CHALMERS

Sustainability Implementation & Change Management

-How Change Management Can Contribute To Environmental Sustainability Implementation

Master of Science Thesis in the Master's Programme International Project Management

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Department of Civil and Environmental Engineering
Division of Construction Management
CHALMERS UNIVERSITY OF TECHNOLOGY
Göteborg, Sweden 2013
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Abstract

With increasing flows of natural resources and countries' quest for economic growth, organizations around the world are realizing the importance of implementing sustainability strategies. Sustainability implementation requires organizations to undertake changes that form their processes and activities to emphasize not just economic aspects but also environmental and social aspects of sustainability.

This research examines how aspects of change management can contribute to environmental sustainability implementation in order for organizations and projects to improve sustainable development. The research is based on secondary data gathered from a literature review and primary data acquired from qualitative interviews with seven respondents from four different industries; oil & gas, automotive, construction & real estate, and power & automation.

The research findings point out that change management is already considered in sustainability implementation to e certain extent and that it has several benefits. Much of the findings from secondary data such as understanding change, communication and education, management support, and reporting are confirmed by the primary data findings to be critical aspects of implementing sustainability and managing change. Nine key factors were developed from the secondary and primary data findings that are considered as critical for successful implementation of sustainability strategies and managing associated changes.

Preface

The various courses in both Chalmers University of Technology and Northumbria University have provided me with interesting and valuable knowledge for the future. My aim with writing a master's thesis was to write about something that I was interested in and something that felt relevant at present and in the future. There has been limited amount of courses and lectures regarding sustainable development during my education, even tough it has been an emerging and important subject for several years. It was when we had a course in project sustainability at Northumbria University when I first fully realized the importance of sustainable development in projects and organizations and how it caught my interest.

After reviewing literature I had formed some ideas for research topics but it was not until I started the research and made a deeper literature review that I decided to examine changes management and environmental sustainability implementation. This research has provided me with lots of valuable insights and understanding in how sustainability strategies are implemented in projects and organizations and how aspects of change management can be a contributing factor. I hope that people reading this will improve their knowledge of the subject just as I have.

1.0 Introduction

1.1 Background

There are some disagreements between scientists whether or not human actions are the major reason for climate change, but the fact that the climate is changing cannot be ignored. Humans are now using two thirds of the ecosystem services that we are dependent on in a way that is not sustainable in the future (Robèrt et al., 2012). Emissions of greenhouse gases caused by deforestation and burning of fossil fuels are together with increasing flows of material and energy causing the global climate to change (Robèrt et al., 2012). By the middle of this century the world population might increase up to 9 billion people (Worldwatch Institute, 2012), which will make it impossible to maintain a healthy planet while living current western lifestyles and using current levels of resources (Ekins, 2011). It is time for the achievement of environmental sustainability to be prioritized in front of economic growth but still the strive for economic growth is not decreasing in the world, not even in the wealthiest countries (Ekins, 2011). The need for environmental sustainability requires to be recognized before any striving towards sustainable economic growth can be undertaken (Ekins, 2011). The current drivers for sustainability are now so many, both inside and outside of organizations that the question is no longer whether or not something has to be done but how will it be done (Kiron et al., 2012).

Consumer interest in sustainable products is increasing and larger amount of organizations have realized that there is not just a need for implementing sustainability but there are also financial benefits (Kiron et al., 2012). Organizations are implementing the agenda of sustainable development set up by societal actors, thus without organizational support, society will never achieve sustainability (Bansal, 2002). But for organizations to become sustainable, they are required to undergo changes in their current activities and processes so that except from economic aspects, environmental and social

aspects are considered as well (Bansal, 2002). Since projects are delivering change to organization, their capability of contributing to an organizations sustainable development should be considered (Silvius & Schipper, 2010). Thus, it is important for organizations to have successful sustainability implementation processes and knowledge of how to manage required changes.

1.2 Research Purpose & Objectives

The purpose of this research is to examine how aspects of change management can improve environmental sustainability implementation. The focus will be on both an organizational and project level, since projects are dependent on the organizational structure and overall implementation of sustainability strategies while organizations are dependent on project success.

The main objective is to explore how change management can be beneficial in environmental sustainability implementation through the comparison of existing studies and acquired empirical data. The existing literature regarding sustainability implementation and change management will be reviewed and analyzed to explore current perspectives, methodologies and models. The findings will be compared with empirical data collected through qualitative interviews in four different industries; oil & gas, automotive, construction & real estate, power & automation. These industry sectors have all products and processes that are causing impact on the environment in various ways, which will provide the research with a variety of perspectives regarding implementation of environmental sustainability strategies. The results will be analyzed and form a basis for discussion, conclusion and further research.

1.3 Research Questions

This research will aim at answering the following three questions:

- What gaps and key factors can be concluded from the existing literature regarding change management and sustainability implementation at an organizational and project level?
- How are environmental sustainability strategies implemented and how are the associated changes managed in practice, compared to the findings in the existing literature?
- How can aspects of change management improve environmental sustainability implementation?

The first two questions are required to be answered in order to form an understanding of both existing literature and practice. The findings will then be helpful to analyze and answer the third question.

1.4 Research Outline

This research is divided into the seven following chapters:

- *Chapter 1: Introduction* – research background, its purpose and objectives and the research questions are presented.
- C*hapter 2: Literature review* – provides a deeper understanding by examining the existing literature of change management and sustainability implementation.
- *Chapter 3: Method* – description of research method including ethical considerations and research limitations.
- *Chapter 4: Interview results* – a summary of the answers from the qualitative interviews are presented.
- *Chapter 5: Analysis & Discussion* – the literature findings and interview results are analyzed and discussed to answer the research questions.

- *Chapter 6: Conclusion & further research – a conclusion of the findings from the discussion and analysis is presented as well as suggestions for further research.*
- *Chapter 7: References & Bibliography.*

2.0 Literature Review

2.1 Change Management

This section explores existing studies and literature of change management in order to provide an understanding of different perspectives, methodologies and models regarding the subject.

2.1.1 Introduction

Organizations are constantly facing new government regulations, new products, growth, increased competition, technological developments or changing workforce, which force them to undertake different kinds of change in order to stay competitive (Kotter & Schlesinger, 2008). Successful change management prepares an organization for course correction and provides the ability to continuously seek new information over time (Newman, 2007). Organizations that manage their change efforts well, will have improved their competitive standing and providing themselves a position for a better future (Stanleigh, 2008). Lawrence (1954) describes change as having both a technical and a social aspect, where the technical aspect represents the making of measurable modifications in the physical routines of a job while the social aspects represents the people affected by the change and their perception of how the change will affect their relationships within the organization. Stanleigh (2008, p. 35) lists a set of key drivers that are often the reason for change within an organization:

- Mergers and acquisitions
- Innovation
- Technology
- Restructuring/re-organizing
- Declining sales and/or market share
- Globalization, expansion and growth
- Sense of urgency

- When 75% of the leadership is honestly convinced that business as usual is no longer an acceptable plan

2.1.2 Implementing and Managing Change

Managing implementation of change initiatives within an organization is a complex process, whether it is a project or strategy (Decker et al., 2012). A strong sense of imagination, creativity and patience is required throughout the process (Newman, 2007). It is important to understand that there are no change processes that look the same, each change is different, each organization is different and each department or project is different (Stanleigh, 2008). Thus, change management requires dedication and leaders who demonstrate their commitment to successful change (Stanleigh, 2008). Hayes (2007) mentions two different approaches to change implementation; implementing blueprint change and implementing evolutionary change. The first refers to a situation where the desired end state of the change is well known and defined, also called planned change, which gives the change manager the ability to create a clear plan. The second approach refers to a situation where the end state is difficult to predict and define, which results in a change plan developed on broadly defined goals and a general direction towards change (Hayes, 2007).

By changing the ongoing communication within an organization, change managers can influence the development and direction of change (Karp & Helgö, 2008). Communication can help people to discover identity issues within the change that matches their own agenda and interests and thereby a change process begins where people can relate to the new state (Karp & Helgö, 2008). As change initiatives always brings along some rates of uncertainty it is required of change managers to communicate and clarify what the change means, its impact and why it is necessary, in order to encourage members and create trust (Self, 2007). By convincing that the organization and its members are fully capable of undergoing a change process, the change manager will have started a path towards change and as the momentum grows and people are starting to accept and understand the reasons for change, the chances for success will increase (Self, 2007).

Levasseur (2001) claims that even though it is important for managers to communicate the nature and impact of the proposed change before introducing any new technology, active top-down communication is not sufficient enough. Communication is not just about speaking, but it also includes listening and proactively seeking input for new ideas and suggestions from other organizational members (Vukotich, 2011). With a two-way communication where managers respond to feedback, the chances of supportive employees increases (Vukotich, 2011). The technical part of a change can often be implemented without any support from employees but the social and behavioral part of a change cannot be implemented by a top-down decision without supportive employees (Decker et al., 2012). Another aspect of the change process is that it requires time to be constitutionalized in organizations. Management often fail by expecting that employees will suddenly accept the new change without considering that adjustments to a new situation takes time (Stanleigh, 2008).

An important aspect when implementing and managing change is to monitor and control the progression to ensure that the change process follows the intended plan (Hayes, 2007). When monitoring a change process, performance drivers are often useful to identify the progression of the change and helps organizational members to clarify what is required of them in order to achieve the desired outcome (Hayes, 2007). There are few existing measures that can be used to predict if the change will be a failure or success and the fact that implementation and change occurs over time makes the issue of prediction even harder (Decker et al., 2012). In the end of a change process when a new state has been reached the change needs to be sustained in order for the organization to not fall back to the previous and well-known condition (Hayes, 2007). Specially designed feedback systems are useful when monitoring and controlling a change process, but can also be effective in helping to sustain a change (Hayes, 2007).

2.1.3 Change Management Failure

The reasons for failure in implementing changes are various in different situations and organizations. Few efforts of organizational change are complete failures but few tend to be entirely successful either (Kotter & Schlesinger, 2008). Failure of implementing

change is defined as ‘either a new project or strategy that was formulated and not implemented, or one that was implemented with poor results’ (Decker et al., 2012, p.31). Even though researchers have put great effort the last decades in examining the reason for failure in change implementation, the rates of failure are still continuing to be high in organizations (Decker et al., 2012). Stanleigh (2008) presents a survey conducted with CEOs of different organizations showing that up to 75% of their organizational change efforts does not reach the set goals.

The view of change is sometimes different between leaders and employees. Top management leaders often view change as an opportunity to strengthen and renew the organization and also take on new professional challenges and risks to advance their careers. While employees and sometimes even middle management might see change as disruptive and not welcomed (Karp & Helgö, 2008). This is why it is important that divergent views and opinions are communicated in decision-making process in order to avoid failure (Hayes, 2007). According to Stanleigh (2008), major reasons for failure in change initiatives are because management does not engage employees in the different processes required for change and the time set out for change to be institutionalized is too short. Kotter (1995, p.59) states that ‘the most general lesson to be learned from the more successful cases is that the change process goes through a series of phases that, in total, usually require a considerable length of time. Skipping steps creates only the illusion of speed and never produces satisfactory results’. Other reasons for failure mentioned by Stanleigh (2008), includes forcing people to accept change, sending employees to change programs and expecting change to occur, not honoring the past and other reasons for creating crisis in change management and thereby also often failure. Palmer et al. (2006) describes vision as both helping and hindering change. When vision is hindering change or leading it to failure it is due to visionary or charismatic leaders, who engages in change initiatives with more focus on the future than on the attention to operational details that are required for a successful change (Palmer et al., 2006).

Decker et al. (2012) claims that the reason for high rates of failure, despite all research, money and effort that is spent on it, is due to lack of a complete systematic view of

implementation failure. Thus, this lack of a systematic view results in an absence of a common language and understanding between experts in decision-making and change management to communicate and collaborate with each other (Decker et al., 2012). Forming a common language and understanding of failure could start through the development of classified failure factors that can be measured (Decker et al., 2012). However, the complexity of predicting implementation failure brings along numerous factors that can be measured which makes the whole process too time consuming and complicated. Instead a set of critical failure factors could be identified through the use of a risk marker analysis, where both employees and leaders states their opinions of which the possible factors are that causes failure of a certain strategy or project. These critical failure factors could then be planned for and mitigated or removed (Decker et al., 2012).

In order to manage change successfully, a change manager needs to understand the organization and its functions. It is not more theory of change management that is the solution to change failure but a better and deeper understanding of what people in organizations are already and always have been doing (Karp & Helgö, 2008).

2.1.4 Change management models

This section presents a set of change management models for implementing and managing change in both organizations and projects.

Lewin's Three-Step Model

There are many models and tools for managing change but one of the most commonly quoted models is the three-step model by Kurt Lewin who was first with introducing a force field analysis, which examines the driving and resisting forces in a change situation (Cameron & Green, 2012). The model does not explain in detail what efforts and actions are required for effecting change but it clarifies the major steps that are required for successful change (Lavesseur, 2001). Lewin's idea of change was that any level of behavior is maintained in a condition of quasi-stationary equilibrium by a force field balanced by forces pushing for change and forces resisting change. A change can then occur when the pushing forces are increased or when the resisting forces are reduced (Hayes, 2007), but the underlying principle of this idea is that the pushing forces need to outweigh the resisting forces before a change can occur (Cameron & Green, 2012).

However, Lewin argued that a change management approach where the resisting forces was reduced was preferable since this would result in less tension and higher constructive behavior, which in turn would result in a more permanent change (Hayes, 2007).

The three-step model, figure 2.1, is based on three different steps necessary for a successive organizational change; unfreezing, movement to a new level and refreezing (Hayes, 2007). The first step, unfreezing, identifies how to minimize barriers to change to increase the odds for successful change (Levasseur, 2001) by identifying the driving and resisting forces, defining the current state and create a view of the desired end state (Cameron & Green, 2012). The second step, movement, is about a continuous development of teamwork and active communication between all members involved, in order to move to a new level (Levasseur, 2001). The third and final step, refreezing, is about stabilizing the new state of affairs (Cameron & Green, 2012) by evaluating and remaining actively involved until the new required behaviors have replaced the old behaviors before the change occurred (Levasseur, 2001).

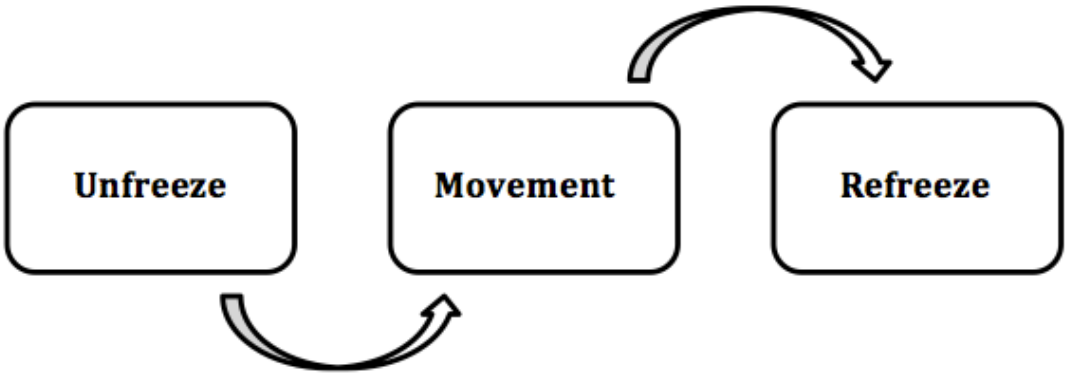

Figure 2.1 Lewin's three-step model.

Some researchers have questioned the refreezing stage and claimed that it is unnecessary for organizations operating in a turbulent environment since they need to be adaptable and not frozen into a given way of functioning (Hayes, 2007). However, Lewin argued that it is not enough to just change and reach a new state but it has to be strongly

established since organizations have a natural tendency to adjust itself back to its original steady state (Hayes, 2007, Cameron & Green, 2012).

Cameron and Green (2012) claims that the three-step model is sometimes misused by managers as a planning tool instead of an organizational development process, where the unfreezing step becomes a planning stage, the movement step becomes an implementation and the refreeze step becomes a post-implementation review. This ignores Lewin's idea of reducing the resisting forces and that groups of people are only willing to change if they feel a need to do so (Cameron & green, 2012).

Elaboration of the Three-Step Model

Lewin's three-step model has been the foundation for other process models of change. A development of the three-step model was made by Egan (1996), presented by Hayes (2007), which focuses on the second step and divides it into three categories (Hayes, 2007, p.82):

- *Current scenario* – assessment of problems and opportunities, development of new perspectives and choosing high-impact problems or opportunities for attention
- *Preferred scenario* – development of a range of possible future scenarios, evaluating alternative possibilities to establish a viable agenda for change and gaining commitment to the new agenda
- *Movement to the preferred scenario* – brainstorming strategies, choosing the best strategy and turning it into a viable plan

Beckhard and Harris (1987) developed a three-step model, presented by Hayes (2007), that is defining the present and the future state, managing the transition and maintaining and updating the change, where management mechanisms, development of activity plans and gaining commitment from key stakeholders is considered as well (Hayes, 2007).

The main stages that these models are highlighting are the importance of attention to the current state and how a desirable state would look like. How the strategies and plans to

move the organization to the new state would look like and finally the implementation of these strategies, which also involve managing the interpersonal and political issues, associated with change (Hayes, 2007).

Kotter's Eight Steps to Transforming an Organization

Kotter (1995) lists the following eight steps necessary for an organization to consider when changing into a new state:

- *Establishing a sense of urgency* – by examining an organizations competitive situation, financial performance or market position and discussing crises or opportunities, it is easier to establish a need for change that will motivate people to join and accept the change.
- *Forming a powerful guiding coalition* – formation of a powerful coalition in terms of titles, expertise, reputations and relationships that can lead the change effort.
- *Creating a vision – the guiding coalition should develop a vision of the future that is easy to communicate and helps clarify the direction of change.*
- *Communicating the vision* – spending a lot of effort on credible communication of the vision will help employees to understand that the change is possible.
- *Empowering others to act on the vision* – removing obstacles, changing systems or structures that undermine the vision, and encouraging risk and nontraditional ideas, activities and actions among employees.
- *Planning for and creating short-term wins* – as change occurs over time there is a need for short-term goals for not losing momentum. Small evidence of progression will positively impact people.
- *Consolidating improvements and producing still more change* – even though a first clear performance improvement can be declared it is important to remember that change takes time to sink into an organizational culture. Therefore it is important to avoid premature victory celebration.
- *Institutionalizing new approaches* – the new situation and behaviors must be institutionalized into social norms and shared values of the organization in order to not be degraded as soon as the change project closes.

The Stage-Gate Model

A well-known model that is used in many projects worldwide for innovation and change purposes is the Stage-Gate model, in figure 2.2, invented by Dr. Robert G Cooper. The Stage-Gate model divides the process into different stages separated by management decision gates where the project team needs to successfully complete a prescribed set of activities in each stage before approval can be provided to proceed to the next stage (Cooper & Edgett, 1996). The Stage-Gate model consists of the five following stages in addition to a first stage of discovering new product/service ideas (Cooper & Edgett, 1996):

1. *Scoping* – an assessment of the technical merits of the project and its market prospects.
2. *Building business case* – technical, marketing and business feasibility is done to create a business case, which consists of project definition, project justification and project plan.
3. *Development* – the design and development of the new product or service occurs where plans are translated into concrete deliverables.
4. *Testing and validation* – the purpose is to provide validation of the project in terms of the product/service itself, customer acceptance, production processes and the economic aspects of the project.
5. *Launch* – the product or service is commercialized and full production begins.

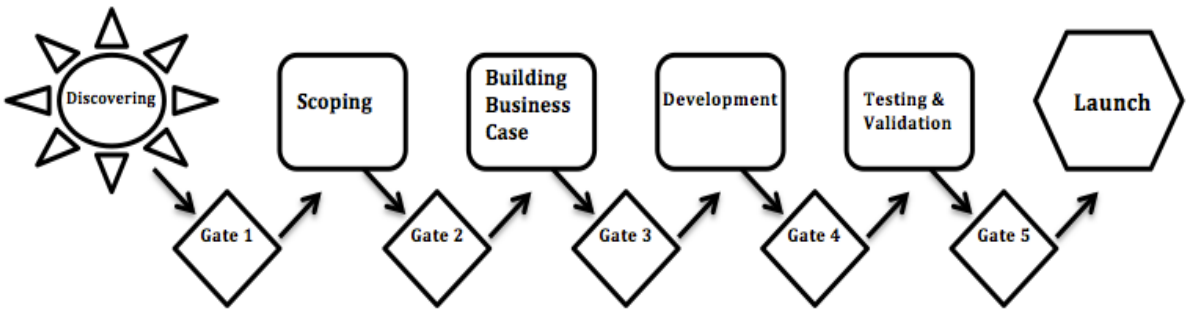

Figure 2.2 Stage-Gate model.

The structure of each stage can be summarized as *activities* + *analysis* = *deliverables* and each gate can be summarized as *deliverables* + *criteria* = *output* (Cooper & Edgett, 1996). Some of the benefits from using the Stage-Gate model are according to Cooper and Edgett (1996) that it accelerates speed-to-market, reduces re-work and other forms of waste, improves focus where many projects fail, achieves efficient and effective allocation of scarce resources and it involves all critical steps.

2.1.5 Resistance to Change

Changes occur continuously in industries and organizations and many managers faces resistance to change among employees, but to deal with resistance effectively the first step is to understand the difference between resistance and readiness (Self, 2007). Both resistance and readiness for change are complex states that are affected by individual and organizational factors and when people are facing a change they start to evaluate the nature of the change and the impact it might have. The effect of this evaluation will result in either adoption or resistance of the change (Self, 2007). There are five key elements claimed by Armenakis et al. (1999) and mentioned in Self (2007) to be necessary in order to create readiness for change:

- *Need for change* – the need for change requires to be justified where there has to be a gap between the current state and the desired state.
- *Establishing if the proposed change is right or not* – the proposed change needs to be demonstrated as useful. It might be how a new service or product will provide increased revenues when replacing the old one.
- *Encouraging employees* – giving the employees confidence that they can successfully make the change. This will include ensuring that people have the right knowledge and skills, that the organization possesses the right structure, policies, technology and procedures for a successful implementation.
- *Key support* – is the actual organizational support of the change, where formal and informal leaders in support of the change show their participation.
- *The value for the organization and individuals* – organizational members will be interested in if the outcome of the change will be positive or negative and how it will affect individual values.

A change is not always resisted and answered defensively (Self, 2007), in fact there are many reasons why organizational members will embrace change, such as security, salary, status and prestige, better working conditions, time saving and self satisfaction (Palmer et al., 2006).

However, when resistance to change occurs, there might be several different underlying reasons for this. Some of the most common reasons why people resist change are listed below:

- *Negative effect on individual interests* – people's perception of how the change might affect their interests will affect their attitude towards change (Palmer et al., 2006), which is why there is often resistance to change when people think that it will have a negative impact on what they value (Hayes, 2007).
- *Lack of clarity, misunderstanding and trust* – resistance to change can occur when people do not understand the implications the change will have on them (Hayes, 2007). Lack of clear information and trust between a change manager and organizational members can affect the success of converting the change initiative into supporting action (Palmer et al., 2006).
- *Lack of conviction and different opinions* – people might react negatively towards change if the need for change is not convincing enough (Palmer et al., 2006). There might also be different opinions between change managers, organizational members and stakeholders, whether or not the change is necessary or how beneficial it will be (Hayes, 2007).
- *Discomfort and low tolerance for change* – some people does not like the discomfort with uncertainty of change and what it will bring along (Palmer et al., 2006) and some people might think that they do not have the ability to develop new skills and behaviors that is required of them (Hayes, 2007).
- *Inconsistence with organizational culture* – organizational members might see the change as inconsistent with the organizational culture and identity, where existing beliefs, values and procedures are not suitable with the new situation (Palmer et al., 2006).

It is important to not just associate resistance to change with employees and stakeholders but also with managers as they do not necessarily need to be passionate advocates of change (Palmer et al., 2006). Managers at different levels might have different opinions regarding a change and this can affect their attitude and execution of the actions required for the change (Palmer et al., 2006).

2.1.6 Managing Resistance

The source of resistance to change may not always be easily identified and there might be several different reasons for resistance. As there are various reasons for resistance, there are also various approaches that can be undertaken to manage it. Participation is often mentioned as a central part in managing change and resistance. The change manager should try to make people involved and ready for change by guiding them to embrace it and shaping attitudes towards the change rather than just attempting to overcome the resistance (Self, 2007). But from a practical point of view, seeing participation as a device for managing resistance is not a good way for managers to think about the problem since this can cause problems (Lawrence, 1954). Kotter and Schlesinger (2008) identifies the following approaches for managing resistance:

- *Education and communication* – educating people about a certain change in beforehand and communicating ideas is an effective way of helping organizational members to understand the need and logic of the change.
- *Participation and involvement* – by involving people who are affected by the change in planning and implementations stages, the risk for resistance decreases. However, the involvement method may be time consuming and will not always lead to compliance.
- *F*acilitation *and support* – support provided by managers in terms of training in new skills, time off after a demanding period, emotional or economic support is useful when people have adjustment problems and thereby resists change.
- *Negotiation and agreement* – negotiating and providing an incentive to resisters, can be a quick and easy way of avoiding resistance but it can also be an expensive approach.

- *Manipulation and co-optation* – by using selective information and conscious structuring of events, managers can manipulate resistance. One way is co-optation, where individuals are given desirable roles in the design and implementation stages. But there is a risk of hurting people's feelings and trust if they feel manipulated.
- *Explicit or implicit coercion* – sometimes managers can simply force employees to accept the change by threatening them with loss of jobs or promotion possibilities or even firing or transferring resistive employees. It is a quick way of overcoming resistance but people often resent forced change and therefore it is a risky approach.

Depending on the situation and type of resistance, change managers have to carefully consider and plan what approach should be taken in order to achieve change as smoothly as possible. According to Kotter and Schlesinger (2008), change managers need to consider the amount and kind of resistance, the difference in power between the initiator and the possible resister, the amount of help needed and the stakes involved when choosing strategy approach and if it will be a fast or slow change.

Lawrence (1954) claims that people do not often resist the technical aspect of change but the social aspect of change. In other words, people resist the change in their relationships within the organization as a result from the technical change, which is why understanding the nature of the resistance is highly important for successful management of resistance (Lawrence, 1954).

2.1.7 Summary

The literature review of change management provides an insight into some reasons forcing organizations to undergo change, how change can be successfully implemented and managed by considering communication, management, measurement and reporting. It also highlights resistance as an issue for successful implementation and management of change. Some existing models for controlling and managing change are also presented to strengthen the understanding of how change is handled in organizations and projects.

The knowledge of change management is meant to be helpful in order for better understanding of the changes occurring and how they are managed in sustainability implementation processes, which will be reviewed in the next section.

2.2 Sustainability Implementation in Organizations

This section will examine existing studies regarding implementation of sustainability strategies in organizations and what actions, processes or changes are required for successful implementation.

2.2.1 Introduction

There is a general agreement among organizations that implementation of sustainability strategies has led to lower costs, innovation and increased competitiveness (Kashmanian et al., 2011). It is the societal actors who define the agenda of sustainable development, which organizations need to implement. Thus without organizational support the society will never achieve sustainability (Bansal, 2002). However, the societal view of sustainable development as an intersection between economic, social and environmental aspects does sometimes depart from the view of corporate sustainability, which is primarily defined by the economic principle (Bansal, 2002). This leads to the fact that organizational goals are mostly tied to economic performance, which puts environmental and social aspects as secondary priorities (Bansal, 2002).

The level to which organizations integrate sustainability strategies and practices varies widely within different industries. But today, many organizations have accepted and integrated some level of sustainability into their business and this is often due to either government regulations, stakeholder pressure or the organization's own beliefs and values (Silvius et al., 2012). The implementation of sustainability strategies is different from implementing other strategies into organizations, since the environmental and social aspects often have longer-term effects that are difficult to measure (Epstein & Buhovac, 2010).

In order for organizations to achieve sustainability they are required to re-engineer their current activities and processes so that environmental and social aspects are considered as well (Bansal, 2002). Though, the introduction of improved sustainability practices might require high investments to introduce new processes, equipment or improved resources (Silvius et al., 2012). Investments in sustainability practices often take time before any revenues are generated and thereby it is a decision making process where the balance between short-term and long-term benefits needs to be considered (Silvius et al., 2012).

Organizations need to make use of sustainability concerns throughout the whole organization to fully integrate sustainability strategies, which requires different management systems to be designed and aligned (Epstein, 2010). Alignment of all key factors that influence organizational performance, such as leadership, vision, goals, strategies, communications, decision-making and accounting are required for organizations to fully implement sustainability (Doppelt, 2010).

2.2.2 Levels of Sustainability Implementation

The path an organization follows to reach sustainability can be divided into several stages or levels. Willard (2005) presents the following five stages of commitment to sustainable development organizations can undertake:

1. *Pre-Compliance* – organizations feel no obligation toward sustainability and focuses just on profits. Laws and regulations are not followed if there is a chance to outrun these.
2. *Compliance* – any environmental or other sustainability related aspects are seen as costs and risks but the laws and regulations are still followed correctly.
3. *Beyond Compliance* – the understanding of the benefits sustainable development brings along is emerging within the organizations. A defensive approach is developing to a more offensive approach but sustainability practices are still not integrated and institutionalized in the whole organization.
4. *Integrated Strategy* – organizations commit to sustainable development and integrate sustainability strategies within key business strategies. Costs and risks are in this stage seen as investments and opportunities.

5. *Purpose & Passion* – organizations are driven by a vision and value-based commitment to improve the well being of the company, society and the environment.

Compliance with regulations should be seen as an opportunity for an organization to start their way towards sustainable development (Nidumolu et al., 2009). When an organization is beyond compliance investments in individual efficiency-driven projects are usual, which will reduce costs and improve the organization's operation efficiency. Such projects often involve reducing energy, materials, waste or water use and are not necessary actions to fulfill any regulations and might not be included in an overall organizational strategy but managed informally within the organization (Kashmanian et al., 2011).

Willard (2005) explains the movement from stage three to stage four as a transformation rather than a transition. Stage four requires profound ways of integrating sustainability thinking and behavior into everyday operating procedures and the organizational culture (Willard, 2005). The distinction between the two last stages is that organizations in stage four "do the right thing" to stay competitive and successful while organizations in stage five stay competitive and successful so that they can continue to "do the right thing" (Willard, 2005).

Top management support is also necessary for a broader implementation of sustainability across the organization and its value chain by the development of a sustainability strategy (Kashmanian et al., 2011). Organizations that operate globally need to consider implementing global or local sustainability strategies, which are often affected by regulations, environmental and cultural issues on each location (Epstein, 2010). Over time, when organizations have made major progression on their sustainability path, initiatives are sometimes taken to help other organizations outside their value chain to become more sustainable by reducing environmental impacts (Kashmanian et al., 2011).

2.2.3 Control, Measurement & Reporting

In order to continuously improve sustainable development, measurement becomes a critical aspect. Using indicators to define goals when implementing new sustainability practices is helpful for managers to later be able to compare the indicators to actual performance (Epstein, 2010). Some organizations have updated their performance evaluation systems in order to help measure the sustainability performance of different business units and company facilities (Epstein, 2010).

To provide correct and equitable data each element of the integrated sustainability processes needs to be translated into a metric to have the ability to be monitored and measured (Epstein & Buhovac, 2010). However, Aaltonen and Ikavalko (2002) mention that transforming strategy to concrete goals is a challenging task. Organizations should therefore find ways of motivating employees to focus on sustainability issues while managing the outcomes of sustainability performances simultaneously (Epstein, 2010).

Measurement is just one step forward in improving sustainability and it also requires some sort of reporting and feedback to responsible people. Reporting leads to awareness and tracking, tracking leads to improved strategies, which in turn leads to new actions and changes that enhance sustainability performance and organizational image (Willard, 2005). A feedback process can often challenge manager's assumptions and be useful to modify the formulation and implementation of sustainability strategies (Epstein & Buhovac, 2010). Reports of sustainability performance can be performed in various ways, such as a periodic written summary that is circulated throughout the organization as a foundation for discussion and improvement. It can also be a report written by a sustainability manager, which is then handed over to executive managers. In addition to the reports, results should continuously be reviewed to note and report any unexpected results. This process can be aligned with the overall quality management systems (Boswell et al., 2005). The important thing is that reports should be made often enough to detect flaws and influence decision-making (Epstein, 2010).

Internal reporting is not just helpful for effective decision-making and strategic planning but it also provides employees to see what their individual performance have contributed to organization's performance regarding sustainability (Epstein, 2010). Adams and Frost (2008) argue that there is a link between sustainability reporting and organizational change aimed at improving sustainable development. Governments should therefore focus on improving accountability, which would lead to changes being implemented and hopefully result in improved sustainability performance (Adams & Frost, 2008). Even though regulations might successfully force organizations to take actions against sustainability issue, an equitable application of regulations is difficult to ensure (Bansal, 2002).

2.2.4 Formal & Informal Implementation Systems

Most of the focus on controlling and implementing strategies has been on the hard or formal systems of an organization, such as evaluation, organizational design or incentive systems (Epstein et al., 2010). However, the results of relying on just formal systems have shown to be insufficient when implementing sustainability strategies (Epstein et al., 2010). To successfully implement sustainability strategies, organizations must consider not only formal systems but also the soft or informal systems as well, such as people and organizational culture (Epstein & Buhovac, 2010).

The formal systems help measuring success and providing internal and external accountability (Epstein & Buhovac, 2010), and are necessary to improve social and environmental impacts (Epstein et al., 2010). On the other hand, leadership, organizational culture and particularly the employees might be among the most important drivers of effective sustainability decision-making (Epstein et al., 2010).

2.2.5 Management & Communication

Aaltonen and Ikavalko (2002) states that some of the most common reasons for organizations to fail in strategy implementation are due to weak management roles in implementation, lack of communication and unawareness or misunderstanding of the strategy. A fundamental part of improving performance and implementing new sustainability strategies is effective communication. The impact and importance of an organizations sustainability performance needs to be communicated to all employees

through internal communications or through training programs (Epstein, 2010). Thus it is critical to establish and facilitate communication systems and decision-making processes throughout the whole organization (Epstein, 2010). Strategies are often communicated top-down, which hinders employees of commenting and questioning it and thus management misses opportunities of improvement (Aaltonen & Ikavalko, 2002). Communication needs to be handled in a two-way direction in order for both managers and employees to be able to communicate with each other and providing feedback (Aaltonen & Ikavalko, 2002). Managers need to have a good understanding of the organizational culture in order to establish effective communication and to find the receptivity of employees to sustainability (Doppelt, 2010).

Managers at different levels have an important role when implementing sustainability. Support and commitment from board directors, top management and middle management have shown to be a critical part of strategy implementation and it encourages employees to comply with the new strategies (Epstein, 2010). As implementation of sustainability strategies are often a top-down decision, top management commitment eases the implementation process (Epstein, 2010). Middle management has also a primary role in strategy implementation, as they are often responsible for continuing the implementation and communication processes (Aaltonen & Ikavalko, 2002). Middle managers have also the possibility to take a bottom-up approach to influence top managers if there if there is a lack of support top-down (Doppelt, 2010).

How organizational members perceive sustainable strategies is a highly relevant aspect to consider. There has to be a consistent understanding of a strategy and its implications throughout the organization (Pellegrinelli & Bowman, 1994). Organizational members need to be continuously updated on sustainability aspects through different training programs and information sharing (Kashmanian et al., 2011). Doppelt (2010) suggests that a change in governance is required for successful transformation toward sustainability. Governance in this case is not just power and authority related to management and leadership but it also includes power generated by the information individuals have access to, resources available for disposal, nature of the informal

networks and coalitions people belong to and influence (Doppelt, 2010). By providing employees with credible and thorough information, their understanding and ability to resolve problems will increase and by involving them in decision-making processes will generate a feeling of personal responsibility and commitment (Doppelt, 2010). Constant learning, increased knowledge and understanding are the key that will lead to change in behavior and actions (Doppelt, 2010). These are the solutions to motivate employees and overcome resistance. It is also the failure of changing governance within organizations that is one of the reasons why change programs fail to transform the organizational culture and thereby fail to achieve sustainability goals (Doppelt, 2010).

2.2.6 Organizational Culture & Sustainable Development

There is a lack of theoretical studies on what a sustainability-oriented culture actually consists of (Linnenluecke and Griffiths, 2010), but it is clear that there is a link between organizational culture and the success of implementing sustainability strategies in the long-run (Baumgartner, 2009). Organizational culture has shown to have a significant influence on both project performance and the long-term success of organizations (Yazici, 2009). A sustainability-oriented culture is defined by Stead and Stead (2004, p.170) as an organization where "members share artifacts, norms, values, beliefs, assumptions, attitudes, and practices that are consistent with the tenets of sustainability". However, Linnenluecke and Griffiths (2010) claims that there is not a single type of sustainability-oriented culture and are referring to the competing values framework, meaning that organizations and employees from different culture types focuses on different aspects in their pursuit of corporate sustainability.

Within an organizational culture there can exist different subcultures where members of each subculture can hold different attitudes towards sustainability initiatives (Linnenluecke & Griffiths, 2010). Therefore, there might be some organization-wide mutual acceptance and understanding of certain issues, while other issues might just be accepted or understood in some subcultures and some issues might even end up in an ambiguous state (Wilson, 2001). The different prioritizations and attitudes towards sustainability initiatives among employees can also affect what kind of organizational communication and change programs they are receptive to. Understanding the

organizational values can provide potential insight into how corporate sustainability can be effectively implemented (Linnenluecke & Griffiths, 2010).

2.2.7 Development Towards a Sustainability-Oriented Culture

To successfully implement sustainability strategies and aspects in the daily business of an organization in the long-run, the organizational culture needs to be developed towards a sustainability-oriented culture (Baumgartner, 2009). To improve organizational culture and not keeping it invisible and non-measurable, organizations need to assess their cultural orientation and make change efforts as a result of those assessments (Yazici, 2009). However, there is a debate, between researchers, whether or not organizational culture is manageable and to what degree of ease a change in culture can be introduced and managed (Wilson, 2001). As a result of the influencing factors mentioned by Wilson (2001) organizational culture evolves and changes over time. But since these factors and organizational components are intertwined and complex, a revolutionary change might be too slow for the market and the management, which is why there are divergent opinions on the possibility of managing cultural change in organizations (Wilson, 2001).

Achieving employee commitment has in many studies shown to be an effective way of implementing change. Thus, organizations that allow employees to participate in sustainability initiatives are helping to reinforce the societal view of sustainability within the organization, while also gaining employee loyalty and commitment by empowering employees (Bansal, 2002). Supportive top management can also be successful in affecting organizational culture to support change, by promoting employee empowerment (Daily & Huang, 2001). Before any actions can be taken to change an organizational culture to become more flexible and responsive to change, top management is required to thoroughly understand the culture since the change will not happen immediately (Daily & Huang, 2001).

2.2.8 SustManage Model for Implementing Sustainability

Even though many organizations commit to sustainable development and try to make it an integral part of their strategy, most of the existing models fail to integrate sustainability into everyday business operations in a successful way (Dudok van Heel & Muir, 2006). Even if the benefits from energy efficiency and waste reduction are clear,

organizations have difficulties to integrate these aspects into all projects. The main reason for this is that operational managers do not have time to consider sustainability initiatives that will distract them from delivering against their performance objectives (Dudok van Heel & Muir, 2006). This is why Dudok van Heel and Muir (2006) developed a management system called sustManage that focuses on three elements and provides managers the ability to implement and achieve their sustainability goals.

Dudok van Heel & Muir (2006) describes the sustManage model as an effective tool to deliver corporate sustainability performance and achieving lasting cost saving through initiatives of energy and resources-efficiency. Table 2.1 shows the three elements; people, systems and opportunities that are included in the sustManage model:

Focus	Process
People Motivation, awareness, training and development of staff and management in line with operational objectives	Creation of a shared vision and focus on sustainability performance. Ensuring management buy-in. Identification, training and coaching of improvement teams. Establishing clear accountabilities.
Systems Visibility of good and bad practices is critical. If it can't be measured, it can't be managed.	Driven by web-based software. Establishing correct key performance indicators and determine internal accountability for these. Establishing quick and accurate reporting of sustainability.
Opportunities Specific opportunities that can deliver rapid and tangible improvements are a key focus point of delivery.	Assessment of current performance. Identification of low/no cost improvement opportunities. Project manage the implementation of opportunities.

Table 2.1 Elements of sustManage. Adapted from Dudok van Heel and Muir (2006).

2.2.9 Summary

The literature review of sustainability implementation in organizations provides a view of various levels of organizational commitment to sustainability. It also provides an understanding of methodologies and activities important for implementing and managing

sustainability strategies, as well as various issues regarding implementation and management processes. It also emphasizes the issues regarding organizational culture and sustainable development and what is necessary for developing a sustainability-oriented culture.

The understanding of sustainability implementation at an organizational level is meant to contribute to a better understanding of the next section regarding sustainability implementation in projects.

2.3 Sustainability Implementation in Projects

This section will examine existing studies regarding implementation of sustainability strategies in projects and what actions, processes or changes are required for successful implementation.

2.3.1 Introduction

As the focus on sustainable development increases and organizations are integrating sustainability strategies, it will have an influence on the organization's projects and how they are executed (Silvius et al., 2012). Implementing sustainability into projects is about integrating economic, social and environmental aspects into the management and delivery of a project (Silvius & Schipper, 2010). Methodologies of project management is often focusing on the triple-constraint; time, cost and quality and even though the success of a project is measured in a more holistic view, project managers often tend to put much focus on the economic aspects and giving less attention to social and environmental aspects (Silvius & Schipper, 2010).

Projects have a high possibility of contributing to an organization's path towards sustainability. It is therefore relevant to improve those aspects of sustainability that are already considered within project management but also providing a better and deeper understanding of how to integrate sustainability into projects (Silvius & Schipper, 2010). There is limited information and established guidance about what constitutes a sustainable project, which makes many organizations forming their own comprehension

and applying techniques based on their agenda and interests (Boswell et al., 2005). This absence of established guidance leads to a confusion of various sustainability indicator systems, where few of them actually provides a clear connection between the project and the overall goals of sustainability (Boswell et al., 2005). Talbot and Venkataraman (2011) also argues that there is little practical guidance for how to integrate sustainability strategies into projects and it is difficult to develop and integrate effective sustainability indicators. Achieving conditions of sustainability is difficult but to demonstrate it, is even harder, which is why there is a need for a framework and processes of setting sustainability goals and measuring progress (Boswell et al., 2005). Developing indicators that can be measured and used in decision-making processes to ensure that a project is managed correctly to fulfill sustainability goals, is an effective way of keeping track and improving the integration of sustainability. Though, the translation of sustainability into concrete tools for use in projects has proven to be a difficult task (Talbot & Venkataraman, 2011).

Since sustainable development issues and the indicator frameworks are in a state of constant change due to new information, values and issues, the review and report systems should be integrated into the project management processes (Boswell et al., 2005). Talbot and Venkataraman (2011) suggest that integrating sustainability reporting into ordinary project reporting could make the project sustainability management less burdensome.

Maltzman and Shirley (2011) have developed the previous concept of SMART (specific, measurable, attainable, relevant, tangible), which is helpful when setting goals and objectives, to become SMARTER. The new developed concept includes 'Environmentally' and 'Responsible' as well. This means that it is no longer enough to consider project goals and objectives but it is equally important to consider the effectiveness of the project processes, waste and inefficiencies, the end product and its reuse or disposal (Maltzman & Shirley, 2011).

2.3.2 The Concept of Greenality

Another concept mentioned by Maltzman and Shirley (2011) is the so-called 'greenality', which is a combination of the words 'green' and 'quality' and can be defined as the

conformance to a set of environmental and sustainability objectives set for a project. Just as quality, greenality should be designed in into the processes of a project so that the outcome serves sustainability instead of forcing project members to inspect and be vigilant all the time and ensure quality/greenality. By integrating greenality into the project at the planning stage, all people involved in the project will have matching goals. When this is achieved greenality becomes an integrated activity for both the project outcome and the project management process (Maltzman & Shirley, 2011).

Since change control is an important aspect for a project manager, Maltzman and Shirley (2011) suggests that since greenality in a project represents a new facet of project management there should be a specific greenality change control process (GCCP). This process helps the project manager to define the standard of control and has the purpose to review, record and decide on any changes to the greenality efforts of the project. The GCCP should be integrated into the overall change control process of the project (Maltzman & Shirley, 2011).

2.3.3 Contrast Between Sustainable Development and Project Management

The imbalance between the concept of sustainability and the concept of projects makes a successful implementation of sustainability strategies into projects problematic. Since sustainable development by definition is about the long-run while projects are temporary, it becomes difficult to measure any meaningful achievement of sustainability (Talbot & Venkataraman, 2011). Integrating sustainability into projects is about considering both short-term and long-term aspects. Viewing a project from an economical point of view puts greater focus on short-term effects while the impacts of social and environmental aspects often occur in the long-term, beyond the project's end (Silvius & Schipper, 2010). Maltzman and Shirley (2011) means that project managers are facing a real challenge when they need to determine the project's so-called cycle of sustainability, a concept that considers the utilization of material, waste and energy reduction of a project including its product and processes. They argue that the challenge lies within showing that all possibilities of reducing waste, energy and emission has been considered in the project and that it requires "green thinking" where the project needs to be viewed through an environmental lens (Maltzman & Shirley, 2011).

Considering the concepts of sustainable development and project management, Silvius et al. (2012) lists some of the differences between these, table 2.2.

Sustainable Development	Project Management
Long-term + short-term focused	Short-term focused
In the interest of this generation and future generations	In the interest of sponsors/stakeholders
Life cycle oriented	Deliverable/result oriented
People, Planet, Profit	Scope, Time, budget
Increasing complexity	Reduced complexity

Table 2.2 Contrast between the concepts of sustainable development and project management. Adapted from Silvius et al. (2012).

Silvius et al. (2012) also presents some conclusions based on studies concerning the relationship between sustainability and project management:

- *Sustainability is relevant to project management* – as project managers are involved in new or changed activities within the organization they have a position and ability to influence the organization's operations toward sustainable development.
- *Integration of sustainability stretches the boundaries of project management* – as sustainability often is a long-term aspect it is relevant to look beyond the project life cycle and also consider the life cycle of the result the project produces.
- *Project Management standards fail to address sustainability* – the processes and knowledge of project management lacks of commitment to a sustainable approach. This needs to be improved since projects are efficient vehicles to introduce change.
- *Implementation of sustainability might change the project management profession* – since project managers are in a good position to influence sustainability aspects their role might change from a more managerial role to a more advisory role with autonomous professional responsibilities.

2.3.4 Projects as a Vehicle for Change Towards Sustainability

Projects are temporary undertakings that deliver some kind of change to an organization, its products, services, policies or assets. It should therefore be evident that achieving sustainability requires projects as instruments of change (Silvius & Schipper, 2010, Silvius et al., 2012). The idea of using projects as a vehicle for change has earlier been examined by Pellegrinelli and Bowman (1994) where they argue that organizations often implement new strategies through existing internal systems and procedures, see figure 2.3. This way of implementing new strategies and change are mentioned to be working as long as the change occurs within the boundaries of the existing paradigm. However, a more revolutionary change, such as adoption of new technology or reorganization of work practices, should be implemented with help of projects in order to avoid distortion and dissipation of the strategy (Pellegrinelli & Bowman, 1994).

Using projects as a vehicle for change enables organizations to undertake complex changes outside the scope of their on-going business and existing culture and thereby helps to transform operations and helps embed new required behaviors (Pellegrinelli & Bowman, 1994). Most strategic initiatives can be handled as projects; from tangible aspects such as new product development to the more 'softer' aspects, such as organization redesign (Pellegrinelli & Bowman, 1994). The knowledge and experience gained from successful projects can be shared across an organization and later adopted by multiple facilities (Kashmanian et al., 2011). Depending on how far an organization is on their path towards sustainability, the implementation of sustainability strategies can imply major changes to the ordinary work procedures, which is why using projects can be a successful tool to achieve the change.

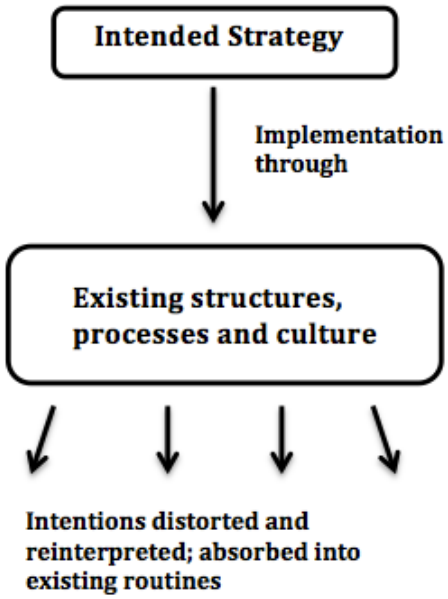

Figure 2.3 Problems of strategy implementation. Adapted from Pellegrinelli & Bowman (1994).

2.3.5 Summary

The literature review of sustainability implementation in projects examines existing methodologies and concepts of how sustainability strategies can be successfully implemented and managed in projects. It emphasizes the importance of aspects like communication, management and "green thinking" as well as the need for development of effective sustainability indicators. It also highlights the absence of practical implementation guidelines and other issue, such as the contrast between sustainable development and project management.

3.0 Method

This chapter presents the research methods used to collect the data and how it has been analyzed. Ethical considerations and research limitations are also explained.

3.1 Data Collection

The data collected to this research for answering the research questions, is in form of both secondary and primary data in order to gain breadth and deep understanding of the subject. Biggam (2008) claims that using more than one technique and source when collecting data provides the researcher with the opportunity to triangulate the results by having a range of perspectives.

Collecting and reviewing secondary data is an efficient and time saving technique to understand the existing studies in a certain subject and uncover aspects that require further elaboration (Windle, 2010). The secondary data collection to this research has been in form of a literature review using books, e-books, articles and reports. The sources used to accomplish this have been libraries, Internet and particularly electronic databases of both Northumbria University and Chalmers University of Technology. The secondary data built a foundation of better understanding and wider range of view of the existing theories and methodologies of both sustainability implementation and change management. This foundation was necessary in order to proceed with the primary data collection with a more narrow focus on the implementation processes of environmental sustainability strategies.

Sources of primary data are often first-hand materials or studies such as quantitative, qualitative, empirical research studies, or questionnaires that forms the basis for following data analysis, interpretation and explanation (Windle, 2010). The sources of primary data collection to this research were in form of qualitative interviews where the questions were based on the previous literature review. The purpose of choosing qualitative interviewing was because this type of interview encourages the interviewee to

share life and work experience while leaving the interpretation and analysis to the researcher (DiCicco-Bloom & Crabtree, 2006). In this way it was possible to gain more unique data and in-depth understanding of the respondent's experience and opinions. The purpose of acquiring empirical data through qualitative interviews was to explore views and methods of practical implementation processes within the chosen industries in order to compare these with the theoretical findings and thus be able to discuss and answer the research questions.

Semi-structured in-depth interviews are the most commonly used technique for qualitative research and they are often organized around a set of open-ended questions (DiCicco-Bloom & Crabtree, 2006). This was the case in this research since the goal was to focus on implementation of environmental sustainability strategies but to still keep the interview more of an ongoing conversation. By using semi-structured and open-ended questions it was possible for the respondents to talk freely about the subject regarding the questions and thus provide in-depth information. The interview questions also had, as Rowley (2012) suggests, a set of sub-questions in order for the researcher to ensure that the respondent explores the main questions sufficiently. One exception was made with the respondent within construction and real estate, since there was no possibility to conduct an interview face-to-face. Instead a questionnaire was sent to the respondent with the same questions and there was a possibility to further discuss or clarify things through e-mail. However, this was not necessary.

3.2 Respondents and Chosen Industries

The sample of respondents that is chosen to a qualitative research should be rather homogenous with some critical similarities related to the research question (DiCicco-Bloom & Crabtree, 2006), however this is depending on the research goal. It is also important that the sample of respondents have the authority or the knowledge to provide the researcher with correct and sufficient answers on the research questions (Rowley, 2012).

Since the research aims to examine the implementation of sustainability strategies at an organizational and project level, to provide a better understanding of the whole implementation process, the respondents were chosen based on their role within their company. The respondents were either project managers or had other responsibilities that are linked to the company's sustainability affairs. An important aspect that was considered during the selection of respondents was that their knowledge about sustainability implementation within their company should be sufficient enough to have the ability to answer the interview questions.

The number of respondents participating in this research was seven people from four different companies in various industries. The industries were oil and gas, automotive, construction and real estate, and power and automation. The research was focusing on these industries since many companies within these industries have environmental sustainable development as a rather high prioritization but their products and processes are different. Thereby the aim was to gain a variety of perspectives regarding environmental sustainability implementation, in order to provide as accurate results and conclusion as possible.

3.3 Data analyzing

Rowley (2012) mentions a set of key components of data analysis; organizing the data set, getting acquainted with the data, classifying and interpreting the data. Organizing the data set can be done in various ways, such as creating a subdirectory containing a Word file for each interview or re-arranging parts of a text so that each answer has all relating answers in one place (Rowley, 2012). The next component, which is important, is to get acquainted with the data by reading and annotate the text with key themes and primary observations (Rowley, 2012). The last component is, according to Rowley (2012), to form some sort of structure to the data set, such as different themes or categories that will become the basis of the findings chapter.

The data analyzing in this research was performed by first analyzing the findings in the literature review and identify key components regarding sustainability implementation and change management. The purpose was to identify what previous studies highlighted and if there were any gaps in the existing literature. The recorded interviews were written down to a summary of each interview to create a clear view of the answers. When this was done, a set of categories/headlines was made where all respondent's answers regarding the specific headline was analyzed. The purpose of the headlines was to categorize the answers into specific fields of the subject to provide a better comprehension of the whole sustainability implementation process.

3.4 Ethical Considerations

Since the primary data collection included interviews with people representing different organizations it was necessary to consider the ethical aspects as well. DiCicco-Bloom & Crabtree (2006) lists three ethical issues that's needs to be considered when conducting interviews:

- *Tape or video recording* – the interviewee needs to agree on that the interview is being recorded by usually signing a consent form. Recorded data should be kept safe and terminated once the data analysis is complete.
- *Anonymity* – the interviewee must be kept anonymous since the information shared during the interview can jeopardize the interviewee's position. The information must also be protected from people with conflicting interests.
- *Ensuring adequate communication* - the intension of the interview and the research must be clearly communicated and understood between the researcher and the interviewee.

Prior to the interviews held for this research each respondent had to sign a consent form where they confirmed that they had been briefed about the purpose of the interview and the research and that they agreed to participate. Any anonymity and confidentiality were discussed and it was agreed that neither the names of the respondents nor the

organizations should be mentioned in the final research report. The respondents also had to agree whether or not they wanted the interview to be recorded.

3.5 Limitations

This research aims at only focusing on environmental aspects of sustainability implementation. However, the social and economic aspects are difficult to avoid but also important to consider, which is why they are included to a certain extent in some sections.

When a research study as this one is dependent on other people's participation for collecting primary data through interviews, the results can be affected in various ways. Rowley (2012) mentions two key factors that affect the choice of interviewees; willingness and availability. It can be difficult to access the right people since they might be busy with their work and thereby unable to spare time for an interview. Since this research had a time limit it was only possible to conduct interviews within a certain number of weeks in order to finish all parts of the report on time. This time limit together with some inaccessible project managers and other suitable people, made the number of participants somewhat restricted. Thus, the focus on environmental sustainability implementation in some of the participating companies are more on either organizational or project level. This in turn restricts the range of answers and opinions, which might affect the final result. Though this research included four different organizations with seven participants in five interviews, which should be seen as a sufficient number of participants to consider the results valid and useful. Three out of four companies had only one respondent while the third company within power and automation had four respondents. There is a possibility that the results might reflect the latter company's answers more because of this.

Rowley (2012) means that open-ended questions in interviews can have a negative side since the respondent might find it difficult to answer and also attempting to provide an answer that pleases the researcher or puts the company or the respondent in a good light.

This is also important to have in mind since sustainability can be a rather sensitive subject to some companies and thereby the respondents tries to modify the answers to highlight the positive qualities of their company and their role within sustainability affairs.

4.0 Interview Results

4.1 Introduction

The following chapter will examine the results from interviews conducted with managers at different levels and other people involved in sustainability affairs. The total number of respondents participating was seven people from four companies and had various experiences. The respondents, their profession and type of industry they work in are presented in table 4.1.

Respondent	Profession	Industry
A	CEO	Oil & gas services
B	Director of sustainability communication & project manager	Automotive industry
C	Project Manager	Construction & real estate
D	Project Manager	Power & automation technology
E	1. Quality Manager & Local Sustainability Officer 2. Working with HR and affairs regarding working environment 3. Working with environmental and quality affairs	Power & automation technology

Table 4.1 Respondents

4.2 Limitations and Deviations

Due to ethical considerations the respondents names or companies they represent are not mentioned. Since one interview was conducted with three respondents at the same time they will all represent respondent E. Respondent D and E are from the same company while the remaining three respondents represents three other companies. In the company represented by respondent C, there will be no examination of sustainability implementation at an organizational level, only at project level, due to respondent C's limited knowledge about this area as a project manager. The focus during the interviews

has been on environmental sustainability aspects but social and economic aspects have been discussed to a certain extent with some of the respondents.
Several studies, (Baumgartner, 2009. Linnenluecke & Griffiths, 2010. Yazici, 2009), mentions the importance of organizational culture on project and organizational performance and how it can contribute to an organizations sustainability implementation. This is why organizational culture has been included in the interviews in order to explore to what extent it is considered in practice. Even though the findings are limited to a rather general view of the consideration of organizational culture, the idea is to provide an understanding of how it can influence the implementation processes.

4.3 Sources of Demand for Sustainable Development

There can be various sources of pressure for making organizations to commit and work towards sustainable development. This section examines the participating organization's reasons and sources of demand to implement sustainability strategies.

Respondent B explains that their work towards sustainability is driven by several factors, such as complying with laws and regulations but also to achieve customer expectations and company values. "Some aspects of environmental sustainability that are legislated, we would have focused on achieving anyway" (respondent B). Respondent E describes the demand for sustainable development as been developed from mostly laws, regulations and government surveillance to become both customer demanded and a social responsibility. "It is nowadays much more important for organizations to take a social responsibility" (respondent E). According to respondent A, much of their sustainability requirements are determined by their customers, which are often related to specific laws of each country. In the project managed by respondent D, there is no specific customer demand but they follow the requirements determined by the organization. Respondent C explains that their projects include sustainability requirements set by the company and client but also laws and regulations within construction.

4.4 Implementing Sustainability

Since the qualitative research examines how environmental sustainability strategies are implemented in organizations and projects, this section divides the answers into two parts regarding organizational and project implementation. This provides a clearer view of both differences and similarities of organizational and project sustainability implementation processes and how changes are managed.

4.4.1 Responsibility for Implementing Environmental Sustainability Strategies

The structure of responsibility for environmental sustainability strategies and how they were implemented varied among the represented companies. Respondent E explained that any sustainability strategies, planned and determined at top management level, were always transferred to different division management groups, responsible for various blocks, such as environment, working environment and quality. Two of the companies represented by respondent B,D and E had some sort of environmental committee responsible for managing environmental sustainability initiatives as well as communicating goals and initiatives to top management. Respondent B mentioned that any environmental concerns are anchored in their cross-functional council responsible for environmental aspects. This environmental council consists of experts within environmental aspects and respondent B represents the communication part. However, respondent B explained that their company has worked with sustainability aspects for such a long time and that it has become a vital part of their products, which makes the initiative taking rather complex since many units are involved. Their organization is also less hierarchical than many others, which provides the ability to run sustainability initiatives from various directions.

Respondent A stated that their organization is a project-based organization except from a base organization, consisting of the executive board and top management, where respondent A is included. All sustainability strategies are therefore determined in this base-organization and then applied by project managers in every project.

4.4.2 Implementing Environmental Sustainability Strategies in Organizations

The way of implementing sustainability strategies within these companies varied due to different industries, organizational structures, regulations and customer demands. Since the company represented by respondent A is almost entirely project-based, the answers from this person regarding implementation will mostly be examined in the next section of implementation in projects. As mentioned in the limitations and deviations, any strategy implementation on an organizational level will not be examined in the organization represented by respondent C.

There seemed to be a common view of that sustainability strategies are being implemented into ordinary processes a much as possible. Respondent E mentioned that their goal is to integrate environmental sustainable development into daily operations and should not exclusively be considered at environmental departments. Their company is also implementing a Health, Safety and Environment (HSE) plan into all units and areas within the company. Thus there will be sustainability activities throughout the organization. “Since our company works with products that will contribute to a sustainable society, it is important to work with it internally as well” (respondent E). According to respondent B, their company’s implementation is very process-governed and sustainability implementations are usually not individual processes but are integrated into the ordinary operations. Though, respondent B is currently managing a project that aims to formulate and develop a positioning for sustainability in order to provide a more vision based work process within sustainability affairs.

Respondent E used no standardized models for implementing environmental sustainability while respondent B used the environmental management system ISO14001. However, respondent E explained that different divisions and projects use environmental checklists and control-step models for ensuring that the implementation and performance is correct. They also use follow-up templates that need to be filled in for all determined goals.

Respondent B emphasizes the importance of communication when implementing sustainability strategies. Each unit within the organization has own communication plans and systems for how to communicate and implement strategies. Respondent B also explains that smaller environmental initiatives, such as reducing the use of paper, are implemented through internal communication paths e.g. intranet in specific divisions.

The view of incentives for encouraging employees to actively work with sustainability aspects varied among the respondents. Respondent A mentioned that they have a suggestion box where employees can put their suggestions of improvement regarding sustainability aspects. The reward for best suggestion can then be in form of movie tickets or similar prizes. Respondent B has another view and explains that their organization is probably different in this specific aspect since there are rarely any difficulties in engaging both managers and employees in sustainability affairs. Respondent E mentioned that they do not have any standardized incentive systems for sustainability aspects but some production units might incentivize their employees for detecting improvements concerning sustainability aspects.

4.4.3 Implementing Environmental Sustainability Strategies in Projects

The role as a project manager concerning environmental sustainability implementation, explained by respondent C, is to follow management guidelines that comes from e.g. ISO certificates. But the contract also includes the company's and the main client's sustainable energy/environmental clause that obligates the project manager to consider alternative solutions to cut energy usage of buildings. Though, respondent C states "the main goal of an organization is to make money for the owners. If the owners do not value sustainability then there is rarely any extra effort towards sustainability". Respondent D explains how they involve people responsible for different fields, such as production, quality, safety and environment to participate and integrate their aspects of sustainability in the planning and design phase of a project. Thereby all aspects of sustainability are considered from start, which, according to respondent D, makes the implementation and work easier. Respondent A describes their Health, Safety and Environment (HSE) operating system as a core aspect in all projects and that environmental and safety aspects are prioritized before budget and time. "Our industry handles large quantities of

substances dangerous to the environment, which is why the requirements of how projects should be managed are tougher and stricter than in many other industries" (respondent A).

While respondent C claimed that they do not use any specific models or tools to implement sustainability strategies in projects, two of the respondents, A and D, explain that they use a gate-model for implementation. The gate-model that respondent D mentions is a model that is used in almost all projects within the organization and consists of different gates that include specific procedures and documentation that needs to be controlled and fulfilled before being able to proceed. The importance is according to respondent D to show that the project includes a plan for sustainability aspects and how they will be achieved and when every activity will be executed. Respondent A explains that they have an own gate-model called project execution model, PEM. This works similarly to the one explained by respondent D, but is not just for sustainability aspects but is an overall model for controlling and ensuring that the project meets the set objectives. Though, a sustainability plan is always a part of this model.

Regarding measurement of sustainability performance in projects there seems to be limited concrete tools or indicators. According to respondent C, their company's management systems are fairly young and therefore there are no measurements for sustainability issues. Respondent D describes a standardized environmental checklist that is used in all projects within their company. The checklist consists of various environmental aspects that need to be documented and controlled, such as the company's own list of forbidden or limited substances/materials, control of related environmental laws regarding the specific project and identification of possibility to after-treatment, recycle or destruction after product use. Respondent D means that except from their standardized checklists it becomes difficult to consider a longer perspective of sustainability beyond the project life-cycle, since their products have a life span of 30 years. This makes the whole documentation of sustainability in the report sometimes difficult since it is difficult to predict how sustainable the product will be in the future. This is something respondent D intends to discuss with higher level of management in

order to clarify how it shall be measured and documented. Respondent A explains that their project performance is controlled by a third party and sometimes even the customer in order to ensure that the project complies with the detailed sustainability plans that are set in the beginning.

The reporting process is mentioned by all respondents as being a critical factor for successful implementation and performance. Respondent D states that sustainability reporting is made continuously and that there is a person responsible for examining the project manager's documentation before it is sent forward to an environmental steering committee that needs to approve the report before the project can proceed. The sustainability reporting is, according to respondent D, integrated to the ordinary project report. Respondent A mentions that their projects reports once a month to see if there is any improvement or problems that needs to be undertaken. Respondent B mentions that their company reports sustainability in accordance to the Global Reporting Initiative (GRI).

4.5 Managing Change During Environmental Sustainability Implementation

This section aims to identify the changes occurring during environmental sustainability implementation and how these are managed. This section includes changes on both organizational and project level.

Respondent A explains that the whole industry is working very hard with sustainability and that often accidents within the industry that affects the environment, forces them to put extra pressure on controlling that regulations are strictly followed and if necessary, make any required changes. Accidents regarding safety and environment might force their clients to have more back-up systems, which puts more pressure on the company to change and improve their existing products. Respondent A mentions that any new changes need to be updated in their project execution model.

Respondent B describes their new developed communication as a tool to encourage employees and make them more involved to better understand and deal with sustainability issues. Respondent B has the responsibility to change the communication to become more direct and specific. Their web page is also reconstructed for making it easier to reach out in todays major news flow.

Also respondent E emphasizes the importance of education and direct communication when implementing new sustainability strategies in order for both employees and managers to better understand the purpose and the procedures undertaken. According to respondent E, the major response come when these changes affects people, which is why there is a need to understand why certain initiatives are taken and strategies implemented and what is to be achieved. Communication, follow-up and feedback have critical roles in this, according to respondent E.

In projects, respondent C explains that they use more time in the planning and design phase to investigate environmental and energy matters but during the implementation, reduction of waste is the only matter towards sustainability. Respondent D also underlines that the planning and design phase of a project requires consideration of all sustainability aspects. As they involve people responsible for different fields in the planning and design phase, much information is realized and considered from start. If there is any changes or improvements detected this information is then passed on to the responsible person. Respondent D clarifies this by describing a product and how changes in material or components are sent forward to responsible designers who have to consider this in the design or prototype phase. Respondent D means that this approach is effective since they do not need to adapt so much later on in the project.

4.6 Organizational Culture and Sustainability Implementation

This section aims to examine the importance of considering aspects of organizational culture when implementing sustainability strategies. The idea is to understand how the organizational culture influences the implementation processes.

The organizational culture is according to respondent B vital for evolving in an organization's sustainability work. Respondent B explains this by describing the lowest level of sustainable development, which is to comply with laws and regulations, as being easier to fulfill since it can basically be forced into the business procedures. However, to reach a higher level of sustainability requires, according to respondent B, consideration of business ethics, expectations and the organizational culture. "The gap between the first level and the second level requires consideration of the "soft" systems and organizational culture is a fundamental part of this" (respondent B). "Visions, ambitions and focus questions are set up at the lower level but *how* it will be achieved highly involves the organizational culture" (respondent B).

Respondent D explains the difficulty in understanding each individual's perception of sustainable development and what impact these strategies have. "That is why we sometimes include production personnel in projects to better understand their work procedures and how they think and act upon these implementations" (respondent D).

Respondent A has a bit different view and explains that their industry consists of very strict environmental sustainable aspects, which are handled by professionals within the organizations and cannot be related to individual employees. Thus, the requirements need to be followed and there are, according to respondent A, often no room for discussion of these requirements and strategies. However, respondent A explains that the organization value their employees opinions and suggestions, which is why they have a suggestion box where all employees can put their suggestions and opinions regarding sustainability aspects.

Most of the respondents mention that organizational culture is important in the aspect of understanding how people think and why they act in a certain way. Respondent B, D and E emphasizes the importance of making people to understand why changes concerning sustainability are made in order for them to act in a correct way and work actively toward sustainability. "If employees do not understand why certain things need to be done it can

easily be disregarded, which is why management support is important for employees to realize the meaning of the change" (respondent E). Respondent E also mentions that every local division needs to consider their culture since each division might focus on different aspects of sustainability due to their different production areas. Some programs, such as occupational, health and safety (OHS), are according to respondent E, easier for the whole organization to gather around since it is the same throughout the organization. Respondent D highlights the importance of communication in this matter, since managers might often think that they have a better understanding of employees' thoughts and behaviors, than they actually do.

4.7 Key Factors for Successful Implementation of Environmental Sustainability Strategies

This section examines the respondent's thoughts and opinions regarding key factors of successful environmental sustainability implementation.

First of all, respondent E means that successful implementation requires a suitable person for communicating and delegating tasks. Respondent A states the need for good and supportive management and leadership so that every employee affected by the strategy is included and considered. This view is supported by respondent D and E, who also mentions the importance of management support and commitment. Respondent A means that management often lacks of understanding the impact of new strategies and changes on each individual. "It is not just about delegating tasks and responsibilities without further reflection" (respondent A). Respondent B also highlights the importance of understanding the meaning and impact on each individual but also the impact on the organization. According to respondent B, it is also important to understand the meaning of various concepts and the terminology of sustainability. Since often people responsible for sustainability affairs are assuming that other employees knows more about the subject than they actually do.

The organizational culture and goals are according to respondent C important aspects for successful implementation and development towards sustainability. “If those do not support sustainability, then it is hard within the projects to be successful” (respondent C). However, a very influential project manager can, according to respondent C, try to convince responsible people to choose the more sustainable options.

Respondent E mentions the relevance of being persistent and continuously work with aspects concerning sustainability in order to successfully integrate it in the organization and its projects. “Often sustainability initiatives can be forgotten and not prioritized when it is difficult to see the benefits from it” (respondent E). Realizing the benefits is important according to other respondents as well. “In the projects, our clients emphasize the money matters and therefore sustainability is sacrificed under that if the costs are too high” (respondent C). Respondent B mentions that there needs to be an economical balance, since their organization has the competence and knowledge to develop products even more but that requires even more investments. This is also mentioned by respondent E who means that organizations need to invest in the ‘right’ activities and strategies when there is a limited budget.

Continuous education and communication is mentioned by respondent B as an important factor and it is also important to choose in which way the strategies will be communicated and what will be communicated. The company that respondent B is representing educates managers and different units regarding sustainability aspects. Respondent A mentions that they have a meeting every Friday at the office where the HSE program is discussed to improve employee’s general knowledge in the subject and also to find possible improvements.

Another difficulty that respondent E mentions is to get everyone onboard on the new strategies or changes, which is vital for successful implementation. The challenge lies in showing the positive effects of the change and that can, according to respondent E, be accomplished by “recruiting” the positive people so that the positivity is transmitted to

others. Respondent D explains that support top-down is important to show in order to get everyone onboard.

Respondent E also mentions auditing the business to continuously improve sustainability aspects and detect flaws. Sufficient amount of statistics, reports and feedback regarding results of implementation and change is also mentioned to be important.

4.8 Summary

The most essential findings from the interviews are summarized in this section in order to provide a clearer view of the results.

4.8.1 Implementation of Sustainability Strategies

The sources of pressure for integrating sustainability aspects was mentioned to have developed from being just laws and regulations to become customer demanded and driven by the company's own beliefs and values.

There were some differences among the organizations in terms of how the implementation of sustainability strategies was handled and who was responsible. Two of the organizations had established environmental committees for dealing with environmental sustainability aspects while a third organization adopted strategies, determined by top management, directly into projects.

There was a common view of that sustainability strategies are being implemented into ordinary work and processes in order to make sustainability a well integrated aspect. There were few standardized implementation tools or models used among the participating companies when implementing sustainability strategies at an organizational level. Various kinds of gate-models for implementing and managing sustainability were mentioned to be used in projects. When implementing sustainability aspects into projects, more time was spent on the planning and design phase to consider different aspects of sustainability and thereby providing better preparation. One of the companies used a standardized environmental checklist in all projects within the organization. However, the

prioritization of environmental aspects in projects sometimes varied widely among some of the participating organizations.

All participants mentioned reporting of sustainability performance as an important aspect of successful implementation and progress towards sustainability. Though there were few concrete tools or indicators used to measure sustainability performance. One of the companies used the environmental management system ISO14001 and reported sustainability in accordance to the Global Reporting Initiative (GRI). Only one of the participating companies had some sort of incentives for rewarding and encouraging employees to work towards sustainability.

4.8.2 Managing Change During Environmental Sustainability Implementation

Continuous communication and education was repeatedly mentioned as important aspects of managing changes when implementing new sustainability strategies or initiatives. Follow-up and feedback of progress was also mentioned. The importance of understanding why new sustainability aspects is needed in the organization and what impact the changes will have on both individuals and the organizations was highlighted as vital for successful performance. One of the organizations was changing their vision in order to gain more direct and specific communication of sustainability aspects and thereby encouraging employees and making them more involved in sustainability affairs.

Most changes in projects related to sustainability was handled in the planning and design phase where attempts were made to consider all aspects of sustainability and then providing specific information to responsible people.

There was an overall agreement of the link between organizational culture, sustainability implementation and associated changes. The understanding of organizational values and also individual values and behaviors was mentioned to be important to facilitate sustainability implementation.

4.8.3 Key factors of Successful Environmental Sustainability Implementation

The key factors for successfully implement sustainability strategies mentioned by the respondents are summarized and presented in the following bullet points:

- Planning of sustainability issues (in projects).
- Understanding the purpose and impact of sustainability strategies on the organization and on each individual.
- Communication and education.
- Supportive Management.
- Feedback and sustainability reporting.
- Alignment of organizational culture and goals with sustainability strategies.
- Persistence, repetition and continuous improvement.

5.0 Analysis & Discussion

This chapter will present a comprehensive analysis and discussion of the findings from this research. In order to provide clarity into the answers of the research questions presented in chapter 1, each of the three questions have been provided with an own section.

Secondary data from the literature review will be analyzed to gain an understanding of the key issues, which will then be compared to the primary data findings from qualitative interviews. Based on the analyzing and discussion of findings in both primary and secondary data, the last section will explore and discuss how the benefits of change management can be applied in environmental sustainability implementation.

5.1 Gaps and Key Factors in Existing Literature

This section presents gaps and fields within the existing literature that lacks of research or needs improvement. Key factors developed from the existing literature of sustainability implementation and change management are also presented. The purpose of the key factors is to provide a clear and summarized view of what is considered most essential of each subject in the literature.

5.1.1 Gaps in Sustainability Implementation Literature

The existing studies on sustainability implementation are rather extensive but there are still numerous fields within the subject that requires further development and better understanding. According to several studies, Silvius & Schipper (2010), Boswell et al. (2005), Talbot & Venkataraman (2011), there is still limited guidance of how to implement sustainability strategies, especially environmental and social aspects, into projects. The concept of "green thinking", mentioned by Maltzman and Shirley (2011), needs to be considered in terms of how it can be integrated into projects so that environmental sustainability aspects becomes a natural and established part of projects. There is limited research made in how sustainability can be translated into concrete tools

for use in projects and how to develop sustainability indicators that shows valid and useful measurements. There is also an absence of change control tools intended to control changes in environmental sustainability aspects in projects, like the GCCP system suggested by Maltzman and Shirley (2011).

Since projects are mentioned to be important and helpful for organizations to change towards sustainability, the role of a project manager in sustainability implementation is something that should be considered more. Silvius et al. (2012) mentions that even though sustainability is relevant to project management, the existing processes and knowledge of project management lacks of commitment to a sustainable approach. The link between project management and sustainable development requires therefore more consideration and research.

Studies show that organizational culture has an important role in sustainability implementation (Baumgartner, 2009, Linnenluecke & Griffiths, 2010). However, there is a lack of understanding what a sustainability-oriented culture consists of and how to understand organizational values in order for more effective implementation of sustainability strategies (Linnenluecke & Griffiths, 2010).

5.1.2 Gaps in Change Management Literature

The literature review on change management shows that there are also extensive studies on change management that provides various perspectives, change management tools and other techniques of how to manage change successfully. Many studies have also been examining the reasons for failure in implementing and managing change. However, according to some studies, Kotter & Schlesinger (2008), Decker et al. (2012), Stanleigh (2008), the rates of failure in implementing and managing change within organizations are still rather high. This is according to Decker et al. (2012) because of an absence of a complete systematic view of implementation failure and a common language and understanding between experts in change management. Thus there is a need for improved joint understanding of change management and implementation failure, which could require research in finding critical failure factors and mitigating actions.

5.1.3 Key Factors from Literature

The findings from the literature regarding sustainability implementation and change management are summarized into the following key factors, presented in table 5.1. These key factors are representing aspects that are critical for successful implementation and management of sustainability and change. The key factors are applicable at both an organizational and project level.

Comparison of the key factors shows that some aspects of change management are corresponding to aspects of sustainability implementation. The arrows in table 5.1 show the following corresponding key factors:

- *Understanding change/sustainability strategies* – the purpose and impact of change is important to understand so that both employees and managers can relate to the desired state and thus be more supportive. Improved understanding can reduce any uncertainty and resistance. This is important in sustainability implementation as well, since understanding the purpose and impact of sustainability strategies will clarify the benefits from them.

- *Communication & education* – is linked to the previous key factor and a core aspect of implementing and managing sustainability and change. Communication and education leads to better understanding of the nature, purpose and impact of strategies and change. Thus, it can help influencing the mindset of organizational members to actively work towards sustainability and thereby also reduce any resistance to change.

- *Management commitment & support* – managers need to be committed and support employees in implementation and change processes. This helps encouraging and convincing employees of the organization's capability to change and to create receptivity among employees by supporting and involving them in decision-making processes.
- *Control, measurement & reporting* – ensuring that the performance of a change process is aligned with the intended change plan requires control and

measurement. Thus, sustainability strategies must be translated into concrete metrics that can be measured and evaluated to control and ensure progress. Performance indicators can also be useful to clarify what is required in order to achieve successful change. Reporting is important in order to control progress and make possible changes and improvements.

It is evident based on these key factors that aspects of change management are already considered to a certain extent in sustainability implementation.

Change Management		Sustainability Implementation
Need for change		Understanding sustainability strategies
Understanding the change		Communication & education
Communication & education		Management commitment & support
Management commitment & support		Control, measurement & reporting
Control, measurement & feedback		Consideration of organizational culture
Institutionalizing the new state		Alignment of all key factors

Table 5.1 Key factors based on literature findings.

There are some of these key factors from change management that are not considered fully in the sustainability implementation literature. The first key factor in change management, *need for change*, considers that many change management models suggest that there has to be a force pushing for change or an establishment of need for change in an organization in order to motivate and accept change initiatives. The need for change can be related to the reasons why organizations commit to sustainable development, such as regulations, stakeholder pressure and the organization's own beliefs and values, mentioned by Silvius et al. (2012). However, the literature does not emphasize to a

greater extent that organizations are establishing a sense of urgency or need to undertake sustainability strategies, except from regulations and laws that are of course a force pushing for change. By establishing a need for sustainable development it might motivate employees to participate.

The last key factor in change management, *institutionalizing the new state*, is not either considered in the sustainability literature. The literature of change management presents different opinions regarding the institutionalizing or refreezing stage. Some researchers e.g. Robbins and Barnwell (2006) argues that an ongoing change does not require the refreezing change while Lewin's idea was that change needs to be deeply established since organizations have a natural tendency to fall back into its original state. Since sustainable development is an ongoing change the consideration of refreezing should be made in each specific situation. But sustainability activities need to be well integrated into business strategies, which might require institutionalizing.

The last two key aspects in sustainability implementation are *consideration of organizational culture* and *alignment of all key factors*. The importance of organizational culture has previously been mentioned and in order for it to change to become sustainability-oriented, managers need to have a thorough understanding of their organizational culture (Daily & Huang, 2001). Alignment of all key factors means that all factors influencing organizational performance needs to be aligned with sustainability strategies for successful implementation (Doppelt, 2010).

5.2 Comparison Between Theory and Practice

This section aims at comparing and analyzing the findings from the literature review with the results from the qualitative interviews.

5.2.1 Stages of Sustainability Implementation

All of the participating companies from the interviews have come far with their development toward sustainability. There was clear evidence of commitment and ambition to undertake environmental sustainability initiatives among all participating

companies. However, the level of commitment varied between some of the companies. Considering the five stages of sustainability implementation, presented by Willard (2005) in chapter 2, all of the companies are somewhere in stage four where sustainability is integrated into core strategies. However, the company within construction and real estate, represented by respondent C has not fully reached stage four, based on the interview results. Their management systems were fairly young, they did not have any measurements for sustainability issues, and the economic aspects were often prioritized before environmental sustainability aspects. Even though there seems to be consideration and clear commitment to sustainable development within the company, these answers points to a direction of stage three rather than stage four. But one thing to keep in mind is that these answers are just based on respondent C's answers as a project manager with limited knowledge of the subject at an organizational level. Therefore a valid conclusion whether or not the company is in stage three or four, cannot be stated without further information.

The other three of the participating companies saw themselves as experts or leading companies of sustainable development within their industry. They are all in stage four since they have deep integrated sustainability strategies and do not always see sustainability aspects as costs but also as investments. They have all been early players within their industry and thereby gained early knowledge of sustainable development. Some of the respondents were working with sustainability affairs within their companies, which also show that the companies have considered sustainability and established people and units responsible for this.

The company within power and automation technology, represented by respondent D and E, seems to have developed their environmental sustainability strategies furthest and might be on the edge to stage 5. Based on the answers from respondent D and E, the company is putting great effort in environmental sustainability aspects and is developing products to contribute to a sustainable society. Thus, the company is driven by a vision to contribute to a more sustainable society, which aligns with the requirements of stage 5. Even tough the company from oil and gas industry prioritized sustainability aspects in

front of budget and time in their projects does not reveal whether or not they do it because of their own beliefs and vision for sustainability or because of the strict regulations in the industry sector.

5.2.2 Sustainability Implementation

The interview results presented an overall agreed view of that sustainability strategies are being implemented into ordinary work processes as much as possible. However, one of the participating companies had initiated a project aiming at formulating and developing their positioning for sustainability. Using projects as a vehicle for more revolutionary change is mentioned in chapter 2 as being effective since existing internal systems and procedures are being avoided. A change in positioning means that communication and perceptions are being developed and improved, which is a complex change. Using projects as a tool to accomplish this might help the organization to embed the new positioning in different communication systems without disturbing the existing communication and behaviors. Thus, the idea of projects as a vehicle for change towards sustainability outside the existing paradigm should be considered and adopted in more organizations. However, the approach of top-down implementation of sustainability strategies in organization needs to be considered to see if they can co-exist or not.

The interview results shows that the planning and design phase of a project was important when implementing sustainability initiatives. More time was spent on considering sustainability aspects and involving people responsible for various fields to contribute to the implementation of sustainability. This conforms the idea of greenality presented by Maltzman and Shirley (2001), where they suggest that greenality should be integrated into project planning so that all people involved in the project will have matching goals. This will lead to better preparation and less adaption when the project is implemented.

Two of the participating companies used some sort of gate-model in their projects to control and ensure progress regarding sustainability issues. The models described are based on the Stage-Gate model by presented by Cooper and Edgett (1996) in chapter 2. The company within construction and real estate did not use any tools for implementing and controlling sustainability aspects within their projects, which could be due to the fact

that their management programs were fairly young. However, this organization was also the one that, based on the results, showed less commitment to environmental sustainability aspects. This shows proof of the importance of controlling sustainability progress and changes, which is mentioned several times in the literature. Only two companies measured environmental sustainability in some way, which was through environmental checklists and the environmental management system ISO14001. This also conforms the difficulty and absence of creating and integrating effective sustainability indicators, mentioned in chapter 2. Findings in literature and interview results highlighted the importance of sustainability reporting and feedback in order to continuously improve sustainability aspects. Respondents from the automotive industry and power and automation technology were emphasizing the reporting process most. The company from the automotive industry reported in accordance to GRI while the company from power and automation technology considered the importance of continuous reporting and integration of sustainability reporting into ordinary project reporting. This is also suggested by several researchers in the literature as being more effective and less burdensome.

The literature mentions the importance of combining formal and informal implementation systems. This was found to be considered in the interview results as well. Communication, management commitment and organizational culture were all mentioned as major contributing aspects for successful implementation.

The interview results gave an impression of a blurry and somewhat unstructured view of environmental sustainability implementation in projects. This reflects the findings in literature where it is mentioned that there are few practical guidelines of how to implement sustainability into projects. These vague guidelines together with the contrast between sustainability and project management makes the implementation process difficult. Because of these vague or flexible guidelines, organizations are adopting and implementing sustainability in their own way (Boswell et al. (2005), which might sometimes be beneficial since organizations are able to develop new approaches and techniques. However, it is clear that there is a need for improved guidelines of how to

implement environmental and other aspects of sustainability in projects and how these can be measured.

5.2.3 Change Management

Since all the participating companies had developed more or less in-depth sustainability strategies and most of them have worked with sustainability aspects for several years or even decades, their knowledge have made them successful and even leading companies within their industry. Much of their environmental sustainability initiatives are integrated into daily routines and procedures, causing limited amount of change. Thus, there seem to be very few major changes occurring in their work toward environmental sustainability. All respondents had rather difficult to identify concrete or tangible changes in either processes or work procedures.

The absence of change and implementation models at an organizational level among the participating companies might be a result of already integrated systems of communicating and implementing sustainability strategies. However, gate-models were used in projects, as mentioned in previous section, for controlling and ensuring progress. As environmental sustainability aspects are mentioned to often be less prioritized in projects, an important aspect for many organizations to undertake would be some sort of change control model for environmental sustainability issues, such as the GCCP model presented by Maltzman and Shirley (2011).

The importance of communication and education when implementing sustainability aspects and managing associated changes was found in the interview results. This corresponds with the findings in literature but is examined further in the next section.

Change is in the literature described as having both a technical and a social part. Findings from the interviews show that major response comes when the change affects people, which is why managers and employees need to understand the change properly. Literature findings proves this statement by mentioning the understanding of the nature of change as vital since people do not often resist the technical aspects but the social aspects of change. Results form the interviews also described how organizations need to consider

the soft systems to reach a higher level of sustainability. This conforms the findings in literature where it is mentioned that the technical part of a change can be implemented without employee support but the social and behavioral part of change requires consideration of employees and their support.

5.2.4 Comparison of Key Factors – Literature and Practice

Table 5.2 shows the comparison of key factors found in literature and from interview results. The left table shows the set of key factors based on literature findings, presented in section 5.1.3. The right table shows the key factors as a result from the qualitative interviews. Even though some of the key factors are formulated differently between the two tables, the underlying meanings are the same.

The tables show that much of the key factors from literature are considered to various extents in practice, with few exceptions. The mentioning of planning in the literature review has been modest. It is just Maltzman and Shirley (2011) who suggest the integration of greenality in project planning. Thus it seems to be considered more in reality. The block that show *feedback and sustainability reporting*, in the right table does not mention measurement, which has been discussed earlier as an issue in practice. The last key factors in both tables have basically the same purpose, since persistence and repetition are mentioned in the interview results as important to successfully integrate sustainability aspects. However, the continuous improvement aspect differs from institutionalizing since it is not refreezing but an ongoing change. This proves the point of sustainability as being an ongoing change and thus the importance of institutionalizing in this particular matter is questioned. However, institutionalizing the thinking of environmental sustainability or as Maltzman and Shirley (2011) calls it, “green thinking”, needs to be institutionalized. But the processes are required to be flexible for continuous improvement.

Sustainability Implementation & Change Management (Literature)		Sustainability Implementation (Practice)
Need for change		Planning of sustainability issues
Understanding sustainability strategies	↔	Understanding sustainability strategies
Communication and education	↔	Communication and education
Management commitment and support	↔	Supportive Management
Control, measurement and reporting	↔	Feedback and sustainability reporting
Consideration of organizational culture	↔	Alignment of organizational culture, goals and sustainability strategies
Alignment of all key factors	↗	Persistence, repetition and continuous improvement
Institutionalizing the new state	↔	

Table 5.2 Comparison of key factors – literature & practice

As a result of combining the key factors from table 5.2, the suggested new key factors of environmental sustainability implementation and management of associated changes are the following:

1. Need for new sustainability strategies
2. Consideration of sustainability in planning process
3. Understanding sustainability strategies
4. Communication and education
5. Management commitment and support
6. Control, measurement and reporting
7. Consideration of organizational culture
8. Alignment of all key factors influencing organizational performance
9. Persistence, repetition and continuous improvement

These key factors are still rather general but are nonetheless very important for sustainability implementation.

5.3 Benefits of Change Management in Environmental Sustainability Implementation

Since environmental sustainability aspects are continuously developing through new technology, regulations and improved knowledge the need for successful implementation processes is vital for organizations. Regardless of where a company is on their journey towards sustainability, there will always be improvements and new strategies available that will force organizations to undertake implementation and change processes. Each new sustainability strategy requires some form of change, whether it is a major change or not.

Based on the key factors presented in previous section, it is evident that change management has an important role in environmental sustainability implementation. Many change management aspects can contribute to successful implementation. But it is important to realize the nature of the changes when implementing environmental sustainability, in order to undertake appropriate actions. Organizations that are rather new to sustainable development might have greater use of the key factors since they will face greater changes in their sustainability implementation.

Considering the drivers for change presented by Stanleigh (2008) in section 2.1.1, shows evidence of very economic-driven factors while implementation of environmental sustainability is more eco-driven. Thus there is a difference in comprehension of driving forces between the two subjects. This is important to consider when using change management approaches in environmental sustainability implementation.

Reflecting on the stages of sustainability implementation, discussed in section 5.2.1, there was one of the participating companies that were on the edge to crossing over to stage five. One main requirement for an organization to take the step from stage four to stage five could be a change in mindset. This change in mindset can, from an environmental point of view, be compared to “green thinking” mentioned by Maltzman and Shirley (2011). It is the mindset of staying competitive in order to “do the right thing” that is required. Achieving this change in mindset means that organizations need to seriously

audit their implementation processes and include change management aspects where the nine key factors presented in the previous section should be considered. This is also applicable for organizations in any stages. By reconstruction of communication systems, improved environmental sustainability reporting, education and continuous auditing of sustainability aspects, organizations can slowly start to change their culture and mindset to a more "green thinking" approach. Thus, these reconstructions and changes require committed and supportive management. Change in mindset can also be achieved by coalition of employees towards change. Self (2007) mentions that when employees understand and accepts the reasons for change, there will be a growing momentum where more employees unite. This is also mentioned in the interview results where "positive" employees are mentioned to be important to recruit in order to influence more resistant employees.

A change model, based on Lewin's three step model, developed by Egan (1996) can be useful for organizations to move further. By assessing the current situation and developing new perspectives and further develop preferred scenarios based on these could help realizing new ways of improving sustainability within organizations. Other change management models, such as the Stage-Gate model should be adopted into more projects since it has shown proof of being useful in managing and implementing environmental sustainability strategies and also considering critical steps and changes.

Project management as a profession might also require change. It is suggested in the literature that projects needs to consider environmental responsibility as well as goals and objectives, and that the role of a project manager might change from a managerial role to a more advisory role. And since project managers are in a position of influencing organizational operations, this could change and enhance the consideration of environmental aspects in projects and organizations. However, the commitment to environmental sustainable initiatives should be enhanced at all managerial levels for even better sustainability implementation and preparation of change.

Implementation of environmental sustainability initiatives has one important similarity with the general view of change; that it takes time. As mentioned in the literature, change processes require time and skipping steps only causes failure. This view is important to have in mind regarding environmental sustainability implementation, as it requires patience and also realization of the benefits it will bring along.

Each organization is unique in some way, which means that implementing sustainability strategies will affect each organization differently and thus, each change will be different. That is why managers at different levels will always have a difficult but very important responsibility to manage environmental sustainability implementation and changes in order for organizations to evolve. By developing environmental sustainability implementation methods where change management aspects are considered to a greater extent, the success rate of sustainability implementation might increase. Thus more organizations can climb higher on the sustainability ladder and contributing to a sustainable society.

6.0 Conclusion & Further Research

6.1 Conclusion

The purpose of this research is to examine how aspects of change management can improve environmental sustainability implementation. The results are based on an analysis and discussion of literature findings and qualitative interviews with companies from four different industries; oil and gas, automotive, construction and real estate, power and automation.

Existing literature regarding sustainability implementation shows that there is limited guidance in how sustainability strategies should be implemented in projects. There is also an absence of effective sustainability indicators for measuring progress and change control tools for controlling changes of environmental sustainability aspects. Rates of failure in implementing and managing change are still high according to several studies, even though much research is made in the subject. Suggested reason is an absence of a complete systematic view of implementation failure.

The companies that were interviewed showed high commitment and ambition toward sustainable development, even though there were some differences in commitment among them. Their work towards sustainability had evolved during many years, which showed limited evidence of concrete changes in sustainability implementation. However, informal systems were mentioned to be important in order for successful sustainability implementation and management of social parts of change. Project managers emphasized the importance of planning when implementing sustainability but there was a lack of indicators for measuring progress. The overall view of the companies' sustainability implementation processes in projects was somewhat blurry and unstructured, which correlates with research findings of missing guidelines for practical implementation. However, this absence of concrete guidelines might be beneficial for organizations to adopt and adapt their own comprehension of environmental sustainability end thereby be abled to improve or develop new procedures and techniques.

The research shows that change management aspects are already considered to a certain extent in environmental sustainability implementation. Key factors summarized from literature findings and interview results were compared and analyzed in order to develop a new set of key factors, which includes sustainability implementation and change management aspects. These key factors are seen as critical for successful implementation of environmental sustainability strategies and management of associated changes.

Improving both implementation processes and change management aspect as well as considering change management to a greater extent would benefit organizations on their way towards sustainability. Considering environmental sustainability aspects in projects might require change in prioritization from goals and objectives to environmental responsibility as well. This can affect the project management profession, which also might need to change to become more advisory with a greater holistic view of environmental aspects.

6.2 Further Research

This research examines environmental sustainability implementation in four different industries; oil & gas, automotive, construction & real estate, and power and automation. These industries have all different products and processes causing impact on the environment, which provides a broad perspective. However, a suggestion for further research could be to include a wider range of companies within these industries or a wider range of respondents from each company.

Since the interviews were conducted with managers at different levels and people responsible for sustainability affairs, the opinions of employees regarding change in environmental sustainability implementation was not considered. As employees probably notice any changes in work procedures or other activities as a result of sustainability implementation, their opinions could be valuable for further research.

The companies involved in this research had come far with their implementation of environmental sustainability strategies, which resulted in limited evidence of major

changes occurring during implementation processes. Thus further research could involve other companies whit less commitment to sustainable development in order to detect more revolutionary changes and explore if the suggested key factors could be applicable. Finally, the company within construction and real estate showed evidence of less commitment to environmental sustainability, which is why a more in-depth research of environmental sustainability implementation in the construction sector should be performed.

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