a precautionary approach to environmental problems is actively encouraged, initiatives are taken to promote greater environmental responsibility and the development and dissemination of environmentally friendly technologies is supported. The company is committed to environmental protection and dedicates resources to planting trees, thus being able to meet its goal of reducing CO<sub>2</sub> emissions. In order to achieve its goal, the company participates in environmental initiatives and projects carried out by volunteers to plant trees throughout Poland and to support all initiatives that restore tree stands in Polish forests. The company also implements an initiative - 'Green office', with waste sorting, use of recycled paper, elimination of plastics, reduction of printing, reuse of office materials, energy saving, efficient use of office equipment and going paperless implemented in each office. Company X was certified as a Green Office by the Foundation for Environmental Education in 2021.

Company X creates environmentally friendly technology by designing solutions and technologies to reduce paper consumption. One of the pioneering solutions is the Durable Medium platform, which allows financial institutions to transmit documents to their customers using a durable medium.

For Company X, social responsibility is important, attention is paid to caring for the local community and employees. It is important for employees to enjoy a healthy working environment and to function in a friendly environment. Objectives related to building social responsibility are: support for employee initiatives, charitable activities, equal opportunities and diversity. Company X's strategy in the area of social responsibility focuses on ensuring employee satisfaction through employee development support, engaging employees in training and work culture. The company seeks to contribute to social change by supporting NGOs working to combat poverty, the drive for equal opportunities in education and digital exclusion. Company X's concept of diversity management is based on 3 concepts - equal opportunities, diversity and the inclusion of all employees in joint activities, which is reflected in the company's employment structure. Particular attention is paid to quotas. Company X is one of the few companies in the financial market to boast almost 50% female representation in the company and an equally high percentage of women in management positions.

At company X, values are put into practice through transparent policies and defined procedures. Company X aims to achieve its corporate governance objectives through transparent governance policies, corporate governance principles bring together the company's strategy and values, as well as a set of programmes, policies and procedures that are formally defined within the company to help employees and business partners understand how to operate and fulfil their role in the wider community. It is important to respect the practices in place, shareholder rights, as well as accountability and to provide a broader framework for transparency in operations, including a whistleblower protection programme in place.

Company X is committed to the highest standards of conduct and ethics. In line with this commitment, an external company has been appointed to provide employees with a confidential whistleblowing service. If a Company X employee has serious grounds for irregularities, illegal, dishonest or prohibited activities occurring in the workplace, they can report them in a secure manner. Reports will be taken seriously and addressed appropriately for consideration of a potential investigation. An essential criterion for whistleblowing is that the whistleblower is acting in good faith, i.e. based on facts and other objective considerations, as opposed to personal considerations, i.e. a sense of injustice, a desire for retaliation, or vested interests of the individual. The employee, either through the hotline or by filling in the relevant online application, can take advantage of the possibility to report violations. According to the UN Protect, Respect and Remedy framework, companies must respect human rights and provide remedies if their actions have caused or contributed to a negative impact on human rights. Complaint mechanisms at the operational level, for those potentially affected by a company's activities, are recommended as an effective process through which companies can enable remediation. Company X is a technology company implementing company-wide sustainability initiatives. It also pursues sustainable project management goals. There is information within the company about the need to save energy and resources. In contrast, Company X does not use methodologies dedicated to sustainable management in



software production. The methodology used in software development is Scrum. Environmental, social, economic factors are not taken into account in projects.

AML is anti-money laundering and anti-terrorist financing. Company X creates such solutions and sells and uses them itself for background checks because it has such services for its clients. These activities are the implementation of Sustainable Development Goal.

### **3.2. Results for multiple embedded case study - for R&D projects**

#### *3.2.1. Description of results (R&D projects)*

##### **Case 1**

The project team undertakes projects almost exclusively for an internal client, mainly for the board of directors and others responsible for key business decisions within the organisation. The main philosophy guiding the team is to use data effectively to support business decisions, while minimising cost impact and focusing on the time and scope of projects. The term 'sustainable management' is a foreign concept to the team leader, but it seems that despite this, this type of management is to some extent unconsciously applied to his team. The term sustainable project management is spontaneously associated by the manager with striking a balance in terms of fulfilling specific project goals, rather than doing something for the environment or future generations. What stands out in terms of sustainability is the theme of data democratisation understood as dissemination, making knowledge available to others - mainly other people in the organisation, but also sharing experiences and insights with a wider audience. For example, during competitions or webinars. The ecological and economic aspect - other sustainability issues are mainly relevant to project themes - there are issues such as the sharing economy (of a fleet of company cars or office space), which can be a project theme, mainly because of its added benefits in terms of cost reduction. This, however, applies to selected projects.

##### **Case 2**

The team usually implements grant projects, often with funding from the European Union or local authorities. Therefore, the way in which projects are managed is very often dictated by criteria imposed directly by the institution. On the one hand, they point to the high value of introducing elements of sustainable management (mainly environmental and social aspects), while on the other hand they recognise the difficulty in perceiving this type of action associated with the imposition of such requirements by the beneficiary. Rigid requirements often make people react with reactivity, resistance to change. Those responsible for implementing the project must therefore use the language of benefits, most often economic, to convince others of the type of sustainability solutions. In addition, the snowball effect was discussed, where it is important not only to convince someone to take pro-environmental action, but to get that person to become a promoter of change themselves and introduce this type of action in their teams or projects.

### Case 3

The surveyed team mainly undertakes projects implemented with European Union funds. It acts as an external provider, as direct support to the grant beneficiary. In the case of sustainable project management, this is not only a requirement of the beneficiaries, but applications that have more of this are also considered favourably. Actually, all aspects of sustainability are relevant, although the ecological and social dimensions are somewhat more so. The ecological aspect is strongly inscribed in EU projects - here, the beneficiary must prove not only the absence of a negative effect on the environment, but that this effect will be positive. As far as the social aspect is concerned, the greatest emphasis is placed on both excluded groups (e.g. the disabled, poorer areas) and an increase in the quality of life for society in general (e.g. better infrastructure, easier access to services). Despite the fact that these are top-down requirements, the manager points out how important it is that certain aspects are not just ticking off points from a contract, but also have a real impact on someone's life. On the other hand, the thought of sustainable management of projects that do not have a global scale causes a crush and a bitter taste of success in the context of ESG issues worldwide.

### Case 4

This team mainly deals with research projects for corporate clients and research and development projects for the internal client (for management). Success within the organisation is mainly defined as the satisfaction of the target customer, often assessed on scales (e.g. NPS - net promoter score). For the team, on the other hand, what is important is the use of the research results themselves, i.e. translating them into business decisions and their positive long-term effect. It is this exerting a positive effect on the target customer that is associated more with the sustainable management of the project itself. Furthermore, when the team defines success through the lens of sustainability aspects, it is primarily the social issue that stands out - whether the project has changed the customer's perception of society/consumer in a way that can positively influence the company's actions towards people. Sustainable project management itself is generally not used in the team. The area of sustainability itself is not something that comes to the fore in projects, especially commercial ones. Sustainability elements appear almost exclusively in social projects, or where the project theme itself is closely related to ESG. The lack of emphasis on sustainable management is due, according to the team, in part to the corporate (internal client) emphasis on profit and long-term relationships with external clients, but it is also due to low knowledge of the subject and therefore low interest in this aspect of the work. Sustainability criteria are closely related to profitability for corporations. If they are not cost-effective, it is still difficult to implement them. They are linked to so-called 'greenwashing', i.e. when companies communicate that they are pursuing sustainability goals in order to gain a positive image, rather than because their action actually has a positive impact on society and the environment.

**Case 5**

The team is currently involved in several projects in the field of nature conservation and the promotion of ecological knowledge as part of its research work at a state university. They do most of their research with grants and support from EU and local government funds. They define the success of a project mainly by the fulfilment of all requirements set by the benefactors and the correct closure of the project. The second important criterion is the number of scientific publications or patents. In addition to these, social aspects such as the establishment of relationships, teamwork and gaining experience are also important, although not a priority. Despite the work being closely related to sustainability, it is surprisingly not part of project management. Team members try to smuggle in ecological elements if that will make for more efficient management of funds, but it is not a very important issue in terms of running the process itself. The thing that is related to this is that the very concern for sustainable management can have negative consequences for project team members, for example imposing additional responsibilities, such as accounting for savings made. Even environmentalists themselves, point out that institutions impose their requirements in the context of sustainability, which restricts society. Thus causing strong resistance and negative associations with ecology itself. There is also a sense of discouragement and negative perception of such guidelines by the team members themselves.

**Case 6**

The team is involved in market research for external clients, primarily business clients, of various industries. The team's definition of success is, above all, client satisfaction and meeting his/her expectations. In addition, criteria such as whether the project was carried out efficiently or smoothly, and whether the methodology was properly matched to the client's business objectives and goals, as well as a criterion such as whether the results of the research would be translated into concrete business decisions, were mentioned. The team had no exposure to sustainable project management methodologies, and sustainability itself is not an important part of project work, nor is it an important part of assessing project success. The issue of sustainability mainly concerns occasional activities in the spirit of ecology, smuggled in from the bottom up by team members or the team leader. As they emphasise, such activities are not a priority in the research process. It was hard to spontaneously list criteria that have to do with sustainable project management or sustainability itself, indicating that the team may pay little attention to this type of activity. After clearly targeting various aspects of sustainability, the team points primarily to economic issues - clients are more likely to choose a sustainable company if it pays off for them or leads to reasonable savings, without compromising the quality of the solutions provided.

**3.3. Knowledge synthesis - applicability of SPM to GC projects**

This section of the article aims to provide synthetic conclusions on the research conducted and answers to the research questions formulated (Table 3-5).

**Table 3.**

*Response to RQ1: What is the understanding of sustainability and sustainable project management among grand challenge contractors?*

IT projects	R&D projects
From the interviews, it appears that sustainability goals are implemented on a company-wide level (there is awareness of them). In IT projects, on the other hand, where software is produced, no sustainable project management methodologies or any sustainability elements are implemented.	The concept of running projects using the sustainable management method is unfamiliar to the majority of respondents. Sustainable project management is understood differently depending on the organisation. For some, it is a new concept, while other institutions, especially those financed by public or EU funds, have specific sustainability practices already in place.
In the company's objectives, sustainability goals are included in the strategy and the company is committed to the environment, the community and the economy. However, the principles of sustainable project management, i.e. in planning, are not implemented. The project becomes a separate entity from the company's overall sustainability mindset.	Social, environmental and economic aspects, if already included in projects, are rather in a less structured way - in a natural way, even if they are not formally classified as elements of sustainable management.

Source: own work.

**Table 4.**

*Response to RQ2: Do differences in the type of activities of grand challenge organisations (e.g. IT, R&D) affect the implementation of sustainable project management?*

IT projects	R&D projects
The company is involved in various scopes of IT activities. In some scopes it meets the principles of sustainable management, e.g. infrastructure management, development and maintenance of network infrastructure, data protection solutions and services, and in other scopes the objectives of sustainable management are not met, e.g. software development.	R&D projects in the public and academic sectors often have a stronger emphasis on sustainable practices due to external and grant requirements. In the sector private, especially in corporations, sustainable management may be less visible, unless it is directly related to the company's mission or market perception.
The company provides an ESG report, acts in compliance, i.e. in accordance with certain established standards, ensures compliance with the law and non-legal standards.	The use of the results of R&D projects and their impact on strategic decisions is crucial, but may be constrained by imposed timeframes and budgets, hence may there is a reluctance to introduce elements of sustainable development, can often carry the risk of impacting on project time and budget. Sometimes there are seen explicitly as an additional, and not necessarily necessary, risk.

Source: own work.

**Table 5.**

*Response to RQ3: To what extent are aspects of sustainable project management included in grand challenge projects and what is staff awareness of this?*

IT projects	R&D projects
The company undertakes a lot of activities in the area of AML, including the fight against financial crime and corruption. As a result, the company boasts ethical activities and a transparent way of operating, which is the basis of corporate social responsibility (CRS), also included in the P5 ontology in the ethical behaviour category as anti-corruption.	Sustainable management practices are more often applied to projects that naturally involve environmental or social aspects. In the case of corporate or purely commercial projects, elements of sustainable development may be less visible.
Managing financial risks, including money laundering risks, is an integral part of sustainability management. A company that manages risk effectively is better equipped to meet long-term challenges and is better able to adapt to changing market conditions.	Project managers often play a key role in promoting practices sustainable management, although their understanding and commitment to these issues may vary.
AML activities can lead to better management of a company's resources through the detection and elimination of fraud and financial irregularities, which can serve to meet standards of equal opportunity and dignity, diversity, fairness and inclusiveness. Sustainable resource management is an important element of sustainable development. Providing training for employees on AML is in line with the principles of labour practices and decent work as indicated in the P5 ontology. Training on AML can perhaps be part of an educational programme on sustainable development.	

Source: own work.

## 4. Conclusions

Based on the analysis of the literature and the results of the empirical study, the following conclusions are drawn on the use of sustainable project management in grand challenge projects:

1. Low awareness of sustainable management in projects: in both IT and R&D, sustainable project management is not a common practice. IT projects lack methodologies to support sustainability, while in R&D projects the idea is often alien or poorly understood.
2. Divergence in the organisation's approach: R&D projects vary considerably in their implementation of sustainability principles, depending on the source of funding and the profile of the institution. Organisations benefiting from public or EU funding show more awareness and apply a structured approach to sustainable practices. In IT, there are no such differences - sustainability goals are a more consistent part of corporate strategy, but are not applied in practice at project level.

3. Lack of formal structures and tools: in both types of projects (IT and R&D), social, environmental and economic aspects are addressed in a fragmented or intuitive way, rather than being an integrated part of formal project management methodologies.
4. Limitations due to low level of standardisation: the lack of a clear and universal understanding of sustainable project management leads to differences in the interpretation and implementation of practices in R&D projects. In IT, on the other hand, even intuitive project-level measures are not applied.
5. Impact on project efficiency: IT and R&D projects have the potential to support sustainability, but in practice they operate as separate entities, which reduces their coherence with organisational goals and makes it difficult to achieve maximum environmental, social and economic benefits.
6. The role of project managers: project managers play an important role in promoting sustainable management practices. Their involvement and understanding of the issues are key to successful implementation.
7. There are differences in the sectors in which grand challenge projects are implemented: the public and academic sectors often show more commitment to sustainability due to external and grant requirements. The private sector, especially corporations, may be more focused on financial performance and short-term goals. The reasons for the differences may vary:
  - a) external requirements - public and academic institutions are often subject to more stringent sustainability regulations and requirements,
  - b) funding: projects in the public and academic sectors are often funded by grants that require certain sustainability criteria to be met,
  - c) mission: public and academic institutions often have sustainability measures enshrined in their mission statement.
8. There is a relationship between project type and sustainable development practices: projects of a social or environmental nature naturally incorporate elements of sustainability. In commercial projects, their presence may be less evident, but AML's activities can underpin the implementation of broader sustainable management practices.

## 5. Summary and recommendations

In both IT and R&D projects, there is significant potential to implement sustainable project management practices. However, currently there is a lack of consistency, standardisation and integration with the strategic objectives of the organisation, which limits the effectiveness of activities. There is a need to structure the approach, adapt the practices to the specifics of the

projects and promote education and awareness in this area. Recommendations for organisations implementing grand challenge projects are as follows:

- Standardise the approach to sustainable project management: implement structured methodologies for sustainable project management (e.g. PRiSM) that take into account environmental, social and economic aspects throughout the life cycle of projects.
- Educating and raising awareness on the importance of sustainable project management: conducting training and workshops for IT and R&D project leaders to increase their awareness and understanding of sustainable management.
- Adapting processes to the specifics of projects: creating guidelines and tools dedicated to R&D and IT projects that take into account their specificities, e.g. emphasis on resource savings in IT or inclusion of environmental criteria in research projects.
- Integration with the organisation's strategic objectives: ensuring that all projects - regardless of their nature - are fully integrated with the organisation's sustainability objectives.
- Monitor and report progress: establish metrics for IT and R&D projects, such as carbon footprint reduction, use of sustainable materials, or social impact. Monitor progress towards sustainability goals on a regular basis and adjust actions according to emerging challenges and opportunities.
- Cooperation with partners: Collaborations should be established with other companies, NGOs and research institutions to exchange experiences and jointly develop solutions.

## 6. Research limitations

In the context of the conducted research, the following limitations can be pointed out, which result from the adopted research strategy: a) small number of cases (in both single and multiple embedded case studies, the number of analysed projects was limited. This makes it difficult to generalise the findings to a wider population of IT and R&D projects), b) the specificity of grand challenge projects (the selection of grand challenge projects introduces additional limitations. While this allowed for a deep understanding of this specific category of projects, it may make comparison with other types of projects difficult), c) subjective case selection (a deliberate selection of projects for the study was made, which introduced an element of subjectivity), d) data interpretation: qualitative analysis requires interpretation of the data, which is always to some extent dependent on the researcher's perspective, e) limitations of the data collection technique (individual and diadic interviews, while a rich source of data, can be susceptible to the effects of socially desirable responses and to the influence of the researcher-participant relationship).

Despite the limitations indicated, the research carried out provides valuable information on the specifics of grand challenge projects.

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