# INTERNATIONAL JOURNAL OF BUSINESS, MANAGEMENT AND ALLIED SCIENCES (IJBMAS)

**A Peer Reviewed and refereed Journal**

## SUSTAINABLE DEVELOPMENT IN PROJECT MANAGEMENT
### Towards a responsible project

## KHALED OMAR ESHTIWI[1], Dr.ABUAJAILA OTMAN[2]

[1]Authority of Natural Science Research and Technology
Email: eshtiwi_kh@yahoo.com
[2]Authority of Natural Science Research and Technology
Email: abu732009@gmail.com

**ABSTRACT**

The main objective of this paper was to define project management methods that can be used to integrate the requirements of sustainable development into project management. Another goal was to provide project managers with a pragmatic model for managing a responsible project. The paper was carried out for the needs of a project management service company using the ISO 21500 project management standard as a starting point, on which a sustainable project management model, i.e., responsible project management, was built. The work was carried out using qualitative methods by researching and applying theories and utilizing existing knowledge in project management. The result was the development of a project management handbook for internal use in the company, including descriptions, objectives, tasks, inputs and outputs of the project management processes for a responsible project. Document templates were defined for project documents and project management documents for key processes undergoing change. The target audience of the work is the company project managers, who are responsible for managing the responsible project.

**Keywords:** Project Management, Project, Sustainability, Project Managers, Project Manager, Responsibility, Responsible Project Management, Responsible Project

## 1. Introduction

Sustainability and responsible business management are already very common concepts and many companies implement them in their operations. However, sustainable development in projects that help companies and organizations accomplish their goals is less frequently addressed. The topic has been researched in recent years, but practical applications for project management methods and processes have not been defined more broadly, nor have they been widely used in Libya. This research

defined a handbook for responsible project management for project managers at Oil and Natural gas Company, which enables them to work on project management tasks for client companies so that sustainable development can be integrated into commissioned project and project management. The work has been carried out using qualitative methods, using theories as a basis for developing a practical approach to the manual. The research is based on the most widely cited theories in the literature and a survey on the current state of project management by Oil and Natural gas Company's Oil and Natural gas Company's project managers.  The definitions of responsible project and how responsible project management differs from traditional project management were used as a basis for drafting the manual. Theoretical examination was limited to the definition of sustainable development as a concept in project management and the impact of sustainable development on the project organization, project management processes and areas related to project implementation. The number of studies and theories was found to be limited at the beginning of the work, and most articles presented in the literature and conferences are based on the same research findings. The thesis uses definitions that are not well-established in the field in the Finnish language or whose meaning may vary in the literature. Sustainable project management is project management that includes, in addition to traditional project management, such as ISO 21500 project management, operations that meet the requirements of sustainable development. A sustainable project is a project that works in accordance with the principles of sustainable development. Line organization or permanent organization

## 2 PROJECT, PROJECT MANAGEMENT AND SUSTAINABLE DEVELOPMENT

The most common theory is that project and sustainable development cannot be combined because their goals are different. In particular, the timeframe for action in these objectives is the exact opposite of the short term span of project and project management, while the effects of sustainable development are long term is the part that receives and maintains the output of the project. The line organization operates on a permanent basis and is the opposite of the project organization.

### 2.1 Configuring the Project and Project Management

The project operates in an ad hoc organization and its mission is to produce a product, service or other output in an inert way. Temporary means that a project has a defined start and end, as well as the scope and resources available for the goal between them. Uniqueness means that the project includes measures to achieve the set objective and does not include routine measures. Because of this nature, the project often has human resources that do not normally work together[1].

Project management, according to the ISO 21500 standard, means 'the application of methods, tools, techniques and qualifications to a project'. Project management takes place through processes that effectively execute projects and produce results that are related to the achievement of the organization's goals[2].

### 2.2 Sustainable development

The general definition of sustainable development dates back to 1987, the so-called. Brundtland Report "Our Common Future". "In accordance with the principles of sustainable development, the earth's resources should be managed and used in such a way as to meet the basic needs of present generations without compromising the prospects of future generations." By definition, sustainable development pursues an approach aimed at securing a long-term living environment. Modified for business, it can be defined as the balancing of the social, ecological and economic aspects in all activities and decision-making. The literature also frequently refers to People, Planet, Profit, the Natural Environment, Economic Performance, or the less commonly used Triple Bottom Line, which refers to the three dimensions of sustainable development.

The implementation of sustainable development is also supported by the ISO 26000 and ISO 14001 standards, which define social responsibility and the environment. The ISO 26000 standard defines the principles of corporate social responsibility and the incorporation of corporate social responsibility

(CSR) into the activities of the entire organization, through which they also influence the operation of projects. The objective of the ISO 14000 series is to determine the corporate environmental management system that enables the organization to achieve the level of environmental protection and impact in its operations, products and services in accordance with its environmental policy and goal.

## 2.3 Project Management Development

Project management and the role of project manager are evolving with future demands. The traditional cost-time-scale-quality thinking, which is still the prevailing practice in project management, is no longer sufficient today and especially in the future. Today, project management should also consider the benefits and risks in order to improve the project's chances of success. However, in addition to these pillars, future project management requires that three aspects of sustainable development be taken into account as part of the project[3]. This new perspective brings with it the challenges of the project itself as well as the project manager's job description, as the effects of sustainable development often only become apparent after the project is completed. This is particularly the case if a responsible project involves designing in a life-cycle or circular economy model, in which case it is the role of the executing project to take into account the after-effects.

## 3 SUSTAINABLE DEVELOPMENT IN PROJECT AND PROJECT MANAGEMENT

Sustainability in Project and Project Management seeks to determine how sustainable development affects traditional project management and how projects can achieve both short and long term goals.

## 3.1 Project Management Standards and Methods

As mentioned in section 2.3, existing standards and methods do not define responsible project management. The ISO 21500 standard does not comment on sustainable development except by stating that internal factors within the organization - such as project portfolio or program - can define project feeds that may include sustainability requirements. ISO 21504, which defines guidelines for project and program portfolio management, mentions sustainable development as one of the limitations of portfolio management, meaning that sustainable development may prevent the portfolio from achieving its strategic goals, leading to strategic goals being re-prioritized or re-prioritized. It is noteworthy that standards do not consider sustainability as an opportunity or a strength.

PMBOK® does not explicitly take a stand on sustainable development except by mentioning the operation of the project-organization interface. If an organization has adopted sustainable development practices, the project should be aware of these requirements, as well as that sustainable development should be considered as a single input, either internally to the organization or to external factors such as environmental legislation. In addition, the project manager is expected to always act in accordance with ethical principles when leading the project[4].

As a new project management method, the PRISM ™ (Projects Integration Sustainable Methods) model has been developed to improve project management rules and improve project delivery capabilities without compromising future generations. The model is process-oriented, combining sustainable development areas with traditional project management phases to achieve a balance between limited resources, corporate responsibility and green project output[5].

## 3.2 Benefits of Sustainable Development in Project and Project Management

The global environment is changing, and limited raw material resources in particular will affect the way companies operate. It is estimated that 90% of the Earth's raw materials used are wasted in the first year. This requires either a change in operating methods or a change in what is produced[6]. People's awareness of environmental problems and corporate social responsibility has grown, which has also increased the demands on companies, and especially on products and services. Stakeholders call for sustainable development to be taken into account in all business operations. In addition, international treaties and legislation continue to demand more and more attention to sustainable development and

eco from a logical and social point of view, not just financially[7]. In response to these demands, organizations are raising the importance of sustainable development in their operations, although 67% of business executives admit that companies are not yet taking sufficient measures to address global sustainability challenges[8].

All of these requirements and changes are accompanied by projects, because projects are the element that implements changes in companies. When companies change their operations, the project must also change its own internal measures to implement this change. The objective of companies is to generate benefits, which are usually measured in terms of economic benefits. By implementing responsible project management, a company can gain additional benefits through project outputs. Such benefits include image enhancement, which can broaden customer base or customer satisfaction, which in turn improves financial performance. Organizational efficiency also increases when employee satisfaction is also taken into account when planning and implementing projects. Taking sustainability into account in a project can be compared to maintaining a quality level, which, through improved customer satisfaction, leads to further improvement in financial performance. Therefore, the long-term benefits and the indirect effects need to be taken into account in assessing the benefits in order to assess the benefits of a responsible project.

A project as an independent part of an organization's operations cannot achieve these benefits, but the organization should commit to sustainable development through which the project feeds into the organisation's strategic goals. The project realizes these goals.

### 3.3 Impact of sustainable development on projects

Responsible project management has been addressed in the literature and project management seminars in recent years, as it has been seen as an integral part of the project management and project manager's future work. Literature is often based on the principles of sustainable development that affect projects and their management. The principles of sustainable development that affect a project are defined in different ways, although the impacts on project management are seen to be similar.

### 3.3.1 Principles of sustainable development in the project

The principles of sustainable development are guiding definitions that must be taken into account when planning and implementing project management.

According to Silvius et al. (2012, 49-51)[7], the principles of sustainable development are:

- Harmonization of social, ecological and economic interests

- Taking into account both short-term and long-term objectives

- Local and global impact

- Consumption of income rather than capital

- Transparency and accountability

- Personal values and ethics.

Gareis et al. (2011)[9] have a slightly different view and the principles are:

- A holistic approach covering both social, ecological and economic issues

- Long-term orientation

- Wide global and institutional scale

- Reducing risks

- Respect for values and ethics

- Participation and capacity building.

Common to both theories is the idea that the social, ecological and economic impacts should be harmonized and managed as a whole in the project. Similarly, the consideration of values and ethics is a common principle in both theories. These common principles are the most important principles in any project when establishing a responsible project. When applying the principles in general to all types of projects, the above principles can also be used to set goals in both the short and the long term, as the project focuses on the short term and long term development. The fourth common principle for all projects is transparency in project operations and management. According to these four principles, a responsible project can be set up regardless of its content or subject matter.

### 3.3.2 Defining a Responsible Project

All theories share the idea that there is no single type of responsible project, since projects and their outputs can be very different. A responsible project can be a project that prevents unwanted effects from occurring by reacting to them, or it can be a project that contributes to building a more sustainable society through the products or services it produces. A responsible project can also be defined based on the effects of the project or project output, for which Maltzman & Shirley (2011, 53-67)[2] has defined a concept called "Rainbow of Green" that describes the content of sustainable development in the project itself as compared to the project manager's (Figure 1).
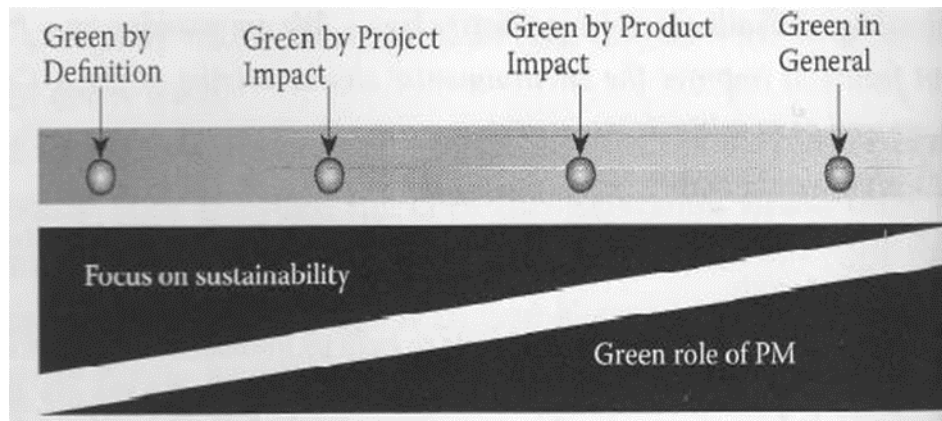


Figure 1. Rainbow of Green[2]

According to the model, the sustainability activities shown in the project will vary according to the objectives and impacts of the project. Another aspect is the role of the project manager role that comes with bringing the requirements of sustainable development into the project. If the project or its outputs as such do not require sustainable development, then the project manager can, by his or her own actions, bring the requirements to the project team. The basic idea is that every project can be a responsible project, only the extent of responsibility varies. The project types shown in the template are:

- A project whose primary purpose and purpose is to produce a product or service that is consistent with the goals of sustainable development. In this case, the output will be straight positive impact on the environment or society. The development of solar panels is an example of this type of project.

- A project whose activities already have an impact on the environment or society during the lifetime of the project. The role of the project manager will grow in the implementation of this responsible project. The purpose of the project output is not to promote sustainable development, but to promote it, for example by creating new jobs, or to improve human health by reducing air pollution.

- A project whose output is not necessarily in accordance with the principles of sustainable development, but may have a positive impact on the project during its life cycle. In this context, the impact will not occur during the project, so the role of the project manager in promoting sustainable development will be greater. The output of a project can be, for example, a device that uses less water

or energy during operation and has a longer lifespan than similar devices. This improves both the environmental impact and customer satisfaction.

- Projects, which must self-assess what measures the project can contribute to sustainable development. Actions may focus on the project team's self-imposed objectives, the project may seek to use resources that are sustainable, or the project may develop responsible project management processes. In this case, the role of the project manager is emphasized because he / she must be the person in the project who takes the matter forward when setting goals.

According to the above model, sustainable development can be reflected in a project through its outputs or effects, ie after the project has ended. This results in a breach of the traditional project management definition, especially if the project also has to anticipate the effects over the life cycle of the end product. In this case, the project manager should extend his or her thinking to include post-project activities that have not traditionally been the responsibility of the project organization. This perspective has been opened up by Silvius et al. (2012, 57–59)[7] by defining the opportunities at which different levels of sustainable development can occur in projects. Levels define the extent of sustainable development in a project such as the 'Rainbow of Green' model presented by Maltzman & Shirley (2011, 66)[2]. The impact of the project will expand as the project organization is affected. At its broadest, the impacts are not only on the project organization but also on line organization and portfolio management, which blurs the boundary between the traditional project organization and the line organization. According to this theory, a project can also be an implementing organization in relation to enterprise-wide changes in the implementation and development of sustainable development.

### 3.4 Sustainable development in project and project management

In the literature, the principles of sustainable development in projects vary, but from the point of view of project impact, and especially of project management processes, theories and PRISMTM define areas of influence in much the same way.

### 3.4.1 Project environment

The project's operating environment, ie the project's relationship with the rest of the organization, its operating procedures and the project management processes used are the starting point for a responsible project. The project owner must be committed to the project objectives, and the project as a whole must adopt the principles of sustainable development in its operations. Defining the goals and scope of the project together with the project owner provides the basis for planning the sustainability goals for the project content. Sustainability goals and tasks must not be separate or under the responsibility of a separate organization, but must be included in other project goals and objectives by modifying the partitioning structure and task description to include sustainable development[2].

### 3.4.2 Project Resources and Procurement

Resources and procurement are the first areas where a project can implement the principles of sustainable development. Resources, both human and equipment, must contribute to the goals of sustainable development. Purchasing needs to consider not only resources but also processes that support sustainable operations. The resources also concern the project team, whose commitment and expertise is one of the cornerstones of a responsible project. The people involved in the project are particularly concerned with corporate social responsibility and respect for ethical values. Each member of the group should be treated with the same principles. The project team contributes to the achievement of the objectives, and training the project team in sustainable development is part of the project work.

### 3.4.3. Stakeholders and risks

The project team is one of the project stakeholders that influences the setting of project goals. When the project has stakeholders committed to sustainable development, the goals are shared. Stakeholders can

also influence the requirements set; for example, the customer insists on using ethically selected raw materials. Stakeholders also define the target audience for communication. In a responsible project, stakeholders include a responsible organization for the company's sustainable development, whose expectations must be taken into account when planning communications. A responsible project develops communications in a direction that supports ecological and social goals, for example by reducing the use of paper in communications.

A responsible project brings with it new threats and opportunities that need to be taken into account in risk management. Sustainability does not impose additional requirements on the risk management process itself, but its content must be considered in the project in accordance with the goals of sustainable development. It is recommended that the identification of risks should also take into account opportunities, ie positive risks, so that sustainable development is not merely seen as a threat, ie as a negative risk.

By combining process groups and sustainability impact areas, and evaluating which project management process is impacted, Table 1 can be used to identify the processes where the inclusion of sustainable development in project management will bring about possible changes.

TABLE 1. Process groups, processes and scopes

| PROCESS GROUP | PROCESS (ISO 21500) | SPHERE OF INFLUENCE |
|---|---|---|
| Application | Preparation of the project setting document | Objectives Project environment |
| | Identification of stakeholders | Content, Credits |
| Planning | Preparation of project plans | stakeholders |
| | Defining scope and tasks | project Environment |
| | Assessment of resources | Content, Credits |
| | Evaluation of the project organization | Project Team, Resources, |
| | Risk identification and assessment | Acquisitions |
| | Procurement planning | The project team |
| | Communication planning | Risk Management |
| Realization | Stakeholder guidance | Acquisitions |
| | Project team development | Communication |
| | Risk management | stakeholders |
| | Selection of suppliers | The project team |
| | Communication of information | Risk Management |
| Controlling | Communication control | Acquisitions |
| | Procurement management | Communication |
| | Resource and project team management | Communication |
| Ending | Learning lessons | Acquisitions |

Table 1 shows the most common processes that are affected by change, but a responsible project should always carry out a comprehensive impact assessment so that the project content and objectives and sustainable development are taken into account in each project. For this reason, the principle of harmonizing social, ecological and economic impacts and managing the project as a whole is the guiding principle of a responsible project.

When starting to create a responsible project in an organization, the challenge of monitoring indicators is the lack of basic knowledge. Benchmarks may not exist, and the way in which energy is used to project a project, for example, can be challenging. In this context, the project can be a pioneer and set the goal of collecting and learning benchmarking information that will allow subsequent projects to build on the lessons learned and use the data collected as a basis.

## 4.CREATING RESPONSIBLE PROJECT MANAGEMENT

Oil and Natural gas Company'sexisting project management models, tools and practices were used as the basis for creating the Responsible Project Management Handbook. On top of these was built a project management description based on the ISO 21500 standard, along with related guidelines and templates that implement responsible project management.

The job description of the company's project managers was surveyed through interviews, which were used to determine the project managers' existing expertise in sustainable development. In addition, the interviews mapped the situation of how customer companies particularly consider environmental requirements in their projects. The project management practice examples are based in part on the author's own personal project management experience of 15 years.

### 4.1 Objectives and Limitations

Founded in 2006, Oil and Natural Company is a service company offering not only project development but also comprehensive business development, personnel training and IT system procurement. The service areas include information system services, operational development and project management. Customers include both government organizations and private companies. Due to the varying needs of the customers, the manual had to be flexible so that it could be adapted to each project. With the help of the developed model, a responsible project can be established using uniform principles and processes, regardless of the content of the project.

The requirements of sustainable development of the product or service were excluded from work. The handbook focuses mainly on project management process groups and processes as well as general project documents used in all projects, which are part of Oil and Natural gas Company's project managers' operating environment. As such, this manual does not contain detailed instructions or methods from the point of view of an individual product, reporting, or meter.
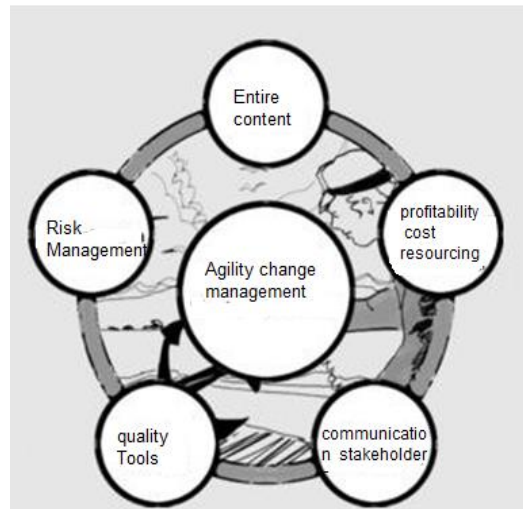
### 4.2 Company Requirements

The company is a service company and project definition takes place in the client company. As a result, no precise specifications or assumptions were made when the manual was drawn up, since the nature of the projects varies considerably. It was also taken into account that the purpose of the project is not necessarily a concrete product, but rather a service or software.

Project management activities in the company are based on the long experience of project managers in the field. This existing information was included in the manual as background information through interviews. A further requirement of the manual was that it be compatible with the ISO 21500 standard for project management. The standard itself does not contain direct references to sustainable development, but as a general definition for project management, changes brought about by sustainable development must also follow the same model.

The manual was to serve Oil and Natural gas Company's service delivery concept in 2015, which consists of the following elements[10]:

1) By following the six project paths mapped by Pasaat, you will achieve the best results.

2) By using Passport to determine your current position relative to the six fairways, you know how to navigate your crew forward with agility and durability.

3) High-end project business generates productivity, high-quality results, and increases the concentration and well-being of your crew.



PICTURE 9. Passages of Oil and Natural gas Company's service portfolio

The project management change focused on defining a service portfolio, which also took into account the company's operating environment, existing project management functions and ISO 21500 compatibility

### 4.3 Background Survey

In support of this manual, the project managers of Oil and Natural gas company and the marketing manager were interviewed in order to get a better idea of the company's assignments, which areas of project management should be given particular attention when combining sustainable development with project management.

### 4.3.1 Operating Environment

There are different types of projects to be implemented, and the project manager can be allocated to the project, either during the set up phase or during the project implementation phase. The project manager can also act as a representative of the subscriber organization in the project the reception of the project.

Of the project management processes, requirements and change management, risk management and communication, including stakeholder management, are the most important process areas that the project manager spends time on. The project set-up document was seen as an important document defining needs and objectives. However, it is not always defined by process. Keeping track of and maintaining a to-do list, as well as managing the scale, are essential to complete a project without delay. Purchasing management in projects where it is part of the project manager's responsibility is an important element. From the project manager's point of view, the project design and completion phases are the most demanding.

The challenge for a project manager in his or her operating environment is to manage content with available resources when assumptions are greater than ability. Learning the internal operating models of a client organization and understanding the project output at a satisfactory level requires time in the project start-up phase, as the project manager works in a foreign organization. Project steering group activities, if the steering group is oversized or undersized, can make project decision making more difficult.

### 4.3.2 Project managers' experiences of sustainable development

According to the interviews, there is limited information on sustainable development. It is often perceived as purely environmental, and does not involve social and economic considerations. This

emerged from the mapping of projects that would have influenced sustainable development. In all cases, the motivating factor was cost savings.

- The final goal of the project was to reduce packaging material

- Digital communication was used for information purposes, and only legal contracts were printed on paper

- The operating temperatures of the equipment were determined, which allowed the control of the data center cooling

- It was specified that the equipment would be recycled for testing purposes, but it was neither instructed nor monitored

- A print management service was defined to reduce printing.

Sustainability, especially energy saving and recycling, is a normal activity in a corporate office environment, although corporate responsibility or environmental strategies had not emerged when designing projects. In addition, there were no procurement-related sustainability requirements in the project feeds or set-up document. Based on these, though based on a very small sample, the strategy and operational activities in the projects are not at the same level.

The interviews allowed us to identify the key areas that were taken into account when integrating sustainable development into project management. The ordering phase of a project must take into account the need and the company's overall goals for sustainable development or environmental requirements. These goals and general requirements should be recorded in the project setting document. Stakeholder management and communication should take into account potential new stakeholders and communication requirements that sustainability actions may bring, such as the company's GRI reporting requirements. Risk management, change management and procurement management must also take into account the requirements of sustainable development

## 4.4 Principles of Sustainable Development in a Responsible Project

The related literature deals with sustainable development in projects, either in terms of impact or in accordance with the principles of sustainability selected in accordance with management. Companies may have different defined principles of sustainable development, but common principles can be defined for responsible projects, regardless of the operating environment, in line with the principles set out in the literature.

1) Social, ecological and economic aspects are taken into account in all stages of project management

- Decision-making must not be based on purely economic considerations, as is the case with traditional projects

- A change to the traditional project triangle is needed that includes project scope, timing and cost, with sustainability attached

2) Targets are set for both short and long term

- The project has traditionally focused on the evaluation and achievement of short-term goals, but the long-term goals of sustainability are usually focused on the longer term.

- The impact of the project's output will also be assessed during its use and the effects of its destruction

- The interface between the project organization, which is a temporary one and the line organization, the division of labor and the transfer of responsibilities at the end of the project constitute a new management area

3) The project follows the principles of transparency and accountability

-Transparency and transparency

- Project activities, and communication in particular, are open to all stakeholders at all times

-Responsibility

- The project takes responsibility for the objectives and acts accordingly

4) The project takes into account ethical values in all its activities

- Ethical practices, such as equal rights of people and prohibition of bribery, are the basic rules of the project and the project team.

The principles of sustainable development have a particular impact on project design, planning and implementation, so the manual emphasizes these process groups as they transform the project into either a responsible project or a traditional project.

**4.5 Sustainability planning model**

As a process, incorporating sustainable development into the project and project management takes place both as a sustainable development task and as customized process descriptions and templates.

The Handbook deals with the impact of sustainable development on project management primarily through project management processes and project documents. The internal goals set for the project team are a special case, the impact of which is briefly discussed, based on the project model presented by Maltzman & Shirley (2011, 66)[2], according to which each project can be responsible. Specific requirements for the product are not addressed in the manual other than in general terms, as the product's sustainability requirements generally go beyond the traditional project organization, and the manual was limited to the purely project organization.

**4.5.1 Project Management Processes and Policies**

Sustainability changes to project management processes were implemented in accordance with Table 1, which complies with ISO 21500. According to the standard, processes are universal, so the effects of sustainable development are reflected in the processes mainly through new inputs, outputs and templates. In order to set the Sustainable Development Goals, a process was developed for the planning phase, as the sustainable development objectives for each future project are defined on a case-by-case basis.

The handbook also defined criteria for the closure of process groups, which also take into account the new criteria for sustainable development. These criteria were defined as optional because the project or company commissioned may not have sustainable development objectives.

The definition of the indicators was not included in the content of the manual, except for the evaluation of the impact of the indicators on the content of the project.

**4.5.2 The project team**

Project team activities are one way to promote sustainable development or to start defining sustainable development. The project and its own staff can be used as experiments and lessons on how to set goals and how to follow them. Otherwise, the design principles are the same as in the previous paragraph. Using indicators, examples were included in the handbook to determine which factors the project team itself can influence independently. In addition, a short Sustainability Demonstration Material was created for the Project Manager to help the Project Manager learn the basics and use the links to learn more about the subject as needed. A list of indicators that can be internally influenced by the project team can be used to develop internal objectives for the project team.

### 4.5.3 Product

The manual does not comment on product-specific requirements, as Oil and Natural gas Company's projects do not focus on individual products. However, when setting project goals, the sustainable development goals and requirements set for the product must be taken into account. Requirements can be directly customer requirements or stakeholder requirements for product features. It is the task of the project manager to find out the product-specific information required from the project owner during the project setup phase. The project manager must also understand the ecological and social impacts of the product so that he can set the right goals for the project.

As the goals focus on the product or service, the additional task is to ensure that all project management processes and project practices are compatible with the product design process. In addition, the project, together with the host organization, should evaluate the impact of the product / service on the use and disposal of the product. In this context, the boundaries of a traditional project organization are often exceeded, so product-specific requirements must always be addressed on a case-by-case basis.

The product or service may also be subject to legal obligations or special customer requirements, so project management needs to take into account the sustainability requirements of external stakeholders. Corporate social responsibility commitments or other international or national agreements may also include feeds to product requirements.

## 5 RESPONSIBLE PROJECT - PROJECT MANAGEMENT HANDBOOK

The handbook contains a project management model that describes the project management subdivisions in accordance with the ISO 21500 standard, divided into areas according to Oil and Natural gas Company's service portfolio, plus new processes and templates developed for the assessment of sustainability requirements. The manual was implemented as a website on Oil and Natural gas Company's intranet.

### 5.1 Sustainability in the Project Management Model

In the manual, the project management components are divided into process groups, which select the relevant processes in use, describing the process objective, inputs, tasks, outputs, and tools and templates. For the sake of simplification, implementation and control are bundled under the same process group name implementation.

Sustainability is considered as a separate option as an option, but with its effects integrated into the same project management-documents than a project without sustainable development goals. The starting point for the work was based on the assumption that a responsible project is managed with the same project documentation as a traditional project. For the sake of clarity, it was decided to separate the activities related to sustainable development into their own path. Incorporating sustainable development into the project is done through a four-step model set-up and design process groups. The fourth step in defining project documents involves maintaining the documents, so the step is not only planning, but also process groups, implementation, control and termination.

The manual deals with processes in a general way so that a responsible project can be set up with minimal changes. The manual covers all aspects and processes of project management. This work describes the areas and processes where changes or additions will be brought to bear in the context of sustainable development. In addition, process groups describe their general purpose and definition.

### 5.2 Project Manager Competence

Sustainable project management is a new area of expertise for a project manager, and applying it to one's own work requires both the acquisition of know-how and an examination of one's attitude. To develop the project manager's know-how, preparation was made for self-study appropriate material on sustainable development, terminology, and opportunities for integrating sustainable development

into projects. The aim was to have the project manager quickly get a brief description of the subject, to make it easier to use the manual in project work.

How a project manager starts or prepares to lead a first responsible project is the first thing to clarify in a responsible project. For this purpose, according to Silvius et al. (2012, 103-106)[7], the following is the point 7 project manager's path to responsible project management.

1) Find out what sustainable development means in general and in the business world, and especially in projects.

2) Take responsibility. The project manager must be committed to promoting the goals, otherwise a responsible project will not add value.

3) Identify the company's sustainable development goals and potential commitments.

4) Find out if your organization has general guidelines for sustainability goals. Take advantage of information and lessons from other organizations.

5) Discuss with the project owner the need for sustainable development in the project and agree on the principles.

6) Define the target state together with the project owner.

7) Make a development plan for the project.

**5.3 need**

Needs assessment assesses the need to set up a project. It answers the question why and takes into account the long-term and short-term goals of the company or organization, the problem or potential potential of the company or organization, the desired output and the desired benefits. In this context, PESTEL analysis can be used, which describes the political, economic, social, technological, ecological and regulatory factors affecting a company.

The influencing factors are partly the same as those of sustainable development requirements, such as energy consumption, values and attitudes and workers' laws. The analysis can also be used to assess the sustainable development objective and to select appropriate indicators for the project.

  The outcome of a needs assessment leads to a business review that takes into account market, organizational, and customer requirements, and the business review is the basis for setting up and setting up the project.

**5.4 Setting the Process Group**

By setting up a project, the project is officially launched and the project objectives are defined. The project manager will be given authority to manage the project and a project steering group will be formed. During the set-up phase, the project manager should check with the project owner whether the project should meet sustainable development goals. The goal of setting is to define the project's guidelines, obligations, assumptions and constraints.

The Set Up process group includes processes for setting up a set up document and identifying stakeholders. By way of exception to the ISO 21500 standard, but according to the PMBoK® specification, the process of establishing a project team was moved to the process group design. The Responsible Project within this group implements the Sustainability Identification (SRE), which aims to determine whether the project has sustainability or environmental objectives. Closure of the process group requires the recording of sustainable development objectives in the setting document and the recording of sustainable development expectations in a stakeholder analysis.

### 5.4.1 Identifying Sustainability and Setting Target Status

The purpose of identifying sustainable development is to determine whether sustainable development objectives should be set for the project. The input for the report is a project order. In addition, the strategy and principles of sustainable development as well as environmental and sustainability policies of the project contracting company can be utilized. The assignment is made with the project owner in the subscriber meetings.

In addition to identifying the project, a target state is defined at which level the project should consider sustainable development. Based on the maturity model presented by Silvius et al. (2012, 119-134)[7], a questionnaire was developed to the project manager selects the appropriate questions for the project, and based on the answers, the project specification document can be used to record the project's sustainable development objectives.

In addition, the mapping strategy and reporting practices of the organization in which the project operates will be mapped. The information will be used for project background mapping to identify existing practices and guidelines.

### 5.4.2 Identification of stakeholders

Stakeholder identification defines the individuals, groups and organizations affected or affected by the project. When integrating sustainable development into the project objectives, potential new stakeholders should also be taken into account, which the project should consider. Such stakeholders may be, for example, the company's environmental manager or the person responsible for sustainability reporting.

The analysis will also serve as a basis for future stakeholder planning and guidance and communications planning. The results of the analysis should also be recorded in the stakeholder register maintained.

### 5.4.3 Preparation of the installation document

The setup document is a document approved by the project owner to determine the operating environment of the project and the project manager, and to authorize both the project starter and the project manager. The set-up document must specify the purpose and scope of the project, the objectives, the higher-level requirements, the indicative schedule, the project budget, the constraints, assumptions, risks and dependencies, as well as the stakeholders. In this context, the project's sustainable development objectives must also be defined so that they are included from the outset in the joint project management documents.

The Responsible Project defines the project setup document on the same principles as a traditional project. The exception is to incorporate the issues of sustainable development into the document. At the very least, if no more specific goal is defined, it is a statement in a couple of sentences that the project should be designed with sustainable development in mind. If the overall objectives can be determined, they will be recorded, together with the associated assumptions, constraints, risks and possible budget, in the setting document.

Sustainability can be taken into account in the project setup document in a number of ways, including:

- The project team aims to reduce travel emissions by using the least environmentally friendly means of transport for the project.

- The project must prioritize eco-labeled companies and products in its procurements.

- Delays in processing xyz-related project law may prevent the project from being completed within the initially agreed schedule.

- No change in project requirements is expected for environmental legislation in the years yyyy-xxxx.

- Acquisition of eco-labeled products may cause additional costs to the project due to the limited supply on the market.

If the Sustainability Goals are not recorded in the project setting document, there is a high risk that they will not be added to the project at any stage, or may remain of low priority compared to the other goals set.

## 5.5 Designing a Process Group

The planning phase defines the scope and objectives of the project and the measures by which the defined objectives will be achieved. The goal is to determine baseline or benchmarks for the project, which can be used to control, measure, and monitor project progress.

The projects are always different, but each project always includes, as an integral part, communication management, risk management, scope management, scheduling management and quality management. In addition to these, project management may also include resource management, procurement management and cost management.

Planning is a major part of project management processes, so most of them are also affected by sustainable development. Criteria for terminating a process group include an approved Sustainability Analysis and Plan, stored in the project folder, and recording the impact of the results of the analysis in effective process management plans and project documents.

### 5.5.1 Defining sustainable development

At the design stage, more detailed objectives and methods of sustainable development will be defined on the basis of the overall objectives set out in the Statement. The specifications are recorded in the same project management plans and project documents, which are also implemented without sustainability objectives. The aim is to create one common project documentation, which will be the basis for implementation and guidance. The input is the project set-up document, the definition of the sustainable development target and the company or organization's sustainable development strategy or environmental policy.

The determination identifies the appropriate sustainability indicators for the target status and project, the project management processes associated with the achievement of the target status, and the project-related project documentation. It also defines how and when the success of sustainable development is measured in a project. Alternatives to measurement include measurement during the project, after the project is completed, or results are measured as part of the company's overall sustainability goals. The project may also aim to collect baseline values for sustainability projects for future projects.

The most common areas, project management and project documents that are addressed in sustainable development are listed in Table 2.

TABLE 2: The most common impacts of sustainable development

| Sub-Region | Project Management Document | Project Document |
|---|---|---|
| overall management | Project Management Plan | Project Setup Document |
| Stakeholder Management | Change Management Plan | Stakeholder Register |
| Resource management | Stakeholder Management Plan | training plan |
| Procurement management | Procurement management plan | Procurement plan |

| Communication management | Communication Management Plan | Selection criteria for suppliers |
|---|---|---|
| Risk Management | | communication plan |
| Cost Management | | risk Register |
| Scope management | | Budget |

In practice, planning begins with carrying out a sustainability analysis for the project, with input from the project set-up document and the corporate sustainability goals, if any. The analysis starts with the result of the determination of the target state, which is the basis for selecting project-specific sustainability indicators. For these selected indicators, a measurement plan is defined which will allow the project to monitor the achievement of the objectives.

Once the indicators have been selected, the project management processes will be analyzed, and any necessary changes and updates will be made to reflect the sustainability objectives. The list of indicators identifies the most likely areas to be addressed by this indicator. After analyzing the processes, project documents are defined, in which sustainable development objectives are taken into account, needs are recorded, and templates are updated. The project documents most commonly affected by the changes are listed in Table 2.

The final step in the analysis is to assess whether the project needs new sustainability project documentation, such as a separate Sustainability Management Plan or Sustainability Report.

The result of the analysis is a list of processes and documents that should support the objectives set. In addition, the targets in the setting document will be refined so that they can be measured.

**5.5.2 Creating Project Management Plans**

The project management plan defines why the project is started, what the project will deliver, how the project will be delivered, how much the project will cost, and how the project will be implemented, guided and completed. It includes method descriptions for scale, schedule, risks, communications, quality, resources, costs, and procurement, which can be documented in large projects.

The Responsible Project shall include in this Plan a Sustainability Management Plan and the objectives to be achieved by the project in the same manner as other objectives set for the project. As previously stated, translating sustainability objectives into measurable indicators and evaluating benefits during the project can be challenging. In the planning phase, the project should determine the target state, how and at what stage the sustainable development objectives will be evaluated. Objectives and their benefits can be measured either during the project or after the project is completed, in which case the project must have a monitoring plan for which responsibilities have been defined. It is also possible to link measurable goals to the overall sustainability goals of an organization or company through a utility map. In this case, the project's share of impacts is made visible at the organizational level.

A benchmark against which success is judged is usually required to determine the metrics. Such benchmarks may not be available as sustainable development projects are new. The aim of the project can then be to develop benchmarks for future projects.

The key to setting up goal monitoring is that the goals as well as the practices for measuring them are defined. In this connection, it must be possible to implement the meter itself, which can ensure the functioning of the measurement.

**5.5.3 Scope and Schedule Management**

Project Scope Management defines project outputs, requirements, and assignments. Schedule management defines the order in which tasks are performed and the time needed to complete them - both workload and calendar time and resources required for the task.

Scale management should take into account the sustainability goals set, taking them into account when designing the partitioning structure of the project. The task list adds any new tasks needed to meet the requirements of sustainable development.

### 5.5.4. Identification and assessment of risks

Risk identification identifies the threats and opportunities facing the project and prioritizes them for follow-up.

If the risk management process and practices are well defined, the responsible project can follow the same process. However, it should be noted that sustainable development brings with it new types of risks that need to be taken into account when identifying and assessing risks. The risk register adds information on which aspects of sustainability are at risk. This will determine whether all areas are taken into account when comparing risks and objectives.

### 5.5.5 Communication planning

Communication planning defines information, communication and communication methods in accordance with the stakeholder register.

The responsible project takes into account three areas in the communication planning. The first addresses the communication target groups through stakeholders, the second addresses the communication methods themselves, and the third addresses the possible requirements of corporate responsibility reporting. Communication for a responsible project must cover the needs of new stakeholders who are primarily interested in achieving the goals of sustainable development. Another aspect is the communication methods themselves, ie how the project can contribute to sustainable development, for example by reducing the environmental load or the burden on people through their communication. Digital communications that reduce environmental impact are easy to implement. But communicating with the least strain on stakeholders is more challenging, but it can affect stakeholder satisfaction through, for example, work efficiency and thereby improving project success. When planning this, the needs for an active and passive communication as well as the structure and scheduling of communications (regular versus case by case). The third focus is on possible requirements for how project communications should support possible corporate responsibility reporting. This is a company-specific requirement and is not covered in this manual.

### 5.5.6 Resource Planning

Resource planning covers the project people, equipment, facilities, materials, tools and infrastructure. Planning takes into account the resources required according to the to-do list and defines the project organization.

Resource management is one of the first areas where a responsible project can start its work. The project must set the sustainability requirements for the resources to be used, which will guide the project in selecting or procuring the resources to be used. If the company has defined general requirements, the project should include them in its own resource plan. The resource plan also records the project's responsible persons, whose competence needs to be ensured. The requirements of the project resource plan must also be taken into account when planning the procurement.

For the whole project team, at least a general outline of the principles of sustainable development and how they affect the project will be included in the training plan of the responsible project. Setting goals at the task level helps the project team to commit itself to sustainable development as well as raising awareness. The commitment of the project team is a prerequisite, especially if the goal is focused on the project team's internal operating models.

### 5.5.7 Procurement planning

Procurement planning is used to plan the procurement strategy and related procurement process prior to commencement of procurement, which may be the most important factor in achieving sustainable development in the project.

The requirements of the procurement plan and the resource plan for the resources to be procured must be identical. Purchases can be a major expense for a project, so it carries the risk of lower non-financial requirements as planned. The project manager is responsible for ensuring that the requirements of sustainable development are met throughout the project. When designing procurements in accordance with the principles of sustainable development, the availability of qualifying resources, the cost implications, the required level of quality and the additional risks must be taken into account and must be recorded in such project documents as the risk register or cost estimate.

### 5.5.8 Cost planning

Planning estimates the costs required to complete the project and defines a budget for parts of the work.

Cost planning takes sustainability into account in its own budget, or estimates the potential costs of sustainable development, which may be related to resources such as training or procurement. However, taking sustainable development into account does not automatically mean increasing costs, but the project must also assess the impact of sustainable development investments, such as cost savings, in the long run.

### 5.6 Implementation and Steering Process Group

In terms of project management, implementation and guidance is mainly about monitoring, measuring and reporting on project progress. In addition, project work is guided, proposals for change and risks discussed, and suppliers selected.

The responsibility of a responsible project is to ensure that the requirements and goals of sustainable development are met within the project organization and to ensure that they are implemented from the perspective of the end product. Criteria for the end of the process group are the preparation of a monitoring report on sustainable development indicators

### 5.6.1 Implementing and steering sustainable development

At this stage, the goal is to ensure that the principles of sustainability or environmental requirements are followed in the project organization and ensure that they are implemented from the perspective of the end product. However, the implementation of the sustainability requirements follows the same principles as other project requirements. Vaasa

Guiding the implementation of ideas requires continuous monitoring of the impact areas to ensure that the objectives are met throughout the project. Tracking reports and benchmarks based on targets are used as inputs for tracking, which is compared to the original target setting. Proposals for changes to the management plan and objectives will be made in accordance with the project's change management process. The output is a share in project reporting or a separate report depending on the requirements of the company. If the goals are related to the project team's practices, then during implementation and guidance, surveys or interviews can be conducted to clarify the project team's views on the implementation of the goals.

Here, as in the other phases, it is important that the requirements of sustainable development are not dealt with in separate processes, but follow normal project management methods. However, during implementation and guidance, special attention must be paid to project team and project management, change management, supplier selection, and procurement management.

### 5.6.2 Managing the project team and the project

Integrating sustainable development into the project also requires the commitment of the project team and the enhancement of the project team's expertise. During implementation, the project manager must monitor the implementation of the practices and ensure team expertise. The project team's opinions and development proposals should be surveyed throughout the project.

If the organization has defined reporting guidelines for sustainability goals and / or indicators, they should be included in the project report. Otherwise, the project should develop a reporting model in which sustainability objectives are part of the project's regular reporting, because transparency is one of the principles of sustainability and through reporting, the success of the objectives brings visibility to project stakeholders.

### 5.6.3 Change Management

The purpose of change management is to systematically address changes to the project management or its objectives. Impact of proposed amendments and

Risks are assessed before making decisions. Decisions, both positive and negative, are recorded in a change register, after which the project documentation is updated.

In the context of change management, a responsible project must assess the impact on sustainable development objectives and risks. Change management must not be a process that can override the sustainability goals set out in the project set-up document.

### 5.6.4 Supplier selection and procurement management

The selection of suppliers will ensure that suppliers receive the required information and will review and examine the information received in order to select a supplier. After selection, procurement is managed to ensure the supplier's ability to meet project requirements.

When sourcing is sustainable, special attention should be paid to the selection of suppliers. Suppliers should be provided with sufficient and reliable information on the fulfillment of the requirements. In addition, it may be necessary to require suppliers to report separately to verify compliance. Suppliers must adhere to the principle of transparency so that the project can ensure the accuracy of the information.

### 5.7 Termination process group

Closing a project means ending the project and releasing the resources assigned to it. If the project has unfinished tasks, they will be transferred to the host organization. In addition, the lessons learned during the project will be handled and assigned responsible for updating relevant project management documents and templates. The project may end when

- the planned tasks have been carried out

- the time allotted to the project has been used

- the project steering group decides to end the project

- the client completes the project.

The responsibility of a responsible project is to ensure that the end result is in line with the sustainable development goals set and to identify and agree on an appropriate organization to measure the benefits of sustainable development after the end of the project or during the product life cycle. The end of the process group is the preparation of an analysis of the realization of sustainable development.

### 5.7.1 Assessment of sustainable development

During the project closure phase, the sustainability assessment is carried out both in terms of the sustainability goals and the lessons learned. Sustainability is summarized to evaluate the success of the

project in terms of its sustainability goals and to ensure follow-up after the project is completed. The set goals and achievements are compared and the success of sustainable development is defined and recorded in the final report of the project. If the benefits can only be measured during the project or product lifecycle after the project is completed, the project will transfer the responsibility for monitoring and maintaining the meters to a responsible organization.

The lessons learned help future projects to take into account good practices or processes and develop methods that were found to be inoperative during the project. An important task of a responsible project is to gather information on how sustainable development can be taken into account in projects. Sustainability indicators and their implementation are part of the knowledge gathered during the project and the project should pay particular attention to the handling and further development of the lessons learned in this area. These lessons should be passed on to the following projects and line organization.

The project is fed by project progress reports and to-do lists. If a product or service is subject to sustainable development requirements, it should be assessed at this point in time whether the product needs a life cycle assessment. Lifecycle assessment focuses on the time after the completion of the project, so it is not covered in this manual.

### 5.7.2 Termination of the Project

During project termination, project outputs have been submitted and approved, and resources available to the project have been released. If a project is suspended, the project must be completed with the same tasks and outputs as the completed project.

The Sustainability Summary is part of the project's final report. The purpose of the final report is to evaluate the success of the project in relation to the original objective. The report should evaluate not only the output of the project itself, but also the tasks related to project management. Process changes due to sustainable development and changes in project documentation are part of the content of the final report. The results of the evaluation help in the planning and management of new responsible projects.

### 5.8 Post-project monitoring and evaluation

The benefits of a project can be measured from multiple angles. Measuring the goals and benefits of sustainable development is one of these. If the project has direct sustainability requirements for the product, measuring and monitoring them over the product life cycle can be defined on a product-by-product basis. If the project goals are related to measurable benchmarks, such as the reduction in energy consumption per hour of equipment resources, they can be measured and monitored during the project.

Sustainability objectives are often company or organization specific, so it may not be possible or sensible to measure these benefits during the project. In this way, a utility map defined at the design stage can be used to link the monitoring of the potential benefits of the project to the overall measurable sustainability goals of the organization or company. This also allows projects to be integrated as a single input into corporate responsibility reporting.

### Conclusion

Creating a responsible project and responsible project management requires analyzing all aspects of project management and evaluating the potential impact. When looking at existing standards and methods, water to build a whole new model, but these designs can be utilized. This will allow you to get started in the first responsible project with small changes.

The most important thing in a project is to set sustainability goals during the set-up phase, which will be addressed like any other project goals. The commitment of the organization, and in particular the project owner and stakeholders, to sustainable development is a prerequisite for a successful project.

Bringing sustainable development into the project's role and expertise is a challenge. Challenges are created by mastering new requirements and areas and breaking the boundaries of a traditional project organization when considering benefit evaluation and target levels, which can only be realized months or years after the project is completed.

Responsible project management should be introduced in all projects, starting with small steps that will bring about the first change. Stakeholders' attitude and willingness to follow the principles of sustainable development, as well as changing resource management to meet the goals of sustainable development, are the first step towards responsible project and project management.

Responsible project management is very new and the model created requires continuous development based on practical experience gained. The manual and template can be developed by specifying examples for reporting, extending the content of the template documents, and refining the indicators by sector. In addition to project management, a similar sustainability model can be developed based on ISO 21504 portfolio management.

### References

1    Silvius, Gilbert 2012. Sustainability in Project Management: Vision, Mission, Ambition
2    Maltzman, Rich & Shirley, David 2013. Center for Sustainability Learning. Green / Sustainability Project Management Overview.
3    Milson, Peter 2015. Time to transition from a projects focus a portfolios. Videossa Time to transition from a projects focus a portfolios
4    PMI Project Management Institute 2013. Project Management Body of Knowledge 5th Edition. PMBOK® Guide. Newton Square: Project Management Institute, Inc.
5    Carboni, Joel, González, Mónica & Hodgkinson, Jeff 2013. PRISMTM Projects inte- grating Sustainable Methods. The GPM® Reference Guide to Sustainability in Project Management. GPM Global.
6    Schipper, Ron & Silvius, Gilbert 2015. The core of sustainable project management. In the video A Day for Sustainability in Project Management.
7    Silvius, Gilbert, Schipper, Ron, Planko, Julia, van der Brink, Jasper & Köhler, Adri 2012. Advances in Project Management: Sustainability in Project Management. Farn- ham: Gower Publishing Limited.
8    Carboni, Joel 2014. Sustainability in Project Management Governance and Integration of the P5 Standard.
9    Gareis, Roland, Huemann, Martina & Martinuzzi, Andre 2011. Relating Sustainable Development and Project Management. WU Vienna University of Economics and Business, Austria.
10   Pasaati Oy. The Passover will serve you holistically in accordance with our six fairway philosophy.