Applied Studies in Agribusiness and Commerce – APSTRACT
Center-Print Publishing House, Debrecen
DOI: 10.19041/APSTRACT/2015/4/5

INTEGRATING ENVIRONMENT ECONOMY TO PROJECT MANAGEMENT

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Abstract: *Environmental sustainability is a horizontal issue that appears at all level of economic activities and private life. Due to the increasing complexity of regulations, particularly in case of EU funded developments, all the projects need to meet a lot of criteria on environment protection issues. These activities include the conduction of environmental studies, data collection, future emission estimations, improving social attitude, acquiring necessary permissions and environment friendly equipment and finally all the administrative activities to monitor everything mentioned previousThe project management organization increasingly needs a special expertise to meet all the requirements no matter what is the original scope of the project. The study collects different type of knowledge and expertise to manage environment economic issues during project management on four different categories, such as legal, technical, financial or human. The summary of the different type of knowledge provides logical conclusion on how the project management organization should meet the challenges of climate change in terms of daily work and organizational operations.*

Keywords: *environment management, project management, externality, organizational management*
(JEL classification: O22)

Introduction

Environmental sustainability is a cross-cutting issue when performing daily activities both at individual and organizational level. Environment friendly actions are either motivated by external factors, such as regulations or may be motivated by internal factors, such as environmental awareness or business interests. Any actions made by humans have an environmental impact and some of them create externalities for others. The aggregated mass effect of these individually created externalities creates cost for organizations, especially in terms of environment management. On the one hand environmental management is mainly about decreasing negative impact and additional cost created by externalities affecting our organization,on the other hand it is about to promote our own organizations to create less externalities resulting negative influence for others. Project management is often the bridge between environmental management and organizational management as it acts as a pioneer of new methods and techniques within the organization. The following study intends to give picture on how project management may assist to integrate environmental management principles and practices into the organizational management activities.

Methodology

The methodology of the study is mainly based on literature analysis of former research focusing on environmental management and project management. The current research intends to discover and analyze the aspects and processes on how environmental sustainability is integrated into organizational practices. The findings and results were complemented by practical experience of mine bases on previous project management career. The current study do not distinguishes project of environment management focus from other projects where sustainability is a horizontal issue. In both cases the same motivations promote the organizational activities toward a more environmental friendly world and the same project management techniques are applied in order to achieve the objectives.

The second step of the methodology is to select projects of various fields and survey whether environmental issues were taken into account during the project and or the positive change have been integrated to daily operations after the project. This step includes the evaluation of renewable energy project financed by Environment and Energy Efficiency Operational Programme in Hungary between 2007-2013. The environment protection indicators were compulsory in these projects;

however, there were no sanctions if the applicants could not meet them. At this step we shall have a look on how much the expected results were fulfilled by the end of the sustainable period after the projects.

Findings

Sustainability issues are more and more integrated into the project management practices as fight against climate change becomes more vital to everyone. "Sustainability has become a component of business success, and project management is one of the ways to get there" (The Bottom Line on Sustainability, Project Management Institute, 2011:1). This is important as the project management organization is a temporal entity, there is a contradiction that how project management may contribute to long-term sustainability affecting the period when the project management organization is ceased to exist (Figure 1).

As environmental sustainability is a cross-cutting issue, related activities include the conduction of environmental studies, data collection, future emission estimations, improving social attitude, acquiring necessary permissions and environment friendly equipment, formalizing and regulating daily processes and finally all the administrative activities to monitor everything mentioned above. According to Hedberg and Jonsson (2013: 15-16) there are 5 main types of theories have been formulated on how project management may influence and alter organizational management:

Evolutionary theories focus on change as a response to external circumstances, situational variables, and the environment faced by each organization. Social systems as diversified, inter dependent, complex systems that evolve naturally over time because of external demands.

Teleological theories or planned change models assume that organizations are adaptive. Change occurs because leaders, change agents, and others see the necessity of change. The process for change is rational and linear, as in evolutionary models.

Life-cycle models evolved from studies of child development and focus on stages of growth, organizational maturity, and organizational decline. Change is conceptualized as a natural part of human or organizational development.

Dialectical models, also referred to as political models, characterize change as the result of clashing ideology or belief systems. Conflict is seen as an inherent attribute of human interaction. Change processes are considered to be predominantly bargaining, consciousness-raising, persuasion, influence and power, and social movements.

Social-cognition models describe change as being tied to learning and mental processes such as sense making and mental models. Change occurs because individuals see a need to grow, learn, and change their behavior

Independently of which approach is used, there are 4 steps to be distinguished when doing theories to practices in term of environmental sustainability according to the literature. The 4 steps cover any activity from planning, though implementing to monitoring organizational activities in terms of environmental perspectives. When all the four steps are achieved professionally, the principles stipulated by the environmental management shall be successfully integrated into the everyday operations of the organizational management.

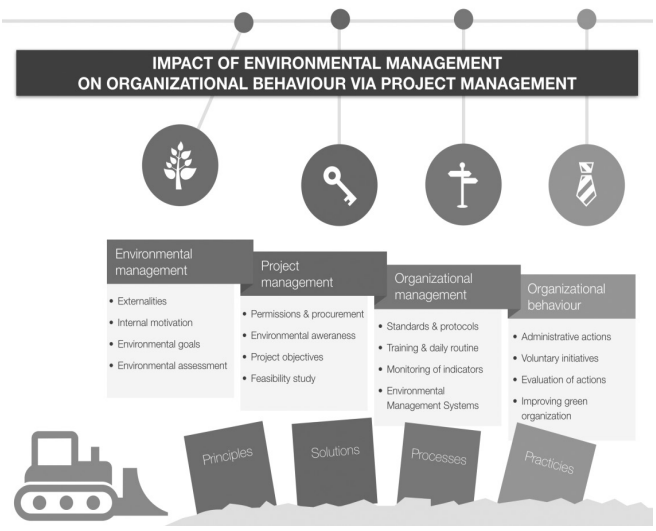
Principles: the primary mission of environmental management is laying down the principles on how the environmental friendly organization should work; at this phase the managers and experts analyze the current situation, set out environmental objectives and lay down principles to be taken into consideration at all levels of activities.

Solutions: in this context the primary mission of project management is to find the organizational solution on how to implement the environmental principles and objectives within the organizational environment during the project; such solutions may be integrated into the standard organizational operations after the project was finished.

Processes: good solutions of the project or environmental protection practices aimed to be introduced into the organization are to be integrated into the daily organizational operations via standards and protocols that provide a framework for the daily routine; this is implemented via the standardized organizational management activities.

Practices: finally, if the environment related standards and process are well-defined and realistic, they may become an inseparable part of the everyday activity provided the employees are able and willing to adapt to the new protocols.

Figure 1 - Impact of Environmental Management on Organizational Management via Project Management



Source: Based on Hedberg and Jonsson (2013)

Environment friendly actions and practices are motivated externally or internally as Hedberg and Jonsson said: "Pressure to integrate sustainability requirements may come from two different directions: from within the business itself or from outside the company (such as from government, business partners, non-governmental organizations and citizen groups)." (Hedberga and Jonsson, 2013:4) External forces to motivate

environment friendly operation may appear in various forms. The external pressure often comes from the society or other market actors, such as externalities unfavorable for the organization. In addition "the governments are also promoting more and more set of laws to protect the environment and the community in general (Chakrabarti and Mitra, 2004)."

Internal pressure comes from the environmental awareness of the organization members or the from the recognition of the business and PR value for the company. "Newman and Breeden (1992 cited Scanlon 2007) imply that the acceptance of an environmental management program by a company would have the following benefits, just like a competitive advantage for green marketing as a reply to consumer expectations, media recognition of environmental efforts, the minimization of risks and future costs and positive recognition of environmental efforts by stakeholders."(Scanlon, 2007). All the factors above contribute directly or indirectly to the profitability of the firm.

When the environment management identified both the external and internal pressure than objectives shall be set out focusing on environmental friendly actions or at least actions that seem to be environmental friendly for the public. Objectives should be clear, realistic, relevant and measurable – exactly the same way as project management defines the project objectives. As a result it is natural to apply project management techniques to define and implement environmental objectives. "If organizations put their money where their mouth is on sustainability, it is inevitable that sustainability criteria and indicators will find their way into project management methodologies and practices in the very near future" (Silvius & Schipper & Planko & van den Brink & Köhler, 2012) A more professional level is the environmental assessment to plan complex and synergic actions to introduce environment aspect into the organizational operations. Environmental assessment has mainly the same function the feasibility study in terms of project management: it analyses the current situation, identifies the objectives, measures the baseline and target indicators and stipulates measures or actions to pursue the objectives. Objectives and indicators are also included in the project plan and become a horizontal target for all other project management actions.

Form project management point of view the environmental requirements often appear as regulations that should be kept, acquisition of the compulsory permissions (e.g. construction, water management, environment protection) or applying standards and protocols for daily activities, especially in case of procurement. By this step, the external pressure is translated to the project management language, as the environmental issues are project requirements and objectives that should be implemented the same way as the other project objectives.

An external motivation for environment management is the compulsory indicators in case of EU funded projects. About 5800 projects were financed in Hungary to replace traditional energy to renewable energy under the 4th priority Environment and Energy Efficiency Operational Programme (EEEOP). The beneficiaries were SME's, NGO's and public organizations. The purpose of the projects was to increase the rate of renewable energy within the total energy consumption. The monitoring system just collected data on the final results of energy utilization; however, there is no information on how the environmental awareness was promoted during the projects (there were other call for proposals for that specific purpose). Therefore, the sustainability of the project results ultimately depended about the financial gain on the utilization if renewable energy.

Results show that although the total amount of utilized renewable energy has been increased slightly, and the rate of the renewable energy within total energy consumption increased a bit more - but the results fall far below the expectations in both terms. The only exception is the electricity, where the solar panel revolution between 2007-2013 showed a positive impact of extraordinary high results. The rapid decrease in the unit cost of investment is a positive side-effect of both the increased demand stimulated by EEEOP and the rapid development of the technology. The total green-house gas

Table 1 – Plan and results of Environment and Energy Efficiency Programme 2007-2013 in Hungary

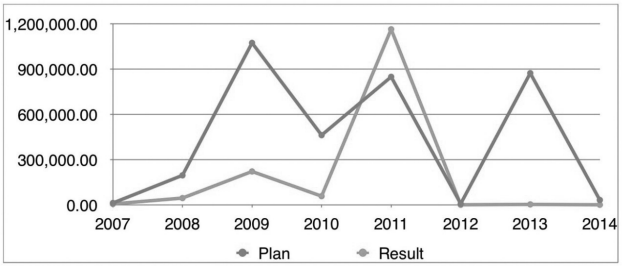
	UNIT	PLAN	RESULT	RESULTABILITY
Primary energy saved	GJ/year	718,500	51,913	7.23%
Renewable energy	kWh/year	115,075,577	15,719,578	13.66%
Total energy saved	GJ/year	4,309	753	17.47%
Decread in GHG	t/year	3,499,886	1,493,510	42.67%
Unit cost of investment	100 HUF/m2	446,997	279,963	62.63%
Renwable electric energy	GWh/year	931	2,594	278.67%

Source: Egysce: electric energyronment and Energy EEMIR), official IT system for administrating EU fund in Hungary

(GHG) emission has been decreased about 43% of the expected result. On the whole the goals of the EEEOP were too ambitious and one reason of unsuccessful implementation might be that environment protection issues were not integrated into project management and the importance of environment awareness was fully neglected. Note that not all the projects have been finished as the projects that started in 2013 (or even in 2014) should be finished by the end of 2015. Therefore the results listed below shall be improved when all the ongoing projects are finished (Table 1).

The most important indicator in terms of climate change is the decrease in greenhouse gas (GHG) equivalent emission. The Lisbon strategy (2007-2013) and the EU 2020 strategy requires all member states of EU to address the problem of using traditional energy. The objective of the Lisbon strategy was to increase the rate of renewable energy to 21% within electricity production in Europe.[1] The EU 2020 strategy stipulated that the member states should reduce greenhouse gas emissions by 20% compared to 1990 levels by 2020[2]. Therefore, decrease in GHG emission is an EU requirement against all related EU funded projects across Europe and it is obligatory to monitor the relevant results. On the other hand higher level of undertaking in terms of GHG emission means higher chance to be funded; as a consequence the projects tend to overestimate their future results and that may be a problem when they cannot fulfill their on estimations since it has a negative impact on programme level indicators. Significant decline in meeting the previously set targets may result the suspension of the operational programme due to serious failure. This is why at the beginning of the 2007-2013 programming period the GHG emission results show a low level of fulfillment of the targets that could have been compensated in 2011 (Figure 2). In 2012 the program was restructured so both the targets and the results are low. As not all the projects that started in 2013 have been finished and processed yet, at the end of the programming period there is only a low level of fulfillment so far, but this should improve as all the projects are finished by the end of 2015.

Figure 2 – Plan and results of GHG emission by year in the Environment and Energy Efficiency Programme 2007-2013 in Hungary



Source: EMIR, 2015

The internal motivation of the project team or any organization to fully respect and fulfill the environmental issues can be raised by improving environmental awareness. The first step has been made by setting up measurable objectives and conducting environmental assessment "To start using a new method and an overall approach in project management with greater environmental perspective, there is a need for a cultural change within the organization. First, this has to take place on an individual level, but may at a later stage spread through the organization to other partners like suppliers, customers and subcontractors." (Hedberg-Jonsson, 2013). If environmental awareness does not follow the objectives and standards stipulated by the environmental management, the whole process will only focus on meeting the official requirements on the paper, however, real environmental friendly behavior will not be created. This happens when the environmental indicators and objectives are irrelevant from the real environment protection or if the standards are only met on the paper but not in the reality. As Yüksel concluded from his research once "… the firms stated that the problem they typically came across while implementing the environmental management practices is lack of environmental awareness in all the areas including in the employees, suppliers and customers". (Yüksel, 2008). As a result "these systems and this change in culture require a useful and sustained education and awareness effort to ensure that the information necessary for environmental management is acquired and retained, or the benefits of implementing environmental management will most probably not be realized." (Power et al.2004

Conclusion

The project management techniques are useful when attempting to integrate environmental friendly daily routine into on organization whether sustainability is the main focus of the project itself or not. «If you want a culture consisting of discipline where results rule, you must start by creating measurable processes. Processes create habits and habits create culture" (Pennington, 2006, s. 111).[3] This step is beyond the scope of project management due to the temporary nature of the project. If the management intends to integrate the environmental management issues for the long run, then the solutions offered by the project management should be further developed to standardized processes within the organization's operational structure. "Even in project-based organizations, there is often a problem of capturing the learning from projects so that it is available for use by other projects. Instead, each project tends to start from scratch, often making the same mistakes as others have made before. This happens even though most organizations have now instituted project reviews, which ensure that project team members capture what they have done on a particular project, codify these lessons in a written document of some kind, which is then stored on a database that others can search at a later point in time" (Newell, 2004.)

1 Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013 http://ec.europa.eu/regional_policy/sources/docoffic/2007/osc/050706osc_en.pdf

2 http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/priorities/sustainable-growth/index_en.htm

3 Pennington, R. (2006). Results Rule!: Build a Culture That Blows the Competition Away

When project management succeeded in integrating the environmental "cost" into to the production chain, the organization shall operate under environment consciousness. „This means it is optimal to choose a stock corresponding to a direct utility lower than its bliss point when preferences are strongly tilted toward consumption rather than toward the stock as an environmental amenity and/or when its reproduction rate is low relative to other parameters. In this case environment can be interpreted as factor of production."[4]

The introduction of environmental friendly standards and protocols are not enough to fully elaborate the change to create a sustainable organization. As Saha & Darnton (2005) said "having these standards does not mean that the company is green: it just means that they are committing to continuous improvement." The success of the process relies on the employees itself, so it is inevitable to promote environmental awareness among the employees. This is achieved via training and other actions and habits that are integrated into the daily routine. It is a key factor to identify and find those employees, who are the most receptive to environment protection ideas within the organizations. They must be deeply involved in the process, it is a good idea to assign them key roles during the introduction process and exploit the voluntary willingness to implement the objective. According to Patterson and Sorrells (2001) "during periods of organizational change, most attention focuses on the organization in terms of structure, processes, tools, measurements, policies, and procedures. However, for the transition to be successful, people need to be persuaded and committed".[5]

There already widely used methodologies on how to define and evaluate environmentally focused indicators, or on how to introduce environment friendly standards and protocols, or oven a complex environmental management systems but this is not the full story. Graham (1989) writes that "success in implementation of organizational changes rests mostly on people's cost\benefit analysis: people accept changes easily in case they see some personal benefits and they reject it if they don't. This could lead us to a conclusion that organizational culture is the main factor influencing project management methodology implementation, especially considering another project definition that includes people. "The key concept is to make the people understand that "sustainability is not about installing solar panels or using alternative energy. It's about connectivity, and thinking project plans through in terms of environmental impact, and the fundamental relationships between the decisions we make today so we are not compromising ourselves down the road." (Project Management Institute, 2011)[6]

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