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SUSTAINABILITY IN PROJECT MANAGEMENT: WHERE ARE WE?

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ABSTRACT: *Nowadays, the conditions (socio-economical, environmental and technological) in which organizations operate and projects are executed change continuously. Therefore, sustainability is becoming a prime driver in organizations and projects, making the relation between project management and sustainability crucial. This paper presents an assessment of the current scenario of sustainability implementation in projects. It confronts the existing literature and exploratory interviews executed to different people related to projects and PM. Findings are that although sustainability implementation in organizations is a common goal; definitions, drivers and methods change. It is necessary to describe, improve and further develop sustainability implementation in PM practice.*
KEYWORDS: *sustainability, project management, sustainability strategies, drivers*

INTRODUCTION

Nowadays, almost everyday we learn of a new technology, social dilemma or environmental issue [1]. Besides this ever-changing scenario, economical crisis and peak oil crisis present challenges in day-to-day business; further profitability no longer comes solely from margins in the value chain (and being able to increase the price of the products/services demanded by the market), but a meaningful part of it has to come from cost reduction and other cost abetment measures. In this climate, sustainability is increasingly becoming a prime driver in organization strategies, however it is not always understood in the same way, and therefore the way it is "exercised" in an organization and through project execution and in the day to day operations varies completely according to the company. Furthermore, in companies projects play a prime roll in the value creation in organizations, thus sustainability driven project management could ensure the delivery of new added value in projects. Project management is a discipline that underpins much economic activity across industries. The Project Management Institute estimated that in 2001 the US public and private sectors combined spend around a quarter of the GDP, which could be extrapolated in a global level and estimated in almost $10trn of the world's global GDP [2].

Currently the reasons for driving an organization towards sustainability can be from different causes. For instance, while clients or employees can request and suggest enabling the drive in an organization, recommended certificates and CSR (Corporate Social Responsibility) options can present new opportunities in emerging markets; governmental regulations can simply compel the organization to meet certain standards. Additionally, other reasons might refer to the ethical obligation ("it is the good thing to do") and strategic vision [3]. The bottom line is that sooner or later organizations will adopt the drive, the question is how will this drive will be embedded in the organization strategy and furthermore, how will it be implemented in the business-as-usual. This also renders a need for a common ground that sets a standard definition for sustainability and a common comprehensive program for its implementation.

RESEARCH FRAMEWORK AND METHODOLOGY APPROACH

The purpose of this research is to look into the current scenario of sustainability implementation in the project management practice. The interviewed companies and approach will be further described in this section. This paper exposes the literature background and results on an exploratory research in the current practice, and confronts both literature and practice in the following chapters. The structure of the paper follows the research questions and sub-questions.

Research questions

The main research question for this exploratory research is: How is sustainability currently being implemented in project management practice?

This research question can be expanded in several research sub-questions that will give the structure to the subchapters in the following part of the paper. The first one is descriptive, since there is a well-known definition of sustainability in general terms, in the practices the definition varies according to the focus:

1. *How is sustainability defined in PM (by project driven organizations and project managers)?*
2. *The second sub-question is about the motivation that the companies find in sustainability. The word driver is used as the motivation for the implementation. One of the aims of this research is to look into the motivation that organizations find in sustainability, hence the question is: What are the drivers of sustainability?*
3. *The third sub-question approached in this paper is about the way in which sustainability is translated in implementation projects. This includes several practices within the organizations, and the question is: How is sustainability implemented in organizations?*

Literature review

In this paper, the points of view of three main research teams in the subject are shown in this section. The current research teams in the PM and sustainability hereby mentioned are: Brent & Labuschagne; Gareis, Martinuzzi & Heumann and Silvius & Brink. Other authors are mentioned from complementary literature, as well as documentation, methodologies, manuals and white papers from organizations in the practice.

Exploratory interviews

To present a first overview of the current situation, interviews were executed in four different companies. These were executed to people in different positions in the company, and with different backgrounds, but that are related in the implementation of sustainability in projects though the execution of the strategies and the influence in the decision making. The full information is in Table1.

Table 1 – Interviews overview

	Company A	Company B	Company C	Company D
Interviewee designation	Sustainability Manager	Contract Manager	Project Manager	Delivery Manager
Education/ experience background	B. Physics, MSc Management Sciences	B. Civil Engineering B. Industrial Economics MSc Business Science	Naval Officer	Mechanical Engineer
Interviewee competencies	Sustainability projects, reporting	Contract administration	Project planning, and execution	Project Portfolio and Project Management
Industry (organization)	High-tech semiconductor	Construction Infrastructure	Energy	Energy

Based on the four interviews executed in May and June 2011, some of the points explored are further developed, contrasted and explained. The interviews were semi-structured and covered:

- *Definition of sustainability and importance in the organization (strategic level), implementation mechanisms, stakeholder support on sustainability.*
- *Sustainability in project management (project and operation level) in relation to added value, practices and tools, governance issues, tradeoffs in the organization, assessment methods, and risks and opportunities.*
- *Consequences in the products and services, and elements contributing to sustainability.*

The interviews explored the experiences of the interviewees and their point of view on processes within the organization, rather than specific project performance. The structure of the remaining part of this paper is composed by a brief summary on prior literature, the interview results divided in the definition, drivers and implementation; and finally the discussion on the results and conclusions.

LITERATURE REVIEW

While there is plenty of sources on project management or sustainability by itself; there is only a few authors that aboard sustainability and project management. This relation involves many concepts depending of the approach of the research team: project life cycle, project management and sustainable projects, project management of sustainable products/services. This is further developed in the following subsections.

In addition to this, other authors might also approach sustainability in other related topics: risks [4,5], KPIs and assessment tools [6-8], reporting practices [5], strategy [9,10], etc; however the scope of this paper presents aspects perspectives of authors focusing on sustainability in project management.

Definition

In a common definition, sustainability implies a review of concepts as production, wealth and interest [11]. It integrates and aligns economical, social and ecological interests within the business model, allowing a holistic approach with a wider scope; this is summarized in the triple bottom-line (people, planet, profit).

Defining sustainability is the starting point from the understanding and implementation of the concept. In some cases authors refer to a comprehensive definition that incorporates the project management angle, although the initial definition is referred to the Brundtland report, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This concept might include many different aspects, although the basic components are commonly defined by the triple bottom line, which aims to include social, environmental and economic goals. Once this concept is understood, then it is translated by the organizations into concrete actions and well-defined operational terms. In Table 2 the main information defining their perspective is summarized.

Table 2 - Current literature information

	Brent & Labuschagne [12,13,14]	*Gareis, Martinuzzi & Heumann [15,16]*	*Silvius & Brink [17,18]*
Definition of sustainability	*''For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today, while protecting, sustaining and enhancing the human and natural resources that will be needed in the future''*	*From the Brundtland report, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*	*From Elkington (1997) Sustainability is about the balance or harmony between economic sustainability, social sustainability and environmental sustainability Dyllick and Hockerts (2002), Sustainability is about integrating economical, environmental and social aspects; and considering short-term and long-term aspects.*
Focus on sustainability aspect	*Project Life Cycle Management, which is a comprehensive sustainability evaluation framework therefore it is required to assess projects during the early life cycle phases in terms of sustainability, consequences of the future implemented in assets and products [13].*	*Sustainability implementation is defined by the following principles [15]: economic, social, ecologic; short-, mid-, long-term orientation; local, regional, global orientation; value orientation.*	*Sustainability in projects and project management is about integrating economical, environmental and social aspects in the management and delivery of projects. In project management, it stretches the system boundaries of the project and of project management, considering the full life cycle from conception to disposal in the decisions.*

Based on the studies on sustainability and project management from the aforementioned authors, the following insights summarize the application of the concept [18]:

- *Sustainability is about integrating economical, environmental and social aspects in the management and delivery of projects.*
- *Sustainability stretches the system boundaries of the project management.*

Sustainability could be considered as a normative concept that reflects values of the society; however the decisions about tradeoffs are oriented towards intergenerational equity and the distribution of welfare in the present [16].

Drivers

Another concept used in both literature and practice documentation is the "drivers for implementation" that refer to the motivation to align operational processes with the triple bottom-line of sustainable development. Drivers are levers in an organization that encourage and maintain the performance towards a given goal, as opposed to barriers, which impede the development. In some cases the lack of compliance with a driver could become a barrier [19].

The drivers for implementing sustainability are very important because they become the prime reason for the organizations to become sustainable. This can determine also the focus and how important is it for the organization. Brent & Labuschagne define the drivers in four types, which also render the position of the company towards sustainability. The four types are illustrated in Figure 1.

According to the type of drivers that direct the implementation of sustainability in an organization, it is also the way in which the organization perceives and sees the competitive advantage in sustainability and therefore determines the approach in operations. For instance, while environmental regulations represent pressure on companies and the commitment remains on compliance level, CSR business cases present support to "embracers" and allows finding better and

further opportunities in sustainability [9]. However the same driver can have two or more positions; for instance, while a regulation like ISO26000 could be a support drive when voluntary, it becomes a push driver if it is a requirement from a client [20].

The diagram showed in Figure 1 has been modified form the original used by Labuschagne [20], allowing a further analysis of internal and external drivers within the same category, divided by the organizational boundaries. The criteria to divide the drivers in internal or external is based on the source and the immediate influence; for instance employees or direct requests from investors are considered internal, and so risk management and stakeholder management strategies because these are the result of a internal need. External drivers are considered as those elements that are part of the context (governmental regulations, society awareness, industry-wide standards), or aspects that might affect the perception of these external parties (sustainability reporting and company reputation).

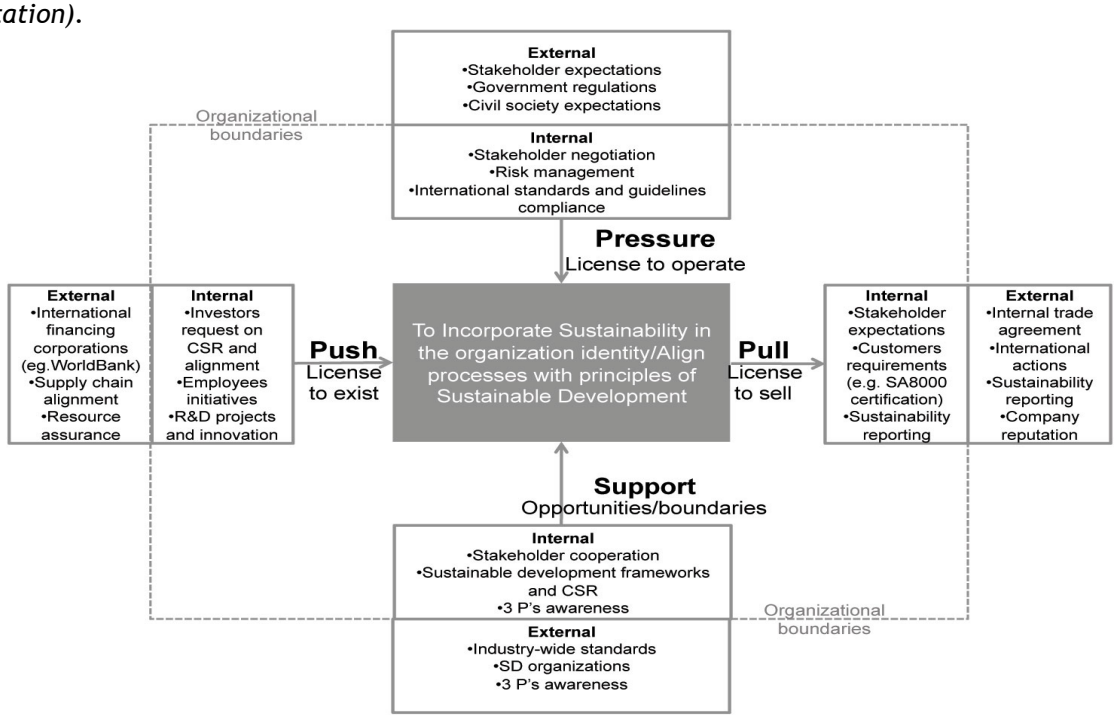

Figure 1 - Drivers of sustainability into business practices, adapted from the original from Labuschagne [13]

Normally, the implementation of sustainability is the result of a number of different motivations acting on the processes. For instance, while stakeholder requirements might push an organization towards sustainability, supply chain alignment efforts might have the same effect on pushing the organization towards the same goal.

Sustainability and the organizational levels

The approach to organizations in this paper is proposed in different levels. These levels are the ones illustrated in the business, planning and control cycle of Mulder and shown in the Figure 2: the strategic level, which translates the mission and vision into the strategic planning; the project level with medium and short term planning, and the operations level, where day-to-day activities are included.

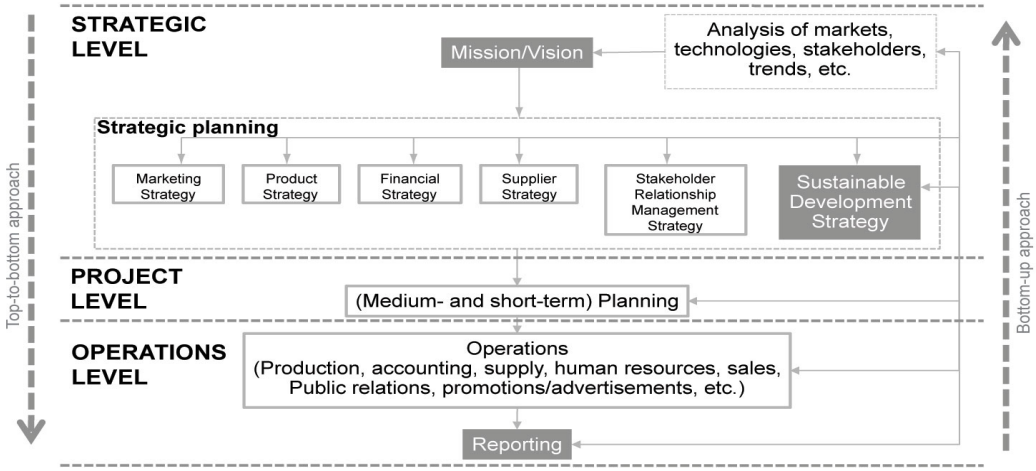

Figure 2 - Organization levels adapted from the business, planning and control cycle of Mulder [11]

In order to translate the sustainability strategy into projects or operations level, the term "implementation mechanism" is used in this paper. We define these implementation mechanisms as the initiatives, standards, projects or other actions executed to implement the sustainability in different levels.

Commonly, in organization the "top-to-bottom" approach is the one used to implement organization. The "top-to-bottom" organizational strategy facilitates de definition, customization and implementation of sustainability drivers into the organization, being defined in the organization vision and governance structure to be later integrated in the value chain and the operations level. However, initiatives could render an inverse path to redefine an organization; a "bottom-up" approach, by driving change trough operations and initiatives. The challenge for the new organizations is to integrate sustainability drivers through multifaceted, rigorous and interconnected strategies linked to overall company strategy and goals [21].

It is the aim of this paper to look into the project level through the interviews, however the connection among the three levels is recurrent in many concepts explored in the subsequent sections.

HOW IS SUSTAINABILITY "HAPPENING" IN THE PRACTICE?

In this section the results of the interviews will be exposed in the same order as the literature topics were previously given.

Defining sustainability in practice

When sustainability is understood as a form of philanthropy or an add-on in the organization, the application of the sustainability principles are not a priority and are misunderstood, and when cost reductions have to be implemented these are the first activities to be cut off [16]. Theoretically, the correct understanding and definition of the sustainability principles in the strategy of the organization would lead to add value in different levels in the organization; for example, by improving its reputation, opening new opportunities in the market, or by aiming for more efficient technologies.

When applied to project management, this definition has to be shifted to a pragmatic approach. Project managers need to broaden their perspective and evolve from "doing things right" to "doing the right things right"[18]. When organizations adopt the sustainability drive it is necessary to have a clear definition of sustainability in a conceptual level, before integrating this concept in strategies, initiatives and programs. This conceptual redefinition depends on the focus of the company and the immediate challenges.

The companies approached in the exploratory interviews represent different perspectives, and therefore having different drivers for the implementation of sustainability in the projects. These are in Table 3.

Table 3 - Definition and sustainability drivers

Company	*Definition of Sustainability*
1	*Sustainability is a process, using the input of the stakeholders to contribute to sustainable development. Sustainability is doing good, connecting to a life term of operations with the community.*
2	*The word sustainability has no use in the project; there is no specific reason for that. People are the most important component. Although sustainability is not explicit, it is the way of working.*
3	*Sustainability in the projects is defined by four aspects: making process as efficient as possible, looking into the materials to be more sustainable, considering the longer-term and integrating the community*
4	*In terms of project, sustainability is making sure that the project you are executing contributes to your business now and in the future.*

It can be seen that all definitions relate to a dynamic concept; a process or a way of executing actions; however all four focus on different aspects. While interviewee 1 stresses the ethical relevance of the concept ("doing good"), interviewee 2 defines it as part of the day-to-day practices. Interviewee 3 defines it as what could be understood as boundary conditions, however he does not uses deliberately this concept to describe sustainability. Definition from interviewees 3 and 4 mention also an important component of sustainability: the longer term, yet it remains as a vague concept. The definition given by interviewee 4 is the only one that focuses in what could be the "profit" or business, but from defining sustainability as the continuity and consistency of this "business" over time.

In a decision-making level, the right definition of sustainability challenges us to make choices that simultaneously improve the economy, the community and the environment [1]. These challenges influence the way in which the decision-making is done in a project, and it could be seen by a constraint that limits possibilities and steer (or even force) the project towards a "sustainable"

outcome, however it is rarely seen like that. Sustainability can represent different perspectives in the decision-making process:

- *Sustainability is an **enabler**, it allows having a different view on opportunities (1)*
- *Sustainability is a **different structure** embedded in the project and planning (2)*
- *Sustainability is more **a trade-off** than a constraint, as decisions bring a different outcome (3)*
- *Sustainability is a **requirement**, is one of the **boundary conditions** in project (4)*

*Sustainability defines value orientation in decision-making process. The different perspectives on the concept illustrate that the relation of sustainability and the decision-making process is dynamic. It also defines the approach in which sustainability is applied. Understanding sustainability as an **enabler** allows identifying opportunities in the current scenario to grow and extend projects and profit, where as understanding it as a **different structure** will lead to the same result but though a different process, which can be similar to defining it as the **boundary conditions** of the project, resulting on a different decision making from traditional PM but remaining within the same scope of the project (it does not imply growth or opportunities). When sustainability is seen as a **trade-off**, it is an opportunity cost on project execution, influencing cost, time or scope; which could be better understood as a strategy of risk management.*

Why should an organization implement sustainability? – Drivers for implementation

Beside the conceptual definition of sustainability, it is also fundamental to understand the importance of sustainability in the organization. When asking "How important is Sustainability in the organization?" almost all the interviewees said that it was very important, however the motivation (or driver) to implement the sustainability strategies is different. Table 4 presents the findings on the drivers for implementation.

In the case of the technology-driven organizations, the importance of sustainability is related to the broad view that a sustainable framework allows. This means, for example, the inclusion of social aspects when communities and other similar actors have major impact in the decision-making; and a more sensible environmental approach and a more conscious risk-assessment that consider resource availability.

Table 4 - Definition and sustainability drivers

Company	Drivers for sustainability implementation
1	technology innovation (external), stakeholder negotiation (internal), company reputation (external)
2	stakeholder negotiation (internal), risk management (internal)
3	technology innovation (external), stakeholder negotiation (internal), environment awareness (external), governmental regulations (external)
4	technology innovation (external), stakeholder negotiation (internal), resource assurance (external), risk management (internal), governmental regulations (external)

In organization 2 (which is driven itself by a project) sustainability was driven by the necessity of having an efficient stakeholder negotiation tactic and as a risk management strategy; which can limit the focus of sustainability, but at the same time allows enhancing crucial aspects of the project execution. Both the definition of sustainability and the drivers for implementation can determine the attitude that influence decision-making on implementing sustainability in the projects.

How is sustainability implemented?

The way of understanding sustainability and the reasons for implementing the drive are the basis of a sustainability program and shape the target in the organization. However, once the targets are defined, the way in which sustainability strategies are translated in operations and projects has to be determined. The term "implementation mechanisms" used in this paper can be understood as the how to "integrate sustainability into what we do" in an organization [16]. Table 5 presents the implementation mechanisms.

To gain competitive advantage, the sustainability principles must be integrated into the core processes of an organization such as the project management processes [16]. When "exercising" sustainability in projects, organizations find different ways to implement the strategies in the operation. While in some cases sustainability starts in concrete projects and initiatives specially defined to enhance the elements of the triple bottom-line, other could simply reinforce certain aspects in the daily operation like communication, the use of "sustainable" or certified resources, or even the planning to profit from specific resources and opportunities.

Based on the results, the "implementation mechanisms" found in the interviews were arranged and classified according to the organizational level in which they are most likely to act, according to the levels proposed in section 3.3 (strategy, project and operations). This analysis is consolidated in Figure 3. It can also be observed that sustainability strategies can be easily implemented in PM by the set of goals in the planning of projects while selecting concrete resources, processes, etc; or when projects are subjected to special standards and assessment that are sustainability-driven. However,

other implementation mechanisms influencing operations or products/services delivered are commonly identified as the way to implement the sustainability in projects since it ultimately will influence the project execution though shifts in operations or delivery goals.

Table 5 - Mechanisms and concrete actions/initiatives to implement sustainability in the organization

Company	Implementation mechanisms	Sustainability projects and initiative
1	Separate projects/initiatives to raise awareness and influence daily operations	The execution of concrete "sustainability projects" defined by the sustainability board such as: reduction of use of energy per machine designed and produced, increasing cooperation with universities, reduction of the machine size and reduction of the amount of energy and size of the material produced by the machines designed.
2	Communication and transparency practices internally and externally	Communication and transparency policy in the operations. This includes community meetings, leasing with civil association and news bulletin publication.
3	Reinforcing the application of the 4 components that define the sustainability in the project execution	Applying sustainability in the components mentioned in the definition: assuring efficiency, using sustainable/certified materials, involving the community and considering the longer term.
4	Planning resources and evaluating emerging opportunities	In the day to day business sustainability is making the proper resources with the right capacities and capabilities to execute the project and deliver to costumers the top projects in the years to come.

Figure 3 - Sustainability implementation mechanisms

Also, these implementation mechanisms can follow the strategy according to the competitive advantage that sustainability brings into the market. Shrivastava et al state that these implementation mechanisms can happen in three ways according to the company strategy: least cost, differentiation and niche [22]. The least-cost strategy orientates the implementation mechanisms towards cost reduction, mass production and standardized products; the differentiation strategy involves well-differentiated products for specific needs of costumers, while the niche strategy focuses in a narrow market niche [22].

DISCUSSION

When authors like Silvius et al define the sustainability in PM as "doing the right things right"[18], the major challenge becomes to define what is "doing things right", finding the reasons why "doing the things right" is important and how to make possible in a day-to-day basis "doing things right" in all levels within the organization. This paper renders some examples of the current application of sustainability in project management, and how some project managers are "doing right" in the practice. The interviews have led us to identify some of the points below discussed.

What is sustainability in PM?

There is a wide understanding of sustainability in both literature and business practice. This includes the definition of the concept, standards, and common practices. Although there is a common starting point on the concept of sustainability based on the Brundtland report "Our Common Future"[23] or other comprehensive definitions as well, there is a diversity of points of view when understanding it inside organizations, and even more diversity in the way to implement it. This diversity in definitions and perceptions will eventually lead to a common understanding, however the wide range of definitions in practice talks about the lack of maturity in the understanding of the concept.

Although considered very important, sustainability per se is not the top of mind in organizations. It is approached from different components: it could be profit, it could be the planet or it could be the people, but it is difficult to find a balance among the three elements (while the original definition emphases the balance), which might open the possibility for opportunistic or polarized perspectives.

Why is sustainability implemented?

As above mentioned, sustainability is often mentioned to be very important in organizations, hence it is important to emphasize the why. In the literature, drivers are understood as the motivation that organizations find in implementing sustainability. Organizations are not driven only by one of these motivations, but by a combination of them that might influence the way in which sustainability is implemented.

Analyzing the figure 1 it has also being identified two main "dynamics" resulting from the application of these drives (illustrated in Figure 4). The push/pull dynamic can be described as the result of a trend, allowing the organization to be part of a "sustainability flow" that occurs in the whole context where the organization operates. The pressure/support dynamic is the result of problem solving situation, where the sustainability approach is needed to operate.

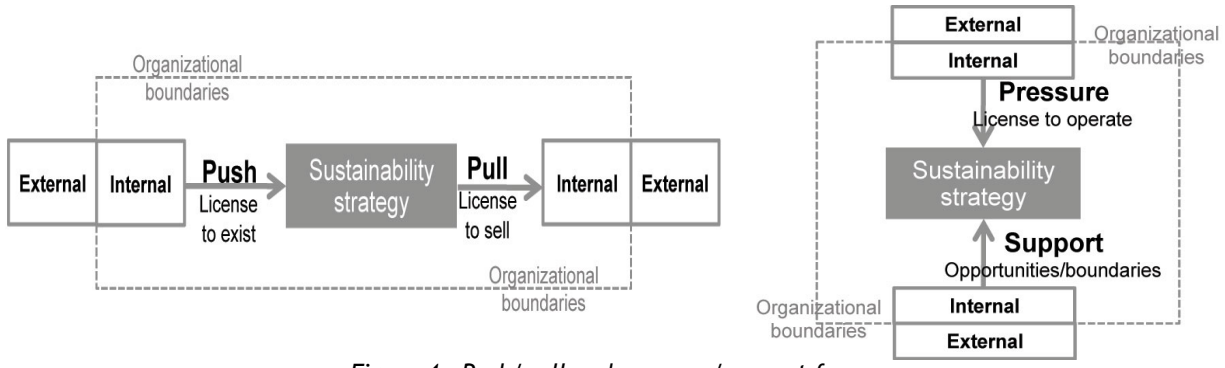

Figure 4 - Push/pull and pressure/support forces

Looking into the interview results, and based on the driver diagram illustrated in Figure 4, it can be seen that technology-driven organizations (organizations 1,3,4) focus on sustainability mainly as a result of push/pull and pressure forces in their operations. Project-driven organizations (organization 2) that do not follow the trend might incorporate sustainability under a dynamic of pressure/support, when sustainability as a driver is the result of a concrete problem-solving strategy, hence offering new opportunities.

How is sustainability implemented?

There are multiple ways to implement sustainability, however they all pursue the alignment to the triple bottom line of sustainability and to create value in the organization based on the sustainable principles in both short and long term. In theory, to implement successfully sustainability in an organization, the implementation mechanisms must happen in all levels: strategic, project and operations. This can lead to a stronger implementation of the drive and allow a cycle in which results can easily redefine the strategy; ideally the execution of this cycle would make an organization to drive more and more towards sustainability. In the practice, implementation mechanisms can happen isolated and with a limited scope within the organization, and the cycle approach is not even considered. In organizations with a higher interest in making sustainability part of their identity, the approach can be more alike the ideal described in the theory, however there are still differences between both approaches.

When talking strictly in a project level, implementation mechanisms found in the practice are focused in planning (in short, medium, long and longer term) and the implementation of standards and certain boundary conditions in the project within the sustainable criteria. However, it is again difficult to talk about this in isolated terms in organizations, since much of this implementation mechanisms are shared with the operational and product/service levels.

CONCLUSIONS

The interviews executed illustrated that sustainability has a wide variety of definitions and resources, therefore it is integrated in different aspects of strategy, project management, and operations with different emphasis in the organizations. These also presented a sample of the current scenario, and the aspects of sustainability that are important to each organization and their experience varied within the different dimensions of sustainability and present a reality that is still separated from the documented literature.

It is interesting to see that in the practice there is not a common language in regards to basic aspects used to talk about sustainability (e.g. KPIs, frameworks, methodologies, etc). Although there are standard frameworks like the one proposed by global organizations such as the World Resources Institute (WRI), the focus of each organization narrows the scope of the aspects that could be included in the "sustainable approach". It is a challenge for the future practice and literature to concur in comprehensive concepts and methodologies that integrate in all three strategic, project and operational level the sustainable performance without presenting further complexity in the management practices. This will also result as the natural evolution of the implementation of sustainability in the practice, thus the literature must not only register but also offer a support in this process.

The implementation of sustainability in project management practices is still in development. The "road" to sustainability is not a single, straight, one-way "road" described in a "map". The roadmap for sustainability is different for each organization, although the aspects to approach are common. Many of the challenges described above are common for companies that adopt the drive by different reasons and forces; hence rendering a wide area for the research to catch up with the practice.

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