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OVERVIEW OF THEORETICAL APPROACHES TO ASSESSING THE RELATIONSHIP BETWEEN ENVIRONMENTAL PROJECTS AND SUSTAINABLE DEVELOPMENT

Summary

The present paper synthesizes the current knowledge of scientific research that analyses the issue of projects, especially environmental projects. It pays special attention to the topic of environmental project management as a prerequisite for ensuring sustainability at both macroeconomic and microeconomic levels.

Key words: project, environmental project, environmental project management, sustainable development.

PRZEGLĄD PODEJŚĆ TEORETYCZNYCH DO OCENY RELACJI POMIĘDZY PROJEKTAMI ŚRODOWISKOWYMI A ZRÓWNOWAŻONYM ROZWOJEM

Streszczenie

W artykule dokonano syntezy aktualnego stanu wiedzy na temat badań naukowych, analizujących problematykę projektów, a zwłaszcza projektów środowiskowych. Szczególną uwagę poświęca tematyce zarządzania projektami środowiskowymi jako warunku koniecznego do zapewnienia zrównoważonego rozwoju zarówno na poziomie makroekonomicznym, jak i mikroekonomicznym.

Słowa kluczowe: projekt, projekt ochrony środowiska, zarządzanie projektem ochrony środowiska, zrównoważony rozwój.

1. Project, theoretical background

The definition of a project has been the subject of extensive debate among project management practitioners, researchers and associations. Dinsmore a Cabanis-Brewin (2018); Khatib (2003) and others define a project as a complex endeavor involving interrelated activities with the intention of achieving a goal, whereby it is a temporary and non-repeatable process.

Turner (2014) describes a project as a unique effort to produce a set of deliverables in which human, material, and financial resources are organized in a novel way to perform a unique scope of work to a given specification within clearly defined time, cost, and quality constraints.

The project can also be defined from two perspectives (Gamboa, 2009; Shobayo, Elumah 2017). A: the first aspect is the management environment that is created to produce a product (goods, services, information, ...). Secondly, it can be defined as a temporary organization that is used to create a unique and predefined result in a predetermined time using predetermined resources.

According to Sholarin and Awange (2015) probably the most complete definition can be found in the work Project Management Institute (2008) where a project is defined as a temporary effort initiated to create a unique product, service or outcome. Temporality means that every project has a definite beginning and a definite end. Unique means that the product, service or result is different in some distinguishing way from all other products, services or results. We can only be pleased that the same characteristics that characterize a project have been identified in our own circumstances, without knowing the work in question (Adamišín, Andrejovský, 2007).

The project exists in a relatively turbulent environment; change is the purpose of the project itself and uncertainty is integral to the objectives of the project. Projects can also have social, economic, and environmental impacts, the effects of which go far beyond the original intent of the projects.

2. Project management in theoretical implications

The literature emphasizes the importance of project management as an effective tool for managing new or complex activities. It is more effective than traditional management methods. The process of introducing new projects into practice and into the marketplaces demands on established organizations and requires different management techniques than those needed to maintain day-to-day operations. In such circumstances, where companies have a limited source of information and a unique and unknown state of the external and internal environment, project management techniques can be successfully applied. These businesses require faster decision-making techniques than is possible in normal operations, and making the right decisions is critical to the success of the company (Kerzner, 2009).

Project management is concerned with the application of knowledge, skills, tools and techniques to plan, coordinate and report on project activities in order to meet project requirements. Projects bring about change and project management is considered to be the most effective way of managing such change (Sholarin, Awange, 2015). A. Badiru et al. (2007) describes project management as the process of managing, allocating and scheduling resources to achieve a given objective in an expedient manner. The goal may be set in terms of time (schedule), performance requirements (quality) or cost (budget). It is the process of achieving objectives by using the combined capabilities of available resources. On the other hand (Havranek, 1999) describes project management as "the art and science of planning, organizing, integrating, managing, and controlling all allocated resources throughout the life of a project to achieve predetermined goals of scope, quality, time, cost, and customer satisfaction". The ultimate benefit of applying project management principles is a satisfied customer, whether in the form of an individual, a community or an organization, i.e. the beneficiaries of the project or other stakeholders.

Managing a project means planning and monitoring its implementation, which enables it to achieve its objectives. Project management no longer has a specific focus (project management), but has become an organizational skill that permeates all levels of the company (Kerzner, 2009; Nicholas, 2004).

The use of modern project management is associated with such new complex problems that are comprehensively called a project (which can be seen as a variant definition of a project). As a result, the success of project management has often been associated with the result of the project. Project management and project success are not necessarily directly related. A project is considered successful if it is delivered on time, on budget and to the required level of quality, while meeting the expectations of the main stakeholders (Munns, Bjeirmi, 1996). It follows that the success of a project cannot be measured until the project is completed.

Project management can be schematically viewed as a triangle, with three main components on each side:

- time/schedule;
- cost/budget;
- quality/performance/specification.

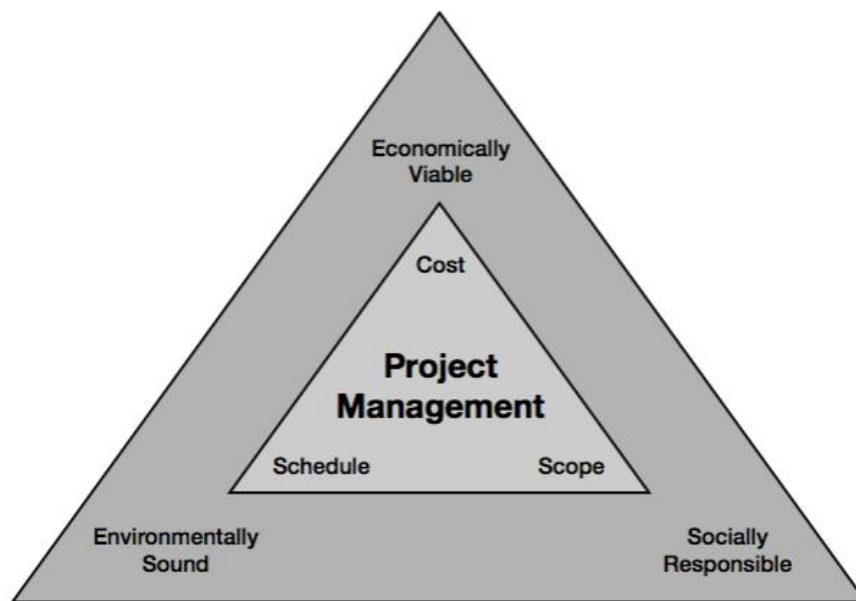


Figure 1. The project management triangle in broader relationships.

Source: <https://opentextbc.ca/projectmanagement/chapter/chapter-1-project-management-in-industry-project-management/>.

If one side is shorter than the other or does not exist, the triangle cannot be used for its intended purpose or only in a very limited way.

Based on the Project Management Institute's definition of project management, it can be said that the given sides represent the constraints for the project, but also the expectations of the project's beneficiary, while the inside of the triangle can be considered as the objectives of the project.

Any project can be successfully implemented if there is no time constraint or an unlimited budget. Unfortunately, this is not the case in real life. A project is implemented within certain constraints and usually these constraints are competing. So, if one of them changes, the other will be affected.

The relationship between the three constraints (time, cost and quality) is given by the following expression (see e.g. Badiru 2019):

$$S=f(T,C,Q)$$

where:

S – satisfaction of the stakeholder, or consumer;

T – time;

C – cost;

Q – quality.

The interrelationships between the three constraints differ. For example, sometimes it is necessary to compromise on the quality and scope of a project to get the project done quickly or cheaper. Often, the longer a project takes, the more expensive it is. However, a positive correlation between cost and schedule may not always be true (Hulett, 2011).

3. Environmental project. Specifics of environmental project management

In general terms, an environmental project is a project that is in some way related to environmental protection. The activities contained in environmental projects are either aimed at preventing pollution and environmental degradation in the form of preventive measures or aimed at eliminating pollution. Activities may act selectively on a chosen environmental component or on the environment as a whole (Adamišín, Andrejovský, 2007).

Environmental protection projects are most often public projects, mainly implemented by public institutions. These institutions have no or few competitors as service providers, creating a dominant position of project owner and project manager. The project environment is very complex: political influence, policy changes, multiple stakeholders (agencies, local service providers, NGOs, businesses), state institutions, donors, legislative framework (Jałocha et al., 2014; Santos, Varajão, 2015). Projects need to be sensitive to political changes and influences at different levels. These constraints highlight the complexity of the project, the importance of relationship management and consultation with project stakeholders (Bulkeley, 2005; Hall, Holt, 2002; Rovňák, 2020).

Environmental projects can thus be seen as public benefit projects whose primary purpose is to achieve environmental policy objectives in relation to:

- to the physical state of the environment;
- on EU requirements and international conventions (Adamišín, Andrejovský, 2007).

The classification of environmental projects in the literature is quite extensive. At a basic level, they can be identified as either pollution abatement projects (ensuring that pollution does not enter the natural environment) or pollution prevention projects (also referred to as pollution abatement at source). This classification is still based on a number of studies in the second half of the 1990s (Thoumy, Vachon, 2012).

An extension of the classification was offered by (Klassen, Whybark, 1999) by categorising projects as: pollution control, pollution prevention and management systems.

Another important way of classifying environmental projects is the focus of the project in the operational activity. For example, projects can be divided into those directly related to the main product (service) or its core production process, as well as those related to peripheral (non-core) products (services). Such a distinction can be found in the lean management literature (Shah, Ward, 2007; Scherrer-Rathje et al., 2009). In other words, core projects are mainly related to aspects for which customers are willing to pay. Projects that entail input substitution, product redesign, modification of production facilities are related to core products, or their core production processes. On the other hand, ancillary projects are those related to activities that do not directly add value to customers and include aspects such as packaging, maintenance, waste management. Environmental projects that are directly linked to the main product or its core production process can not only provide strategic value, but are generally more financially viable than non-core projects (Thoumy, Vachon, 2012).

In terms of content, we can distinguish the following types of projects:

- Projects involving economic activities that use or affect environmental components. This is the most common type of commercial project.
- Environmental improvement projects
- Combination of the above types – the project brings economic benefits while improving the quality of the environment. (win-win projects).
- Research projects whose results are prospectively applicable in practice with a subsequent positive impact on the environment (Adamišín, Andrejovský, 2007).

Of course, projects can also be classified according to size – classifying them according to this criterion is not the aim of the lecture, but when size is considered, it is important to point out the findings presented in the literature – the negative correlation between the size of the organization and the environmental performance (Grant et al., 2002; Vachon, Klassen, 2008).

Environmental protection projects are considered to be very complex, mainly due to the characteristics of (Todorovic, 2019):

- Ownership – environmental protection projects are mostly owned by public institutions with a monopoly position in the market (Santos, Varajão, 2015).
- Comprehensive stakeholder management – these projects have many different stakeholders (central and local governments, service providers, national legislation, donors). This further implies the importance of stakeholder management (Hall, Holt, 2002).
- Legislation – laws, contracts, agreements with donors and other partners, procedures (Santos, Varajão, 2015).
- Dependency – environmental projects have mainly been part of a programme that requires commitment to programme objectives and often dependency on other projects (Istrate et al., 2014).

Environmental projects can have an impact on the economy at local and national levels, e.g. a project focusing on biodiversity can lead to tourism development and an increase in tourism revenues. Tourism development can create the need for infrastructure projects. Given these linkages with other sectors and multiple effects, these projects should be part of local or national strategic management plans (Tallis et al., 2008).

Environmental projects can contribute to economic growth by building a platform for the green economy, increased employment and new jobs (Bartniczak, Ptak, 2015; Kim, et al., 2012).

In terms of new jobs, the above authors refer to 'green' jobs as jobs that contribute to reducing the environmental impact of businesses and economic sectors towards sustainable levels (Bartniczak, Ptak, 2015). In addition to these jobs, employment can increase because of newly created jobs and synergistic development of other sectors.

The impact of environmental projects on the economy can also be seen through cost-benefit analysis. According to this analysis, we can find the benefits in the reduction of negative impacts, e.g. on human health, and value it in monetary units. Based on OECD data, for example, in Slovakia, more than 5,000 premature deaths occur annually as a result of excessive air pollution, generating costs of €9.3 billion. (CEPTA 2019)

In addition to the direct impact on economic growth, environmental projects have an impact on and provide value for:

- people employed on projects – by working on these projects, people can gain knowledge of project procedures, planning, organization and reporting, as well as sector-specific expertise (Brooks et al., 2013; Jałocha et al., 2014);
- society – the objectives of the programmes under which many environmental projects are implemented address not only environmental protection, but also economic and social issues (Hall, Holt, 2002; Savic et al., 2016);
- policy making – implemented projects can modify future policy objectives and initiate policy changes towards better regulation of environmental protection (Thompson et al., 2011);
- future projects – good project management can influence future projects (Ibidem).

An environmental project has several key characteristics that distinguish it from other projects. The most obvious characteristic is that an environmental project must achieve a specific environmental objective, for example "to reduce greenhouse gas emissions or reduce industrial waste by 20% by 2020".

Environmental projects are usually dependent on other projects or are part of a larger programme. To manage a programme at local or national level, it is necessary to secure funding as well as a commitment from local authorities to the programme's objectives and a contractual agreement with donors. The success of a project or programme is largely influenced by the maturity of the institution's project management (Istrate et al., 2014). A project often requires cooperation with institutions at local and national level, as environmental projects have many stakeholders which make these projects very complex.

Based on the general nature of environmental projects discussed above, the following specificities of environmental projects can also be identified (Adamišin, Andrejovský, 2007):

- the benefits are mainly environmental and social, less so in the economic sphere;
- non-commercial character;
- the limitation of the usual sources of funding;
- low to no economic return on projects based mainly or exclusively on environmental activities;
- insufficient interest of business entities in the implementation of such activities;
- pressure from state authorities to support the implementation of environmental activities in business entities, especially through legislative standards (Ibidem).

4. Environmental project management

One of the earliest definitions of environmental management is that it is "the process of allocating natural and man-made resources so as to make optimal use of the environment to satisfy basic human needs to the minimum extent, and to a greater extent if possible, on a sustainable basis" (Jolly, 1978).

Another definition states that environmental management can also be defined as the process that industries, companies and individuals undertake to regulate and protect the health of nature. In most cases, it does not actually involve the management of the environment itself but is rather the process of taking actions and encouraging behaviours that will have a positive impact on the way environmental resources are used and protected.

Environmental management has two main objectives: to control the amount and level of pollution and to improve the quality of the environment to an acceptable level. So far, these objectives have been attempted to be achieved mainly through two different management strategies: command and control and economic instruments. The latter has proved to be more effective and has created a win-win relationship between governments and companies (Sholarin, Awange, 2015). The environmental project, its implementation coupled with financing, is a good example of an economic instrument of a management strategy at the central or regional level.

In this context, it is important to distinguish between environmental management that is 'unsustainable' and that which will lead to sustainable development goals. We refer to the latter as environmental project management.

Sustainable development can be broadly defined as development that meets the needs of present generations without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). In addition to this, the

most commonly cited definition, a number of other definitions of sustainable development can be accepted. These definitions serve as a complement to better understand the goals of sustainable development. For example, sustainable development can be understood as the improvement of human life while living within the carrying capacity of supporting ecosystems. Further, it can be understood as development that provides essential environmental, social and economic services to all people in a community without compromising the viability of the natural and social systems on which these systems depend for their provision. The definition of sustainable development also suggests an integration of what is to be sustained as well as what is to be developed. There are, however, differences in the boundaries of 'merely sustain' and 'mainly develop'.

Although more than 100 definitions of sustainability have been put forward, most scholars working in the field agree that sustainability emphasizes the need to simultaneously balance social, environmental, and economic goals (Aarseth et al., 2017). Despite considerable research interest, sustainability and sustainable development as concepts remain ambiguous.

Environmental project management (EnvPM) is a relatively new concept that can have different interpretations. Most people would probably answer the question by saying that it means exactly what it says – environmental management as a project. They are not too interested in the details of how it is done. However, the term also encompasses the principles, areas of knowledge, processes, detailed tools and techniques used to manage specific components of the environment, such as water, air, soil and living organisms. It is also possible to associate the term with environmental management systems and processes used to guide the potential environmental impact of project activities.

EnvPM should not be confused with Green Project Management (GreenPM), a term coined by (Maltzman, Shirley, 2012; Krasnoff, Mochal, 2010) to incorporate an organization's environmental policies into its project management processes. Green project management is a model designed for project managers to think "green" throughout the life of a project and to make decisions that consider the environmental impact of human activities. Environmental project management, on the other hand, is a concept that uses project management principles, methods and processes to manage and improve elements of an ecosystem, such as water, air, plants, soil or living organisms, to achieve a sustainable outcome.

This concept can be illustrated as follows:

EnvPM = Environment + Project + Management

EnvPM = Ecosystem – the biological and physical elements of our life (e.g. water, air, plants, soil, and living organisms) + the temporary and unique efforts undertaken to create sustainable change + the organization, coordination, and management of ecosystem elements.

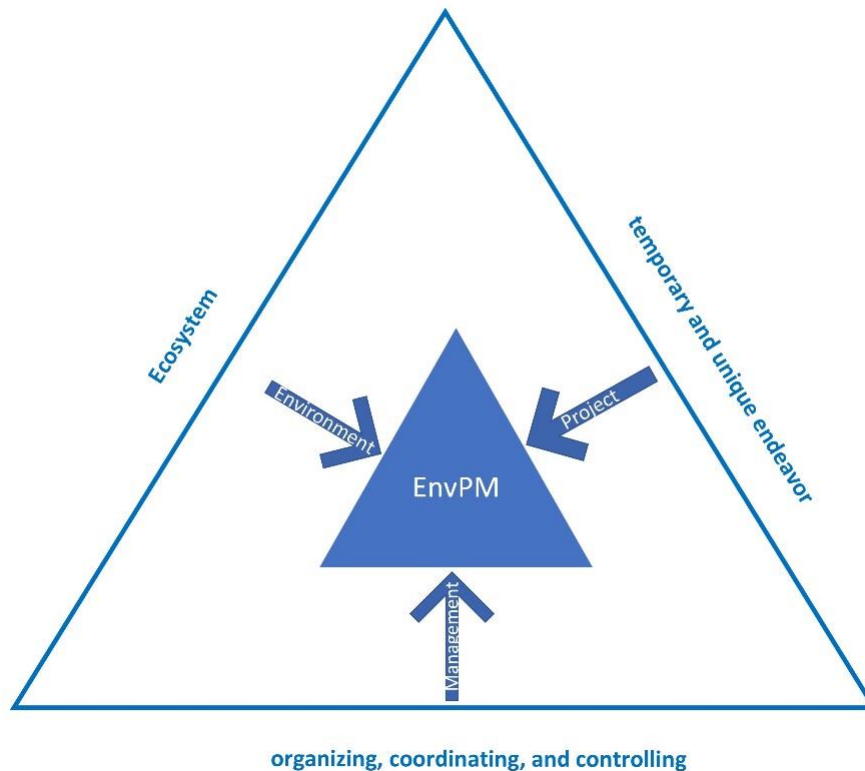


Figure 2. Schematic representation of the EnvPM concept.

Source: own research.

It is important to note that environmental project management is not separate from project management; all project management practitioners must see it as an integral part of their work at all stages of the project lifecycle. In the past, the main project evaluation tools have been cost-benefit analysis (CBA) and net present value (NPV); both are logical and quantitative methods for determining whether a project is worth pursuing.

Like "traditional" project management, environmental project management comes with a unique set of challenges. The specific challenge in this case is how to incorporate environmental impact considerations into the project strategy.

Project management in the environmental restoration and remediation industry involves a unique set of challenges involving the management of engineering, technology, science, cost, schedules, procurement, risk, safety, human resources, and communications. The general approach to addressing this challenge is to enable an environmental manager who possesses leadership qualities to become a project manager through informal mentoring and professional learning from their own work experience (Sholarin, Awange, 2015).

Since the demands for implementing environmental project management are higher than for traditional project management, it is a legitimate question whether the eventual implementation (out of compulsion or conviction) also makes any economic sense. Several studies have empirically linked organizational performance to environmental management (King, Lenox, 2002; Klassen, McLaughlin, 1996; Rovňák, 2021). This is particularly true for environmental activities that reduce pollution at the source (Vachon, Klassen, 2006; Zhu, Sarkis, 2004) also known as pollution prevention activities. Environmental management that emphasizes pollution prevention has been associated with better cost performance (Christmann, 2000), better financial returns (King, Lenox, 2002) and higher share price (Konar, Cohen, 2001).

Conclusions

The benefits of the projects for society as a whole and for the individual groups of primary beneficiaries are unquestionable. The implementation of environmental projects brings even further added value. It is not our aim to argue about the greater or lesser value of implemented environmental projects compared to standard ones. Nor is it possible to respond properly to the question posed in this way.

Research on the integration issues in question is still in its infancy, which does not allow for sufficient theoretical results of relevant research as a basis for subsequent shifts in the topic. Nevertheless, the results in the partial themes make it possible to benefit from the relevant findings and to create further directions for the field of science and for practical applications based on the given starting points.

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