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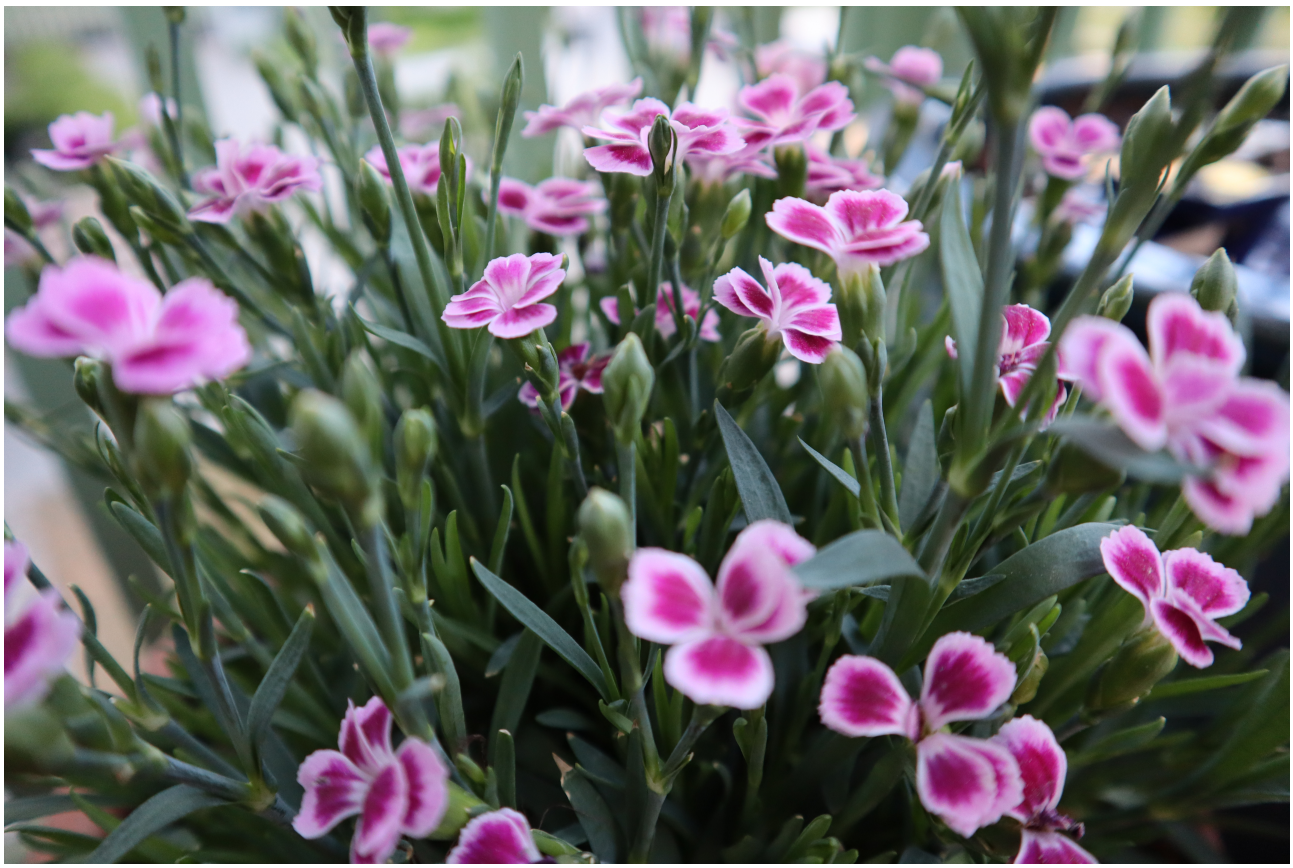

Communicating Environmental Work

A case study of challenges related to communicating and integrating Environmental Work in a construction company

Master's Thesis in the Master's Programme Design and Construction Project Management

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Department of Architecture & Civil Engineering
Division of Construction Management
Chalmers University of Technology
Master's Thesis ACEX30-18-41
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Abstract

The threat about climate changes is one of the most severe environmental issues mankind has ever had to deal with (Naturvårdsverket, 2018) and it affects everything and everyone in one way or another. A big villain is the construction industry, which 2014 stood for 19 % of the total greenhouse gas emissions in Sweden (Lundgren, 2017). However, changes are being done in order to build more environmental friendly and one important part of this change is for construction companies to involve all employees and thereby realize the importance of the human employed by the company as the main resource (Chawla et al., 2018).

This thesis aims to investigate how the Environmental Work is communicated and what information is given, within an infrastructure district of a large construction company in Sweden. This in order to help improve the environmental performance by identifying challenges and how these can be overcome in order to obtain the environmental engagement the company is aiming for.

It was concluded that more information and knowledge must be mediated in order to increase the consciousness and involvement among the employees. Today there are a rather few communication ways down to the construction sites with a limited amount of information. To increase the knowledge, the investigated district must review how they can communicate the Environmental Work to reach as many as possible and what kind of information being communicated. This thesis highlights an environmental representative and more interactions, possibly made by adapt a sustainable framework where communication and feedback is vital, as important prerequisites and possible solutions for the investigated district.

Keywords: Environment, Environmental Work, knowledge, communication

Kommunicering av miljöarbete
- En fallstudie av utmaningar relaterade till kommunikation och integrering av miljöarbete i ett byggföretag

Examensarbete inom masterprogrammet Organisering och Ledning i Bygg- och Fastighetssektorn

MALIN OLOFSSON
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Sammanfattning

Klimatförändringarna är ett av de svåraste miljöproblemen mänskligheten stått inför (Naturvårdsverket, 2018) och det påverkar allt och alla. En stor bov i denna fråga är byggindustrin, som 2014 stod för 19 % av Sveriges totala växthusgasutsläpp. Men en förändring håller på att ske för att ett mer miljövänligt byggande ska bli möjligt och en viktig del i denna förändring är att involvera hela organisationer och därmed inse vikten av de människor som är anställda på företagen som de mest betydelsefulla resurserna.

Denna rapport syftar till att undersöka hur miljöarbetet är kommunicerat och vad för information som kommuniceras, inom ett anläggningsdistrikt på ett stort byggföretag i Sverige. Detta görs för att kunna förbättra företagets miljöprestation genom att identifiera var utmaningar finns och hur dessa kan hanteras för att uppfylla det miljöengagemang som företaget önskar.

Studien visade att distriktet måste sprida mer information och kunskap för att öka medvetenheten och engagemanget bland de anställda. Idag är det få kommunikationskällor ner till byggprojekten och med begränsad mängd information. För att öka kunskapen och medvetenheten så måste distriktet se över hur miljöarbetet kan kommuniceras för att nå så många som möjligt och vad som faktiskt kommuniceras och bredda detta innehåll. Denna rapport belyser KMA-ansvariga och mer interaktion, i form av ett ramverk där struktur, kommunikation och feedback är viktiga, som förutsättningar och möjliga lösningar för det undersökta distriktet.

Nyckelord: Miljö, miljöarbete, kunskap, kommunikation

Contents

Preface

This master thesis has been carried out at the Department of Architecture and Civil Engineering, Chalmers University of Technology, Sweden, during the spring of 2018. It is the final part of a two-year master program within Design and Construction Project Management. The thesis equals 30 credits of the masters programs' total 120 credits and has been conducted in collaboration with a large construction company in Sweden. In the study, several interviews took place in the second half of March.

We would like to thank our supervisor Martine Buser, a docent at Construction Management, Chalmers University of Technology. She has helped us and guided us when we felt lost and contributed with many good thoughts and opinions. Furthermore, we would like to address appreciation to everyone at the company who helped us with our report. Several people have been a crucial factor for the success of this master thesis, with their patience, participation and guidance. They have reserved time within their work schedule to help us with our case study and interviews and thereby contributed to the outcome and eased the process of this thesis.

Malin Olofsson & Mikaela Stenberg, Gothenburg, June 13, 2018

1

Introduction

This chapter aims to introduce this thesis. Starting with a background to the regarded topic, then the purpose and aim and the research questions of the thesis, followed by the delimitations and ethical aspects.

The studied company has requested anonymity, therefore the references from the company have been excluded. The company in question will be referred to as *Company A* in the remaining part of the thesis and the studied district, within the company, as *District A*.

1.1 Background

The threat about climate changes is one of the most severe environmental issues mankind has ever had to deal with, according to Naturvårdsverket (2018), and every country will in one way or another be affected. To address this global problem the United Nations did in 1992 adopt a climate convention: The United Nations Framework Convention on Climate Change (UNFCCC), which is a framework for international cooperation to prevent climate changes (Naturvårdsverket, 2018). The UNFCCC includes the Paris agreement, which was adopted during the United Nations climate change conference in 2015. The most essential elements of this agreement are to keep the global temperature rise below two degrees Celsius, to increase the countries' ambitions and to strengthen the capabilities to deal with the impacts of climate changes (UNFCCC, n.d). In order to handle the climate changes and to make the two-degree goal become reality, the Swedish government has, with support from the UNFCCC, adopted a vision of net zero greenhouse gas emissions by 2050 (Naturvårdsverket, 2018). Net zero emissions, or climate

neutrality as it also is called, means to decrease all emissions and to compensate the unavoidable emissions (Naturskyddsföreningen, 2006).

The construction industry affects the environment both globally and locally and generally consume enormous amounts of natural resources during both construction and operating phases (Boverket, 2018). In 2014, the construction industry stood for 19 % of the total greenhouse gas emissions in Sweden (Lundgren, 2017). Therefore, the construction industry has improvement possibilities for the environment, if managed actively. Then, the negative impacts can be reduced. This is why *Company A*, since the mid-1990s, has had a proactive environmental management. *Company A* aims to build for a better society with innovative and sustainable solutions in all their projects. The company is determined to be a leading green project developer and contractor, and this is a focus area within the organizations profitable growth strategy. *Company A* also has an environmental strategy, in which it is stated that a significant contribution to a more sustainable world can be made and that this approach can influence both customers and suppliers. The environmental strategy also states that the environmental performance is integrated in their core business processes and plans. However, *Company A* works continuously with improving the environmental management, which involves the whole workforce, including subcontractors and other partners. In 2015, *Company A* decided to adopt a vision of climate neutrality by 2050, in accordance with the Swedish Government's vision.

In order to reach the desired goals and visions, an organization such as *Company A* needs to have well thought out plans or strategies of how to reach their target. One important part of a plans or strategies of this kind is to involve the whole company and thereby realize the importance of the people, employed by the company, as the main resources (Chawla et al., 2018). It is a necessity that focus is put on the human resources in order to contribute to the organization's goals. Furthermore, all employees do not require the same information and do not require the same communication ways.

In view of the above, to achieve set out goals and contribute to a more sustainable society, it is crucial for *Company A* to have an efficient communication of their Environmental Work. This is the core of this thesis.

1.1.1 Definition of Environmental Work

The Environmental Work *Company A* is performing is affecting all units and departments of the company and it includes both what they construct and produce and their own businesses. The Environmental Work includes managing and de-

veloping strategies, policies, working methods and tools, use of material, handling of chemicals and waste, environmental certifications and energy usage. The Environmental Work also includes technical development and innovation, sustaining of knowledge, inspirational educations and efforts to develop new and more environmental friendly alternatives in all areas.

When Environmental Work is mentioned in this thesis, it is referred to the description above.

1.2 Purpose and Aim

In this thesis the Environmental Work of a district within a large construction company in Sweden is studied. The purpose is to get an overview of how the Environmental Work is communicated within an infrastructure district of a large construction company in Sweden and to identify improvement possibilities regarding content and methods.

It aims to analyze how the Environmental Work is being communicated right now and what information being communicated to different groups of employees within the district. In addition, it aims to investigate improvement possibilities for the communication structure and the type of information communicated, and also what type of information needed and requested among the employees. This in order to help improving the environmental performance of *District A*, by identifying where potential changes can be implemented and which aspects that need to be highlighted in order to obtain the environmental engagement the company is aiming for.

1.3 Research Questions

To investigate and analyze the communication of *District A's* Environmental Work and identify possible improvements, the following questions have been used:

- What kind of information and knowledge is communicated within the district and to whom?
- How is the Environmental Work communicated within the district?
- According to the literature, what are the challenges related to communicating and integrating Environmental Work and how can they be overcome by *District A*?

1.4 Delimitations

In this master thesis, the content is limited to the internal Environmental Work within an infrastructure district of *Company A*, referred to as *District A*. A more precise result could be obtained by reviewing the Environmental Work of the entire *Company A*. Due to time constraints, only *District A* were chosen and only a limited number of employees within the *District A* were chosen to participate in this study.

There are also a lot of external aspects influencing the environmental performance of the district, for example regulations and client's requirements, these external aspects are not considered in this report. It only focuses on what *District A* within *Company A* internally can improve, with the existing external prerequisites.

Further, economy will not be an affecting factor of this study. The proposed improvements and changes will be without regard of *District A's* economical business aims.

1.5 Ethical Aspects

It is important to consider ethical aspects when doing an investigation. According to Bryman and Bell (2015) there are four main areas regarding ethical principles; Harm to participants, lack of informed consent, invasion of privacy and deception. These principles are considered during this study. *District A* and participants involved are anonymous and their names are therefore not mentioned. The interviewees were informed of the thesis purpose and aim and were also aware that the interviews were recorded, which they agreed to. The recorded material has only been used by the authors to ease the analyze and will not be accessible to any others. Bryman and Bell (2015) also discuss the difficulties of ethical decision-making of qualitative studies. In many cases, the aim and purpose of a report may change during the investigation. This can result in a project aim and purpose different from the one the participants were informed of, which in turn could contribute to ethical errors in accordance to Bryman and Bell's (2015) ethical principles. During the development of this master thesis, the project aim and purpose have changed to a certain degree. However, the core of the thesis has remained the same and the purpose and aim have not been changed to the extent where the ethical aspects need to be reviewed.

2

Methodology

This chapter will present the methodology used in this thesis. The choices made are presented and alternative options are briefly described. The methodology in this report is, in short, a qualitative study with an inductive research approach based on semi-structured interviews combined with a theoretical framework.

2.1 Research Approach

In general, research approaches can be divided into three different types, deductive, inductive and abductive (Gill and Johnson, 2010). In deductive reasoning a hypothesis or theoretical proposition is proposed prior to the research process (Mason, 2002). The hypothesis is thereafter tested and confirmed or rejected. The inductive approach is considered the opposite of deductive and does not include a hypothesis. Instead, inductive reasoning starts with data collection, thereafter are thematizations made and theories will be chosen based on analysis of the data collected (Mason, 2002). Hence, the conclusion of such a research approach is thematized and in some cases hard to apply on other situations or issues, due to the strict limitations of the observation (Mirza et al., 2014). The abductive research approach considers reasoning from both inductive and deductive approach and it is used for understanding rather than explaining (Blaikie, 2009). This is associated with a continuous movement between empirical data and theoretical work and in the process developing theories or making new findings.

The research approach used in this report is an inductive approach. First, the data needed in order to identify the specific problem was collected. This was done

with semi-structured interviews, from which identifications were done of what issues there were and where these were located. Further, the theoretical framework was elaborated in order to understand and analyze the empirical findings and explore possible improvements (Mason, 2002). Due to the limitations of the observations, the conclusion in this report is thematized, in accordance with Mirza et al. (2014).

2.2 Research Method

There are two research methods, qualitative and quantitative researches. Depending on the purpose of the study, one of these are determined (Bryman and Bell, 2013). The primary difference between the two are that quantitative research focuses on quantitation of data, while qualitative research stresses the importance of people's interpretation and own opinions. Qualitative research focuses on the exploration and understanding, while quantitative research focuses on tests and measurement. This thesis is based on a qualitative approach, where the opinions and views of the individuals within the organization are analyzed and interpreted.

2.3 Case Study

The case study in this report was made for an infrastructure district of a large construction company in Sweden, *Company A*, during the spring of 2018. The thesis' subject area was presented by the company and the purpose and aim were then developed by the authors of this thesis. An important point to mention is that the authors are a part of the studied company and have been for the last 1-2 years. This means that a good prior knowledge about the company and how work is carried out, was obtained before the beginning of this master thesis. One of the risks of being a part of the studied company is to be too involved, connected and faithful to the company. This can influence the data collection and the analysis of the result. However, throughout the research we tried to keep a neutral and participant observational role where this risk was considered. Although, it was especially difficult to not be faithful to the company, which is affecting our results. The results are therefore not completely unbiased and are to some extent in the company's favor.

The case study included an investigation of Company A's internal website, which the authors of this thesis had access to. It is an intranet which all employees (apart from the construction workers at the time) have access to and where information

regarding several areas can be found. With the study of the intranet, focus was put on the environmental section in order to see what kind of environmental information was available for the employees. Due to confidentiality, the intranet and the information available are only briefly described.

2.4 Interviews

Several representatives from the approximately 100 employees at *District A*, were chosen to participate in the study and they all accepted being individually interviewed. The selection of employees was made to get representatives in different levels of the hierarchy and to get a wide variety of age, experiences and genders. The selection was made in collaboration with our supervisor at the district, who provided a list of possible candidates which we could choose from. We also had the possibility to add our own candidates, the list from the supervisor was mainly a tool to facilitate the selection process and not a list of the employees we were allowed to interview.

Altogether, 17 people were interviewed in this study. 15 of these belong to *District A* and then the regional manager of the region *District A* belong to and an employee from the support function Sustainable business development were interviewed too. The chosen employees were divided into three groups depending on their job assignments and responsibilities. The groups are Construction Workers, Project Staff and Management Team and they were given the same questions, with some modification depending on which group the interviewee belonged to.

The structure used for the interviews was semi-structured and altogether the interviewees were given around 25 questions, depending on which group the interviewed belonged to. In Appendix A, all used interview questions are listed. All of these questions were not used in every interview, only the ones suitable for the interviewee were chosen. The duration of the interviews was between 25 to 60 minutes. The interviews were established in order to answer the questions “What kind of information and knowledge is communicated within the district and to whom?” and ”How is the Environmental Work communicated within the district?”.

The interviews took place at both construction sites and at the main office depending on what was easiest for the interviewee. Every interview was recorded in order to facilitate the data analysis. Before the interviews, time was put on deciding how the interviews should be performed and a decision was made about not leading the interviewee towards wanted answers.

The interviewed employee from the Sustainable business development department

is not included in any of the three groups. The interview was performed to obtain knowledge and understanding of how the Environmental Work is done in *District A* and how the support function of the Sustainable business development department work. The answers from the interview is not included in the compilation of the answers in 4.2.1 - 4.2.3.

The trustworthiness of the interview answers has been critically reviewed and it has been determined that the answers are of a credible character. Since both the authors are a part of the studied company and thereby knew most of the interviewed employees, it could be ensured that no modified answers were given.

2.5 Analysis of Data

In order to facilitate the analysis of collected data, every interview was recorded. The analysis of the data took place in different steps in order to break it down into a more manageable size. The first step was to listen to the recordings and transcribe all that was said. After that, each interviewees' main points and thoughts of every question were written down. Thereafter, the interviewees' main points for each question were compared with the main points of other interviewees' belonging to the same group (construction workers, project staff or management team).

This resulted in a summary for each group, with their main points and thoughts for each question identified. These summaries were analyzed to get an overall picture of the groups' opinions regarding the issue.

2.6 Literature Review

The literature review was made after the interviews were conducted and the collected data organized by topic. The interviews showed different areas where potential improvements could be made. With that as a basis, relevant theory linked to the case study was found, analyzed and applicated. The literature section highlighted important factors worth considering when reviewing Environmental Work and how that should be integrated and mediated within organizations.

Regarding the literature collection, the search engines mostly used were Google Scholar and the library of Chalmers, SUMMON. However, other similar sources were used as well but to a smaller extent. Before application, all sources were critically reviewed in order to allocate the trustworthiness and applicability for strengthening our statements.

3

Theoretical Framework

This chapter is meant to introduce the existing research that fits to the issue this report is analyzing and to give an overview of alternative ways to handle Environmental Work. The chapter discusses Environmental Management Systems (EMS), Proficiency levels within the construction industry, Incentives and Environmental representatives.

3.1 Environmental Management Systems (EMS)

There is a increasing demand and will of operating in a sustainable way in many industries and the construction industry is one of them (Zhang et al., 2014). Sustainability is often described as the balance between economical, environmental and social objectives (Sev, 2009) and this can be a difficult process when the economical objectives are what makes an organization competitive on the market, according to Buser and Koch (2015). If an organization wants to operate in an environmental friendly way, the organization must first aim for a sustainable result and establish environmental goals (Marcelino-Sádaba, González-Jaen and Pérez-Ezcurdia, 2015; Sev, 2009). After that, resources such as different guidelines, standards and frameworks can be considered, to help reaching the established goals. Environmental Management Systems (EMS) are such resources, which can be used to achieve environmental objectives (Zutshi and Sohal, 2004). EMS are composed of a set of processes and practices, which enable organizations to decrease their environmental impact and reach more sustainable results (EPA, 2017). EMS helps identify opportunities for improving an organization's environmental performance through consistent review and evaluation. Apart from this, the adoption of an EMS demonstrates a commitment to the environment and sustainability.

Furthermore, Zhang, Wu and Shen (2015) say that this can improve a company's environmental image and possibly attract more clients, especially if internationally recognized EMS are used.

Since the construction industry largely can be held responsible for the environment degradation seen today (Olubunmi, Xia and Skitmore, 2016; Zhang et al., 2014), many construction companies are trying to achieve a better environmental performance. In this development the EMS are considered as an effective way of improving the environmental performance (Zhang, Wu and Shen, 2015).

Another aspect of environmental management system, which Chawla et al. (2018) address in their study, is the importance of policies and procedures. Since it is them that creates trustworthiness and shapes a company's actions, decisions and responsibilities, and thereby affecting a company's relationships with clients, stakeholders and the society. Hence, when establishing an EMS and formulating policies and procedures it is essential to make them clear, relevant and uncomplicated (Chawla et al., 2018; Tung, Baird and Schoch, 2014). If the policies and procedures related to EMS are imprecise, it can create uncertainty within the organization and eventually affect not only the environmental performance but the overall performance too. Clear policies and procedures can ensure an organization-wide awareness and commitment of the Environmental Work (Tung, Baird and Schoch, 2014).

3.1.1 ISO 14000 Family of Standards

One of the most frequently used standards for an EMS is the ISO 14001 standard (SIS, n.d), which belong to the ISO 14000 family of standards (EPA, 2017). The ISO 14000 family standards are environmental management system standards which provides tools for organizations who want to manage their Environmental Work (ISO, 2017). By utilizing the ISO 14000 standards, and particularly ISO 14001, organizations have a good base and prerequisites to reach internal established environmental goals and contribute to external goals as well. Among other things, ISO 14001 is to give increased process efficiency, reduced usage of resources and material, increased goodwill and credibility for the Environmental Work and increased competence within the organization (SIS, n.d). To get ISO 14001 certified the organization needs to have their EMS described and to maintain it regularly. The company also needs to communicate and integrate the system into the daily work and to have a quality management system which meets the demands of the standard(ISO, 2017).

ISO 14000 family standards are such widely spread standards because of their possibility to be incorporated into other ISO standards already implanted in organiza-

tions (Marcelino-Sádaba, González-Jaen and Pérez-Ezcurdia, 2015). This makes it possible to integrate sustainability into organizations and projects. Therefore, standards from the ISO 14000 family are commonly used in construction companies.

3.1.2 Effectiveness of EMS

However, according to Zhang, Wu and Shen (2015), EMS are of limited effectiveness and the result of the implementation of ISO 14001 can be ambiguous (Boiral, 2007). In the US for instance, some hesitant towards ISO 14000 standards has been noted and in Singapore an attitude of "wait and see" towards the same standards has been adopted. Marcelino-Sádaba, González-Jaen and Pérez-Ezcurdia (2015) also state that it is difficult to include and integrate EMS in organizations and projects. Moreover, as solely adopting an EMS in a company does not lead to improved environmental performance, some companies might fail in securing environmental benefits. To get result when adopting an EMS, action must be taken, the systems and standards must be taken seriously, and their objectives must be met (Zhang, Wu and Shen, 2015).

3.1.3 Sustainable Framework

To reach higher environmental performance Montes et al. (2005) suggest that companies involve the whole organization and engage employees from all different levels of the hierarchy. A framework, which could help companies acheive involvement of the entire organization and which can be applied to a construction company's EMS, is one presented by Chawla et al. (2018), see Figure 3.1. The framework is for project-based organizations, which is an organizational structure many construction companies have. The employees of an organization can be viewed as what makes it competitive (Chawla et al., 2018; Barlett and Ghoshal, 2002). Therefore, it is on these resources and the communication between them, that focus should be put on when improving environmental performance. It is the human decisions, policies and ways to implement things that form an organization (Chawla et al., 2018).

In the framework by Chawla et al. (2018), there are three levels of human resources identified in a project based company. These are project staff, project managers and the management of the project company. The project staff is usually the lower level in the hierarchy (workers, foremen, junior managers etc.), project managers are the middle level (senior manager, general manager etc.) and the management of

the project company is the highest level (president, vice president, chief executive officer etc.).

In the framework, the three levels of human resources are represented together with suggested knowledge and performance level for each group. Integrated with the knowledge and performance, is the feedback. It can be regarding decisions, processes, assignments etc. and it should be added to all levels in the organization (Chawla et al., 2018). The feedback is to create communication between all levels of the human resources and letting information, knowledge and experiences move up and down in the hierarchy. If the feedback is reviewed and assessed properly, the environmental performance can improve. However, a prerequisite for this to work is appropriate delegation of power and responsibilities between the three levels.

An important thing to notice with this framework is that it emphasizes that everyone within the organization have the consciousness and knowledge to deal with sustainability issues related to their respectively role, and that these performances are linked to each other (Chawla et al., 2018). With feedback within all processes and decisions in addition to the link and collaboration between the different levels, a chance of improving Environmental Work within the projects emerges. The feedback can also ensure, in accordance with Montes et al. (2005), that employees from different levels of the hierarchy is involved in the Environmental Work.

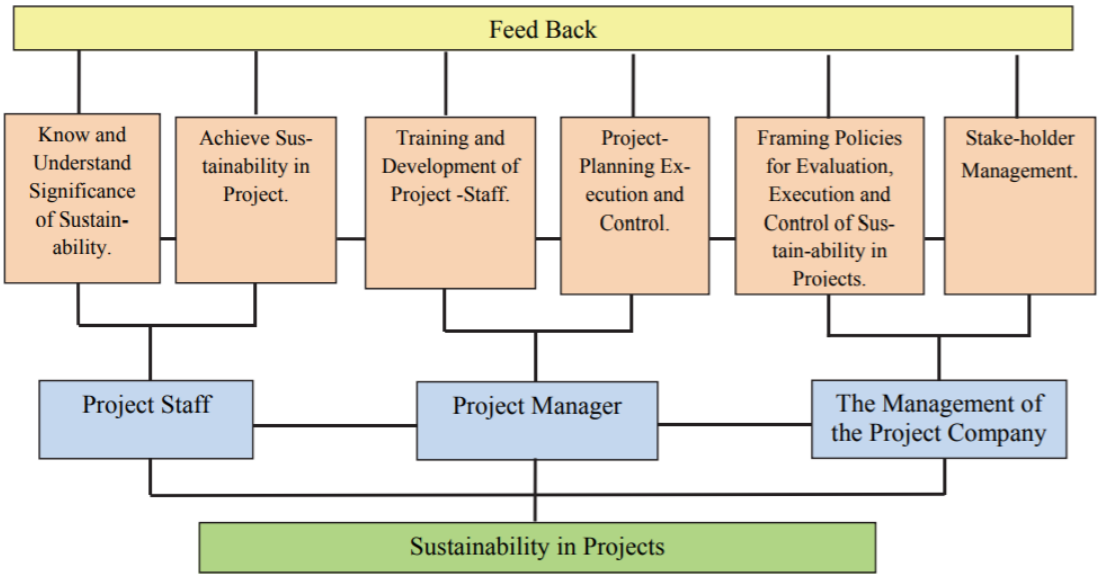

Fig. 3.1: *A framework for sustainable projects (Chawla et al., 2018)*

3.2 Knowledge of the Environment

Several studies have showed that when people have a greater level of knowledge regarding the environment, they tend to change their behavior in a more environmental friendly way (Seth et al., 2011; Misra and Panda, 2017). When people grasp the magnitude of the problem and understand the positive effects of increasing the environmental performance, their willingness to do more environmental efforts improves (Bulkeley, 2000). Thus, when the complexity of the environmental issues and its consequences are not understood, people are unable to change their behavior and reduce their negative environmental impacts. This is applicable for employees in an organization too.

It has also been shown that with greater knowledge of the environment, the attitudes towards Environmental Work tend to be more positive (Barber et al., 2009; Flamm, 2009; Polonsky et al. 2012). Polonsky et al. (2012) have also seen that with the positive attitude, people tend to alter their behaviors in a larger extent. Showing that greater knowledge, attitude and behavior are linked together.

3.2.1 Required Proficiency Levels

How much and what type of information an employee needs to be able to do their job assignments depends on the employee's position within the company. Different job assignments require different knowledge (Siew, 2014). This also applies for environmental knowledge. Therefore, depending on the employees' roles and job assignments, different knowledge levels regarding the environment are necessary for employees to be able to do their job. This is something Siew (2014) addresses in the article Human Resource Management in the Construction Industry - Sustainability Competences. Siew (2014) defines four proficiency levels and proposes a framework for measuring sustainability competencies of employees with these proficiency levels. The four proficiency levels are defined as follows (Siew, 2014):

P1 - Demonstrates basic knowledge/understanding of subject matter
P2 - Applies knowledge and analyses outcomes stemming from action
P3 - Manages, develops action plans to mitigate negative impacts
P4 - Provides advisory services and drives performance based on extensive experience.

The framework has eight competencies regarding sustainability and for each competency it is, in addition to the definitions above, described more precise what the four different proficiency levels mean (Siew, 2014). In this thesis, only one

competence from the framework will be taken into consideration, "Managing environmental aspects, impacts and OHS (Operational Health and Safety) hazards", as this competence is in line with what this report is addressing. Apart from the OHS hazards, this competency is about identifying, assessing, eliminating and mitigating environmental impacts (Siew, 2014). In Table 3.1 it is shown for the competence "Managing environmental aspects, impacts and OHS hazards" how the proficiency levels are defined.

The other seven competences in the study by Siew (2014) are: "Safety auditing", " Project Risk Management", "Safety recognition and reward", "Safety/environmental reporting", " Monitoring contractors/subcontractors", "Communication" and "OHS regulatory and management system/Planning and assessment".

Table 3.1: *Proficiency levels described more precise for the competency " Managing environmental aspects, impacts and OHS hazards" (Siew, 2014).*

P1	**P2**	**P3**	**P4**
Demonstrates the ability to conduct environmental impact/ OHS hazard identification and risk assessment with guidance.	Conducts and validates environmental impact/OHS hazard identification and risk assessment.	Manages and guides team in identification, risk assessment and mitigation measures concerning environmental impact/OHS hazards.	Advises on identification, assessment and mitigation of environmental impact/ OHS hazard.

According to Siew (2014) the proficiency levels appropriate for the employees at construction companies differs depending on what role one has. The appropriate proficiency levels for the different roles, according to Siew (2014), are shown in Table 3.2.

Table 3.2: *Proficiency level for respective role (Siew, 2014)*
**Environment Safety Health*

Role	**Proficiency level**
Site Worker	P1
Site Manager	P2
Site EHS* Advisor	P3
Project Manager	P4
Senior Manager	P4

The study by Siew (2014) showed that employees at the construction sites do not need to have more knowledge within the area than P1 and P2, apart from the site ESH advisor, whom should be the one managing and coaching in regard to the environmental aspects and therefore needs proficiency level P3. Further on, the project manager and senior manager should have a broader and deeper understanding of the topic and be able to strategize and improve the work on regular basis. This is somewhat in contrary to the studies by Bulkeley (2000), Seth et al. (2011) and Misra and Panda (2017) showing that with greater knowledge of the environment, the environmental performance of people tend to increase. However, Siew (2014) only proposes the proficiency levels needed for the employees to strictly be able to do their job assignments.

3.3 Environmental Incentives

Incentives are usually defined as something that influences or motivates people to act in certain ways and they can be used to increase the willingness of people to focus on something (Olubunmi, Xia and Skitmore, 2016). This also is applicable for the environmental focus in the construction industry (Koppfeldt, Revellé, 2017). There are two types of incentives, internal and external, also called intrinsic and extrinsic. According to Olubunmi, Xia and Skitmore (2016) several studies have observed effectiveness from both types of incentives in the construction industry.

Extrinsic incentives come from outside the individuals and it is motivation driven by a desire to obtain or avoid a certain consequence or outcome, such as a reward or a punishment. Intrinsic incentives are instead from individuals' feelings and connections to certain activities, and are driven by personal interest in subjects, tasks or activities (Olubunmi, Xia and Skitmore, 2016). Thereby, the difference between extrinsic and intrinsic incentives is the causes that lead to the behavior or action. Extrinsic incentives lead to an action because it results in a specific outcome, whilst intrinsic incentives lead to action due to personal interest or enjoyment (Cherry, 2018).

There are several different types of intrinsic incentives, for example those incentives connected to human well-being. Incentives about improved environmental performance often relates to human well-being as the improved environmental performance also can have a positive effect on people's own health (Olubunmi, Xia and Skitmore, 2016). Therefore, human well-being incentives can reinforce Envi-

ronmental Work. Another important intrinsic incentive, according to Olubunmi, Xia and Skitmore (2016), when it comes to Environmental Work, is altruistic incentive. The foundations for these incentives are unselfish or personal morals and values. Involvement and engagement in Environmental Work can be due to a person's beliefs that climate change and its effects on the planet is real, which thus is an altruistic incentive. These altruistic incentives based on human beliefs are considered important for the development of environmental efforts (Olubunmi, Xia and Skitmore, 2016). Connected to the altruistic incentives are the inspirational incentives, which promotes environmental performance through inspiration from for instance exemplary management (Olubunmi, Xia and Skitmore, 2016). If a leader has strong beliefs about the effects of climate change and therefore works extensively with Environmental Work, the leader is motivated by altruistic incentives and may, in turn, inspire and motivate employees to do the same, thus inspirational incentives.

There can be different types of extrinsic incentives for environmental efforts in the construction industry too. Olubunmi, Xia and Skitmore (2016) point out the importance of governmentally provided incentives to promote high environmental performance and requests from clients can also be motivating for companies to do more environmental efforts. However, extrinsic incentives from within a construction company can be motivating for the employees to be more involved in the Environmental Work of the company.

The effectiveness of both extrinsic and intrinsic incentives on the environmental performance in the construction industry is apparent, according to Olubunmi, Xia and Skitmore (2016). Incentives are essential tools when developing and increasing environmental efforts, although it is not distinguishable if intrinsic or extrinsic are the most effective ones. It is also difficult to determine the ideal level of an incentive for a desired result. This means there is a challenge to find both the right incentive, intrinsic or extrinsic, and the best level of it.

3.4 Environmental Representative

Boström, Uggla and Hansson (2018), state in the article "Environmental representatives: whom, what, and how are they representing?" that the environment never can plead on its own and that it instead always will need to be represented by someone in all situations. Environmental representation is of importance since everything that is done without any consideration towards the environment affects everyone, living as non-living. But during the recent years, the environmental issues has become a recognized topic and the number of people who tries to help

has increased (Gluch et al., 2011)

In the society today, the environment is, as said before, one of the most debated topics and there are a lot of things that needs to change to attain a sustainable future (Zhang, Wu, Shen, 2015). Environmental representatives could be the potential change-makers needed to get the employees in organizations to start focusing on the environment. There are a few development factors that affects the representativeness (Boström, Uggla, Hansson, 2018). Knowledge, expertise and experience are such factors and are of importance since knowledge about the environmental issue needs to be integrated and communicated to the entire organization to get everyone aware of its importance (Chawla et al., 2018).

Zhang, Wu and Shen (2015) argue that many methodologies about green management have limited effectiveness and that environmental management will not be prioritized as long as economics and profits are essential. Hence, it becomes something that many organizations disregard when the focus is on other parameters. An independent candidate who work as an environmental representative for a project based organization (PBO), with the proactive incentive of maintaining the green environment, is therefore a solution that Zhang, Wu and Shen (2015) claim can solve the limited effectiveness of the otherwise neglected environment methodologies. Zhang, Wu and Shen (2015) argue that this environmental representative should be an independent part, and thereby hired to play a neutral role with actions based on the environmental gods.

The traditional model of how a construction project functions, is that different stakeholders affect the project based organization, while the organization handle the management objectives, including cost, time and quality, with environmental management embedded somewhere within these objectives, see Figure 3.2.

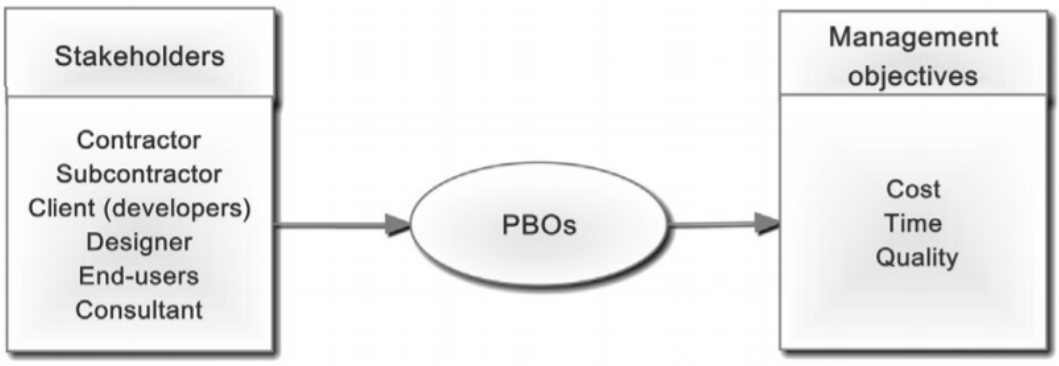

Fig. 3.2: *A traditional model of project based organizations (Zhang, Wu, Shen, 2015)*

The model Zhang, Wu and Shen (2015) propose instead is similar to the traditional one, but with an additional factor, an independent environmental representative, looking after environmental interests in each project, see Figure 3.3. With this model, the environmental objective is separated from the other management objectives and in this way, the environmental objectives get a more clear and prioritized role within the projects (Zhang, Wu, Shen, 2015). The principle is that the environmental representative maintains the environmental interests parallel with the maintenance of the other project objectives.

According to Zhang, Wu and Shen (2015) should the environmental representative be governmentally appointed and paid for by the government, to ensure neutrality in the management organization. The neutrality can, for instance, be of importance when a conflict between environmental objects and cost appears. In such cases can the representative enforce the environmental commitments and help balance between the two aspects.

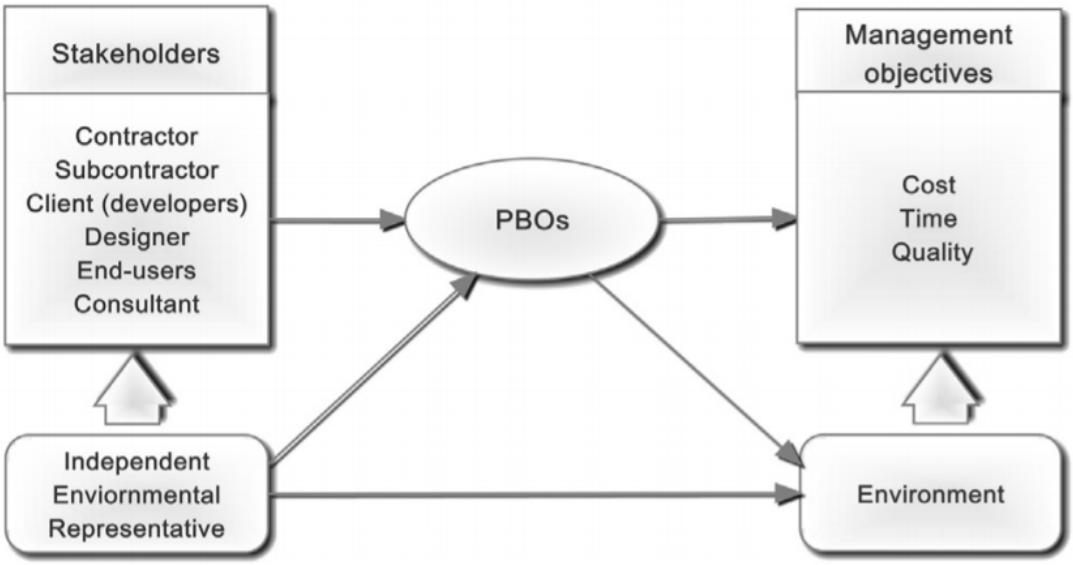

Fig. 3.3: *A typology model of green embedded project based organizations (Zhang, Wu, Shen, 2015)*

Just as Boström, Uggla and Hansson (2018) state, the environmental representative must be knowledgeable and have expertise and experience within the environmental area. In addition, Zhang, Wu and Shen (2015) say, the representative must be knowledgeable in the area of construction too. Thereby, the representative can result in several benefits for construction companies. The representative can then be involved in the design phase and help with the planning, at construction

sites monitoring and reviewing improvements of the environmental performance and can also raise awareness by education among employees. By using an environmental representative in this way, engagement in improving the environmental performance is increased and it will be ensured that all parts of an organization are working towards the same environmental goals (Zhang, Wu and Shen, 2015).

Within the construction industry in Sweden, the environmental representative is often called a QEHS-coordinator (Quality, Environment, Health, Safety - coordinator) and thereby is responsible for the four areas at the projects (Framtid, n.d)

3.5 Summary

To manage a company in an environmental friendly way Environmental Management Systems (EMS) can be used. EMS helps identify opportunities for improving an organization's environmental performance through consistent review and evaluation (EPA, 2017). One of the most frequently used standards for an EMS is the ISO 14001 standard, which provides tools to manage Environmental Work (ISO, 2017). Another framework that can be applied to a construction company's EMS, is presented by Chawla et al. (2018). The framework is for project-based organizations and it focuses on human resources and the communication and feedback among the employees.

There are different level of knowledge needed for employees, depending on their roles and positions within a company. In order to manage the Environmental Work, it can be useful to consider these different knowledge (Siew, 2014). According to Siew (2014), there are four proficiency levels (P1-4), where P1 is the lowest level and P4 the highest. For the environmental aspect the employees at construction sites need P1 or P2, whilst project and senior managers need P4.

In order to get people more motivated to work towards a more environmental friendly construction industry, different internal incentives can be of use (Olubunmi, Xia and Skitmore, 2016). The internal incentives can be human well-being, gratifying, altruistic and inspirational incentives.

An environmental representative is important to make sure that the environment is spoken for. According to Zhang, Wu and Shen (2015) a representative of this sort should be an independent part with the aim to inspire and sustain the environmental aspect within projects.

4

Empirical study

In this chapter, our empirical findings are presented. First an overview of *Company A*'s Environmental Work is given, followed by a description and compilation of the performed interviews.

4.1 *Company A*'s Internal Environmental Work

The purpose of this section is to give an overview of *Company A* and *District A*'s Environmental Work, the organizational structure and what content regarding Environmental Work there is available for the employees. Emphasis has been put on the district this thesis is focusing on, *District A*. However, much of the information is distributed to the entire organization. The content available for the employees will only be described briefly due to confidentiality issues.

Company A states that their ambition with the Environmental Work is to constantly develop and improve processes and tools, as new demands and prerequisites appear. They also want to enhance and develop the knowledge levels and competences within the organization. Through experience exchanges, training, and continuing development of their management system, the company tries to acquire the needed competencies, skills and experiences to reach their environmental goals. In *Company A*'s projects, external requirements and environmental laws are a minimum level for the environmental efforts. To increase the environmental efforts, *Company A* tries to propose alternative solutions and methods, as they are determined to reach high environmental performance. *Company A* wants to take responsibility towards society, develop a sustainable construction industry and decrease negative environmental impacts on all levels. The aspiration to have high

environmental standard is meant to guide both the organization itself but also to affect clients, subcontractors, suppliers and other partners in the same direction too.

4.1.1 Organizational Structure

This subchapter is to briefly describe the organizational structure of *Company A* in order to ease the understanding of how the Environmental Work is carried out.

Company A is a part of a corporate group operating international and *Company A* is operating in Sweden. *Company A* is divided into different business units and each unit is divided into geographical regions, which then are divided into different districts. This thesis focuses on one of these districts, *District A*. In addition to the business units there are also support functions, for example Human Resources and the Sustainable business development department. To understand where in the corporate group *District A* is, Figure 4.1 shows a simplified organizational structure based on the empirical findings in this study. This structure is not a complete version of the entire corporate group. There are more companies, business units, regions and districts in the corporate group than seen in Figure 4.1. These are excluded for simplicity.

The corporate group *Company A* belong to is a value driven organization. This means there are overall values and a code of conduct, which define and characterize the work and how all employees act. Everything *Company A* does has its origin in these overall values. As a complement to this *Company A* has policies and steering documents regarding several areas, including the Environmental Work. To determine what these policies and steering documents mean in more detail, different business plans are developed. *Company A* has an overall business plan for the whole company, and then each business unit establish one for their operations and finally the districts in each geographical region of the business units, establish their business plans.

In addition to the business plans, there are action plans established for the support departments within *Company* A. One of these departments is focusing on sustainable business, which includes Environmental Work. In the action plan, there are descriptions of assignments, goals and actions for each support division.

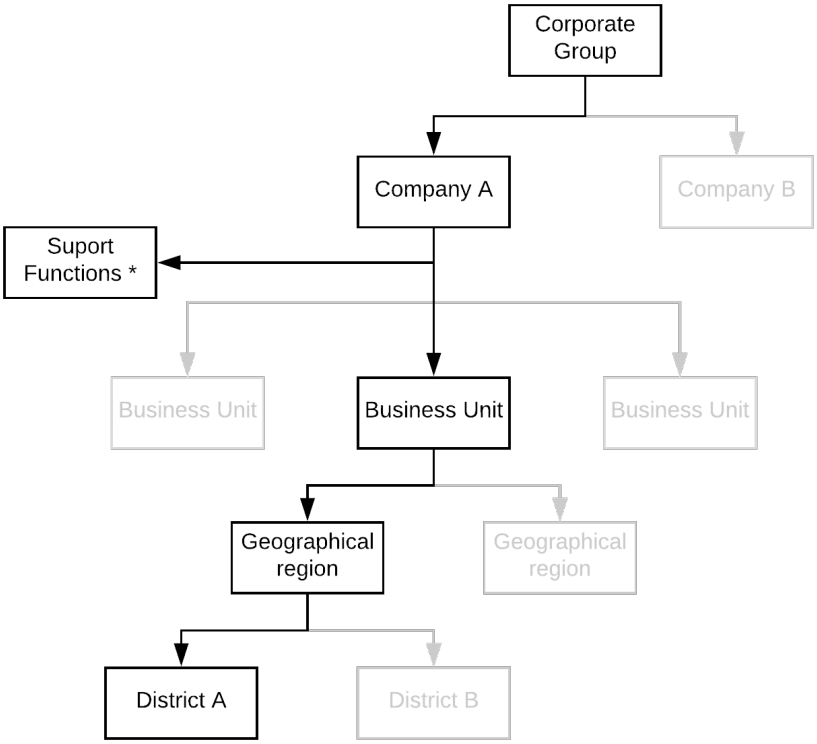

Fig. 4.1: *Simplified organizational structure according to the empirical findings of Company A in this study.*
**One support function relevant for this thesis is the Sustainable business development department.*

4.1.2 Management System

The foundation for the work *Company A* is executing is their management system, which contains the decisive and governing working methods for the company. The management system is a tool for leading the operations of *Company A* and it is based on the different processes of the organization. The management system can be accessed through *Company A*'s internal website and there employees can find several chapters for the company's core activities and the different business units. Incorporated in the management system are recommendations, guidelines and requirements regarding environmental laws and working methods connected to their ISO-certificates. All employees, except the construction workers, have access to the management system.

4.1.3 Environmental Policy

As said before, as a complement to the values and code of conduct, there are different policies established. *Company A* has an environmental policy, which defines the way they work with environmental questions and to which extent the organization work with the subject.

To describe a more environmentally adjusted and future oriented way of construction, the company commonly uses the term green building. Green building includes both what and how they build and also project developing and producing. *Company A* states in their environmental policy that their goals are to be a leader in green building and to reach close to zero negative environmental impact. This from both what they produce and from their operations.

Company A expresses their environmental policy with five principles, which all employees at *Company A* must follow. The principles are:

- We want to build green
- Our ambition drives us forward
- We are competent
- We exceed external requirements
- We take responsibility

These principles relates to other policies and values within the organization and all these are, together with work processes and tools, integrated in the management system, see Chapter 4.1.2.

4.1.4 The Internal Website

The primarily source of information *Company A* has for their employees is the internal website, which communicates news and all sort of information to the whole organization. When examining the intranet it can be concluded that there is an extensive amount of information available concerning numerous areas, including environmental related information. Through the intranet, the employees can access the management system where, as said before, issues regarding environmental laws and working methods connected to their ISO-certificate are incorporated. However, regarding other environmental areas, information and support is to be found at the page at the intranet called "Green Building". Here employees can find overall goals, visions, policies and sections about incentives, educations, numerical goals, tools business plans and contact persons among other things. The purpose of the

page "Green Building" is to give employees information, support and guidance in questions regarding sustainability and especially the environmental subjects, which cannot be found in the management system. The employees should use the "Green Building" page when needed in their work tasks.

Here, a brief description follows of some of the tools, regarded as most essential for this study, for which information is available at the "Green Building" page.

- Green week
  - One week annually where the focus is on the environment and green building, with workshops, activities, discussions and lectures to create and increase interest and commitment.
- Green map
  - Model developed by *Company A*, available for the different business units to steer, measure and communicate what the company means by green building. With the green map projects can evaluate to what extent they are being environmental friendly.
- Green solutions
  - Alternative solutions, developed by *Company A*, for different business units regarding energy, climate, water, material and waste, which increase the environmental performance.
- Green construction sites
  - An environmental marking for *Company A*'s construction sites, which works as a tool to increase the Environmental Work at the sites. It includes working with higher environmental ambitions and there are several criteria a construction site must fulfill to achieve the marking "a green construction site". The marking is obligatory for larger projects.
- Educations
  - Internal educations within the environmental area, addressing different employees depending on their business unit and position.
- Climate calculations
  - A tool to calculate greenhouse gas emissions in the projects.
- Climate adjustments
  - Information about how individual employees can adjust their lifestyle to the climate changes and how that affects themselves and the society.

- Material, waste and chemicals
  - Information about how to think and act regarding the handling of material, waste and chemicals.
- Environmental certification
  - Links to external information about the most common standards and certifications in Sweden.
- Contact persons
  - A list of the most relevant persons to contact regarding the Environmental Work.

4.2 Case study - Interviews

The case study is based on interviews with 17 selected employees at *District A*. 15 of these belong to *District A* and in addition, the regional manager of the geographical region the district belongs to and an employee from the support function Sustainable business development were interviewed. The interviewees were divided into 3 groups depending on their tasks within the organization: Construction Workers, Project Staff and Management Team. The set up was as follows:

- Management Team (MT)
  - 1 project manager
  - 1 operational manager / former district manager
  - 1 regional manager
- Project Staff (PS)
  - 4 foremen
  - 1 QEHS-coordinator (Quality, Environment, Health, Safety-coordinator)
  - 2 surveyors
  - 2 site managers

- Construction Workers (CW)
  - 2 concrete workers
  - 3 ground workers

From now on, these three groups will be abbreviated to CW, PS and MT.

The MT works with management of the district, positioned at the main office. They have the responsibility for the operations of *District A* and they have authority to make decisions, steer and affect in many areas. They have the overall responsibility for the district's Environmental Work and they can make decisions about environmental focus in different projects and working methods and procedures at construction sites among other things. MT also has a responsibility to live the environmental values of *Company A* and thereby set good examples for the employees at *District A*.

The PS is employees at the construction sites of *District A*, working with management, supervision and administrative assignments of the specific project. They steer the everyday work on site, which for example includes planning the work, handling deliveries and assigning work tasks to the CW. The Environmental Work at construction sites is to a large extent controlled by the client's requirement and the decisions done in the design and planning phases. However, the PS can affect the everyday work at site, coordinate deliveries, choose equipment and machines, handle material and to some extent choose working methods.

The CW are employees by *Company A* working at the construction sites of *District A*. They are the employees performing the construction work in the projects. The CW follow the instructions from the PS and cannot affect their work tasks or their Environmental Work to any large extent. They can however do efforts in their everyday work, for example recycling, thorough handling of chemicals, careful usage of machines and sparsely usage of material.

4.2.1 Compiled Answers from Construction Workers (CW)

In this subsection, a compilation of the CW interviews is presented.

How is the Environmental Work communicated?
According to the interviewed CW, they get a rather limited amount of information about *Company A*'s and *District A*'s Environmental Work and they receive information quite rarely. During gatherings twice a year with the whole district they get information from the MT and sometimes from the support functions. The

workers also mentioned that a QEHS-coordinator on site can be a source of information to them, both orally and written, and that they sometimes gets newsletters and information leaflets from both managers and QEHS-coordinators.

Another way *District A* has of communicating their climate work, which the CW brought up, is the Green week, see 4.1.4. They express an appreciation of these kind of happenings, since they give opportunities for the CW to learn and put focus on the environment during work hours.

However, from the CW' answers, it can be concluded that there is a lack of continuity of the communication of the Environmental Work. The CW claim that the gatherings twice a year and the green week is not often enough. As a complement, the CW would like to get information more regularly, for example every week or month, and most preferably orally with opportunities for discussion. Though, newsletters and information leaflets are good complements. For this type of communication a person on site responsible for the environment, is a great option, according to the CW. The interviewees were most positive about a person on site responsible for environmental questions as the optimal communication way, as it is easier to receive information and guidance from a person present on site, who is knowledgeable and committed within the area. This was also something that many of the CW had experience from, from different projects. Nevertheless, they also claimed that some projects they had been working in did not have an explicit environmental responsible, which were considered as a disadvantage by the CW.

What information regarding the Environmental Work is communicated?
The information regarding Environmental Work that the CW receive is mostly about goals and visions that *Company A* has. For example, addressing large environmental problems that society and *Company A* are facing today, as the goal about climate neutrality 2050. The interviewees feel that the communicated information often is vague, general and long-term for them to relate to in their everyday job assignments, which further explains their decrease of interest in them. This also explains that the CW do not assess *Company A*'s environmental efforts as credible. The CW perceive that *Company A* is only focusing on the large and overall areas whilst the smaller efforts at the construction sites are put aside. During the interviews, the CW therefore requested more concrete instructions and precise information directed towards specific construction sites and individual workers. In addition they would also like to get information and education about more concrete subject areas and if possible with connections to production and their work tasks. This, the CW say would show that *Company A* is serious about their environmental efforts.

Attitude towards Environmental Work
Regarding the new environmental vision *Company A* has, the answer was a clear no when the CW were asked if they thought climate neutrality 2050 was possible, but there was an impregnated belief that improvements can be done. According to the interviewees, there is not enough information and knowledge communicated within the organization about the new vision. More knowledge could perhaps improve the belief on the visions possibility the CW stated. Nevertheless, the attitude among the interviewees towards *Company A*'s general environmental efforts is positive.

4.2.2 Compiled Answers from Project Staff (PS)

In this subsection, a compilation of the PS interviews is presented.

How is the Environmental Work communicated?
The interviewed PS claims they receive information about the Environmental Work from rather few sources. Their main source is the internal website, where they can read on their own about the Environmental Work. The material available is regarded as efficient when it is known what to look for or if there is a large personal interest in the matter. However, when one do not know this or are not interested, it is regarded as an ineffective way of communicating, according to the interviewed. Instead, direct communication from someone with affiliation to production would be a good way of reaching out to more people, according to the PS.

The PS also mentioned the gatherings twice a year with the district and the Green week as two central ways of receiving information from the MT and sometimes from the Sustainable Business Development Department. QEHS-coordinators and managers were also two sources of information brought up by the interviewees, from which they can get both written and oral information and help.

The PS has a responsibility to pass on information to the CW and this includes environmental material. According to the interviewees, they merely pass on information regarding directives or requirement, for example, new work methods. The interviewed were quite certain their directives and requirements were received and noted by the CW. However, they were not sure they could reach out regarding other environmental topics, depending on the recipient's interest in the subject.

The interviewees emphasize the importance of that the MT contributes to the environmental message by living the environmental values and setting good examples, which today is not done in the extent that is noticed by the PS.

What information regarding the Environmental Work is communicated?
The PS stated that the limited amount of information they receive is mainly concerning goals and visions *Company A* has. They can also acquire other information at the intranet, although, since it is voluntarily to read, few of the interviewed said to have a good insight in this information, as it is not prioritized to read due to lack of time. They were however, aware of its existence and where to look for it if necessary.

During the interview, the PS argued, in opposite to the CW, that the credibility regarding the seriousness of the environmental efforts is decreasing since *Company A* only focuses on the small efforts and not addressing the big problems in a convincing way. These small efforts could, according to the PS, for example be having beehives on the roof or recycling waste from the lunchroom. Whilst the larger efforts could be, switching to electrical machines or decrease the emissions from concrete production. Instead of doing selective measures, the Environmental Work should be more integrated in the daily work and seen in all employees' job assignments, the PS says.

The interviewees would all like to do more environmental efforts, but do not know exactly what and do not have the time to look into the matter on their own. Therefore, the interviewed PS expressed that a good start to increase the environmental efforts on site is to provide more information about the Environmental Work the entire *Company A* is doing. Both about performed work within the organization to inspire, and more directives and guidelines of what environmental efforts that can or should be done on site. Although, at the same time, the directive and guidelines should be modifiable depending on the project, which gives the PS possibilities for innovative ideas.

Attitude towards Environmental Work
The interviewed PS has a positive attitude towards the Environmental Work performed by *Company A*. However, the opinion of the possibility of reaching climate neutrality 2050 is rather negative among the interviewed PS. They explain that they lack knowledge and information about the vision.

4.2.3 Compiled Answers from Management Team (MT)

In this subsection, a compilation of the MT interviews is presented.

How is the Environmental Work communicated?
According to the MT, a lot of the information they receive about the Environmental Work comes from the internal website, where they can read about it. Since the MT members have different positions with job assignments differently related to

Environmental Work, there are diverse opinions about the internal website. The regional manager, who has more Environmental Work included in the daily work, generally have a greater interest and need for more information, and therefore enters the intranet to find information more often. The operational manager and project manager, who have less Environmental Work included in their daily work express, feelings of the intranet being too big and with so much information that they do not know where to start or what to read. This is in relation to that they do not have any obligation to read specific information for their everyday work.

Every third month, the MT of the region has a quarterly reconciliation where the Environmental Work is one topic on the agenda. The participants then share and review knowledge and information between them. The interviewed also said to receive information orally or written, which has moved down in the hierarchy. It comes from top management of *Company A* or other business units or departments, down to the MT for each specific region and then further down to the districts and different projects. This was mostly done, according to MT, through emails and meetings.

Some of the interviewees have a explicit responsibility to forward information about the environment, depending on their position. This is done through forwarding and presenting business plans, oral and written communication down in the hierarchy and at the quarterly reconciliation. They explain that an important prerequisite for the Environmental Work on site is the QEHS-coordinator, who inspires and pushes the projects in the right direction. Although, the interviewees states that this role can be improved and needs to be better integrated the projects in the future as this role is supposed to help increasing the environmental performance within the projects and creating engagement and commitment among all employees.

The MT thinks that the way they receive information is efficient and they consider it good that several communication channels are used. The optimal way of receiving information, according to the interviewees, is through their own managers and by seeing that their managers are ”living as they learn”. Meaning that they are acting in accordance with the company’s values, environmental policy, guidelines, goals and visions. It is thereby of great significance that the MT and other leaders show the seriousness of the environmental values and live up to them. By showing the employees this and mediate knowledge, the employees can understand the problem to the fullest and try to live the environmental values too. The MT also stated the importance of orally face-to-face communication and company seminars. This way of communicating is something that they prefer, since it opens up for discussions and explanations.

What information regarding the Environmental Work is communicated?
The MT concludes that they receive a rather large amount of information regarding the Environmental Work. It is information about goals and visions for the company, business plans and what environmental efforts both the whole company and other business units, regions and districts are performing. What type of information the MT receives or obtains depends on the MT members' positions and job assignments. Although, the interviewed stated that it is up to each individual to have enough information to be able to "live" the environmental values and set good examples. This information is available at the intranet and it is the individual employees' responsibility to obtain it. The MT also expresses, as there is such a considerable amount of information at the intranet, it would be easier if the information they received were more precise and specific, preferably aligned with their job assignment. Due to shortage of time, finding environmental information at the internal website is often not prioritized, if it is not required for the work assignment in question.

Attitude towards Environmental Work
Regarding the Environmental Work *Company A* performs, the MT is positive and they feel that there is a generally positive attitude within the organization. However, the interviewees are unanimous that the Environmental Work is not always communicated throughout the organization in a way that makes the actual work justified. They explain that *Company A* does considerably more than many of the employees are aware of, which is to the organizations disadvantage.

Further, the MT feels that the vision of climate neutrality 2050 is possible, but there is a lot to be done in order to fulfill the vision and everybody needs to be a part of that.

4.2.4 Type of Information Received

After having performed the interviews it was possible to compile what type of information regarding the Environmental Work different employees, depending on their position, receive. This is listed below. Information the employees obtain due to personal interest in Environmental Work is not included in this list.

- **Regional Manager:** A lot of information and mostly regarding what *Company A* is doing and planning to do. This includes both large and smaller goals and visions, business plans, what the region in question is supposed to do, other regions Environmental Work and other business units environmental performance.

- **District Manager:** Information regarding *Company A*'s goals and visions, business plans and what both the region the district belong to and *District A* itself is doing and planning to do.

- **Project Manager:** Information regarding *Company A*'s goals, visions and business plans.

- **Site Manager:** Information regarding *Company A*'s goals, visions and new formal demands.

- **QEHS-coordinator:** Information regarding *Company A*'s goals, visions and specific information needed for different job assignments or projects.

- **Foreman:** Information regarding *Company A*'s goals and visions and new environmental laws, restrictions or requirements affecting work or equipment at construction sites.

- **Construction Worker:** Information regarding *Company A*'s goals and visions and how new environmental laws, restrictions or requirements affect their working methods or equipment at construction sites.

4.2.5 Communication Stream within the District

After having performed the interviews it was possible to compile how information regarding Environmental Work is moving from *Company A* to *District A* and between the different roles within the district. The movements of the information are schematically illustrated in Figure 4.2. The authors of this thesis have done the illustration based on the answers from the interviews.

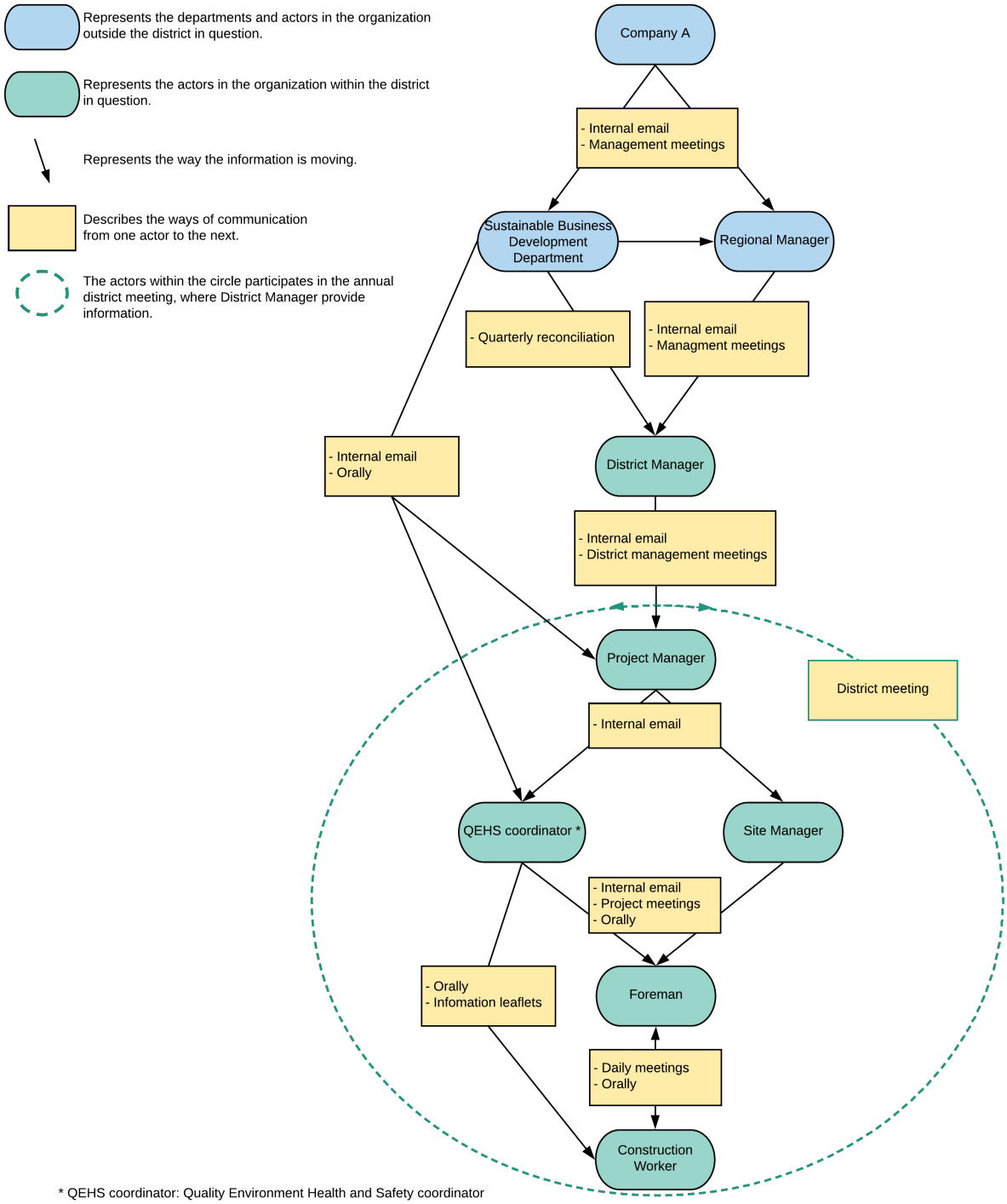

Fig. 4.2: *Communication flow of Environmental Work within District A, according to the authors of this thesis and based on the interview answers.*

As seen in Figure 4.2 there is a line of communication down through the studied organization of the environmental related information. When asked if there is any communication going up, the interviewees said there is a possibility to affect the work upwards as well, but this is not being done. The interviewees were uncertain of why, some said it was due to lack of interest, other due to shortage of time. The only exception was the CW and PS who could have communication regarding environmental aspects connected to their specific project and working methods. In addition to this top down communication line, all employees receive information from the Green week and all employees, apart from the CW, can acquire information from the internal website, described in 4.1.4. Right now, there is an ongoing process of giving the CW access to the internal website too, they do however have limited or no access at the time this report is written.

The line of communication contains different communication methods, seen in the yellow rectangles in Figure 4.2. These methods are in more detail:

- **Internal email:** Email from one employee to another
- **Management meetings:** Meetings where higher management, from district managers and regional managers up to CEO, can participate.
- **Quarterly reconciliation:** Meeting held four times a year where the management from the region together with support functions participates. The meetings are to supervise the regions progress and information from *Company A* centrally and from other business units and departments is forwarded, new working methods and support for construction sites can also be discussed.
- **District management meetings:** Meetings where the management from the district participates, this includes district manager and project managers.
- **Project meetings:** Meetings regarding specific projects. Participants and location can vary, commonly held at construction sites where site managers, foremen and QEHS-coordinator attend.
- **Daily meetings:** Daily meetings at construction sites, usually in the morning before the workday starts, where foremen and construction workers participates, sometimes together with QEHS-coordinator and site manager.
- **District meeting:** Meeting, twice a year, where the whole district participates. District manager gives information and others can be invited to speak too.
- **Orally:** When employees talk to each other in informal ways compared to arranged meetings, information or experiences are shared or advise given.

- **Information leaflets:** Information on paper given to the construction workers. This can also be a newsletter.

5

Discussion & Recommendations

In this chapter the empirical findings are analyzed and combined with the theoretical framework. This to identify how challenges related to communicating and integrating Environmental Work can overcome by *District A*. The identification has resulted in improvement possibilities for overcoming these challenges. The improvement possibilities we recommend for *District A* are presented in 5.5.

5.1 Environmental Management System

Company A is dedicated to achieve high environmental performance, they want to take responsibility for a sustainable construction industry and decrease environmental impacts on all levels. Therefore, they have an environmental policy and environmental goals and values, which all employees are expected to know and follow. Since the environment is a central issue for *Company A*, and thereby for *District A*, having efficient Environmental Work where everyone is participating and contributing is vital. For this, all employees must have knowledge and information about the environment in general and about *Company A*'s Environmental Work in particular.

Chawla et al. (2018) emphasizes the importance of clear procedures and policies to make it possible for everyone to follow them and to create trustworthiness and credibility for the environmental efforts. From the interview answers, it can be seen that this is not entirely the case. PS is requesting clearer policies and guidelines and both PS and CW express some trustworthiness issues regarding the seriousness of *Company A*'s Environmental Work. After studying the environmental policy of

Company A it can be concluded that it is quite general and challenging to apply on everyday job assignments. Therefore, in accordance with Chawla et al., *Company A* could need to clarify their environmental policies and make them more applicable and concrete for the employees.

Company A has an ISO 14001 certificate and they have a management system where environmental law and working methods connected to the ISO certificate are incorporated. The EMS *Company A* has is to facilitate and improve the environmental performance, just as Olubunmi, Xia and Skitmore (2016) says. According to Zhang, Wu and Shen (2015), EMS are effective when improving environmental performance and ISO 14001 gives prerequisites to reach established environmental goals. In ISO 14001, it is stated that the Environmental Work should be communicated and integrated into the daily work. The ISO 14001 requirements are integrated in the management system, however, from the empirical study it can be concluded that there are improvement possibilities regarding *District A*'s communication of it. Because even though the company is ISO certificated, most of the interviewed stated communication of the Environmental Work is unusual, which shows that there is a gap in the communication and mediation of it. Just as Marcelino-Sádaba, González-Jaen and Pérez-Ezcurdia (2015) states, environmental performance is not automatically improved with an ISO 14001 certificate.

Improvement alternatives for the EMS could be that more material regarding the Environmental Work is included in the existing management system, instead of having it at the "Green Building" page at the intranet. This in order to have everything at the same place and to integrate the environmental issues in all operations of *Company A*. This can however be a challenge since the projects of *District A* are diverse with different conditions and prerequisites. Therefore, more requirements and guidelines of what the employees must read at the "Green Building" page and what tools to use could be an improvement possibility. Guidelines of what to read were something interviewees from all three groups asked for.

An implementation of the framework presented by Chawla et al. (2018) could make the EMS more efficient for *District A*. It could get all employees to participate and contribute in the Environmental Work. The framework is for project based organizations, which *District A* is, and it puts human resources in focus. The core of it is that all employees collaborates and give feedback to each other. From the interviews it could also be shown that most of the Environmental Work were communicated top down, this is illustrated in Figure 4.2. The usage of this framework could enable a more bottom up communication as well. This since the feedback is to create communication between all levels of the human resources and letting information, knowledge and experiences move up and down in the hierarchy.

This framework could give the MT a possibility to spread their information and knowledge easier to the rest of the district, and for PS and CW to respond to and discuss the information and share their own experiences. CW did in the interviews request better continuity, opportunities for discussion and more project specific information, which the feedback could enable.

5.2 Proficiency Levels

One can discuss that the knowledge and proficiency needed for an employee depends on his or her position within the company. The same applies for the knowledge about the Environmental Work within an organization. In accordance with Siew (2014) a site worker do not need the same proficiency level as a project manager.

Table 5.1 shows the proficiency level for each role in Siew's (2014) article. This has further on been adapted to the case this report is analyzing and the correspondent role and subgroup for this report have been compiled.

Table 5.1: *Proficiency level for each role in Siew's (2014) article with the corresponding role and subgroup for this report.*

Role according to Siew (2014)	**Proficiency level according to Siew (2014)**	**Correspondent role in this thesis**	**Subgroup in this thesis**
Site Worker	P1	Construction Worker	Construction workers
Site Manager	P2	Site Manager	Project staff
Site EHS Advisor	P3	QEHS-coordinator	Project staff
Project Manager	P4	Project Manager	Management team
Senior Manager	P4	Regional Manager	Management team

According to Siew (2014) CW need to have a proficiency level corresponding to level P1, which means that the CW should be able demonstrate the ability to conduct environmental impacts assessment with guidance. The PS should have the proficiency level P2 or P3 depending on their role. P2 equals the ability to conduct and validate environmental impact and risk assessment on their own, while P3 correspond to the ability to manage and guide the team in questions regarding environmental impact. MT should have P4, which means advising in questions regarding environmental impact. According to the case study, the CW, PS and MT achieve the levels Siew (2014) suggest, but with some variation depending on their

individual interest. Moreover, the overall impression is that the different employees have the right level of knowledge in order to perform their job assignments.

Company A is, as said before, determined to reach high environmental performance. To achieve this, all employees must participate and contribute with experiences, innovations and new ideas etc. Therefore, it can be argued that knowledge levels to only be able to do specific job assignments are not enough. Instead higher knowledge levels than the ones suggested by Siew (2014) could be suitable. Tis is in accordance with Bulkeley (2000), Seth et al. (2011) and Misra and Panda (2017), who all states that the environmental performance can increase with a greater level of knowledge of the environment. If CW and PS, for example, have higher proficiency levels, they could therefore possibly be more involved and contribute with new ideas or solutions related to their work experience.

According to the empirical findings, the CW and PS lack credibility about if *Company A* is completely serious with their environmental efforts and if the goals and visions *Company A* has are possible to reach. The fact that they do not believe in the company's goals and visions could be a sign of that more knowledge and involvement regarding the Environmental Work is needed. There lack of credibility could be identified as a slightly negative attitude towards the environmental efforts. This attitude could be reduced, as Barber et al., (2009), Flamm, (2009) and Polonsky et al. (2012) says, with increased knowledge the attitude will also turn more positive. For *Company A* to achieve their set out goals, it is important for all employees in all districts to believe in them and contribute to the work towards them. A contributing factor to CW and PS's lack of credibility, identified by the MT, is that all environmental efforts done by *Company A* are not entirely communicated in the organization. MT states that the company does considerably more than many employees of the district are aware of.

5.3 Environmental Incentives

Incentives are, according to Olubunmi, Xia and Skitmore (2016), essential tools when developing and increasing environmental efforts and can be used in the construction industry to increase the willingness to focus on the environment. *Company A* wants, as said before, to have high environmental performance and the employees thereby need to be committed and engaged in the subject. To achieve this, incentives can be used.

Regarding intrinsic incentives, the human well-being and altruistic incentives mentioned by Olubunmi, Xia and Skitmore (2016) are both incentives which grows stronger with greater knowledge about the subject in question. With more knowledge regarding the consequences for one's own health when the environment is deteriorated, people can get more motivated to prevent it. Similarly, with more knowledge about the environment and climate changes, employees can understand and believe in the magnitude of the problems and thereby be motivated. This underlines the importance to focus on knowledge spreading among employees. Especially the CW and PS could benefit from this, since they are limitedly involved in the Environmental Work today and with more knowledge they could feel more committed and included and thereby more willing to contribute.

The inspirational incentives mentioned by Olubunmi, Xia and Skitmore (2016) are also applicable to the case with *District A*. CW, PS and MT have all explained the value of exemplary management, where the leaders strongly believe in environmental changes, work extensively with environmental efforts and "lives" the environmental values of *Company A*. The MT of *District A* emphasizes that they today are working with this and tries to set good examples. It can however be seen from the interviews that PS and CW notice this but that they see room for improvements. Either the MT's efforts must be more visible, or MT can improve their efforts. From this study, this cannot be determined, nevertheless, the importance of MT inspiring the employees is clear and *Company A* should take advantage of the incentive possibility.

The extrinsic incentives for environmental efforts can come both from within or from outside a company and Olubunmi, Xia and Skitmore (2016) point out the importance of governmentally provided incentives. The governmentally provided incentives can be regarded more as incentives to motivate construction companies to do more environmental efforts, whilst incentives provided by a company can be aimed more at the employees. With extrinsic incentives to motivate the employees a higher environmental performance could be reached through an enhanced involvement in environmental efforts among the employees.

As Olubunmi, Xia and Skitmore (2016) say, both extrinsic and intrinsic incentives are effective in the construction industry, but it is difficult to distinguish which are the most effective ones. When using intrinsic incentives they are applying to employees' willingness to do Environmental Work through, which could be considered as a long-term solution since it motivates employees to do the efforts without any concrete rewards. However, whilst the intrinsic incentives can be of importance when enhancing the employees' commitment and engagement in the subject, the extrinsic incentives can be considered as more important for an organization to achieve desired environmental performance. This since an organization is re-

sponsible of their employees and must steer and guide them in the organization's desired direction. An organization cannot solely rely on the employees' drive to do environmental efforts due to personal believes or interest.

5.4 Environmental Representative

Company A and *District A* already have QEHS-coordinators in their organization, which are working with quality, environment, health and safety questions. They are positioned at the construction sites and can be regarded as a sort of environmental representative. Sometimes the QEHS-coordinator is not their only job assignment; they can have other responsibilities as well, depending on the size of the project. In addition to this, *Company A* has decided that every district will establish a QEHS-coordinator for the whole district, this was under progress during the writing of this thesis.

Zhang, Wu and Shen (2015) propose a model for project based organizations with an environmental representative for every project, who can maintain the environmental interests parallel to other project objectives. According to Zhang, Wu and Shen (2015) the environmental representative should be an independent part, outside the company and hired to play a neutral role with actions based on the environmental gods. However, in order to get this model applicable to the studied case, it can be argued that the environmental representative can be a part the company, district and project but independent in an economical perspective of the projects. If the environmental representative in a project is paid for by the district instead of being a part of the project's budget, the environmental representative would be independent in a economical perspective and would not affect the project's profit. In this way, the coordinator would not be as independent as Zhang, Wu and Shen (2015) propose, but would however be knowledgeable about *Company A* and all policies, procedures, values, assets etc. that the company has and at the same time be able to maintain the environmental interest without financial constraints from the projects.

According to the CW and PS, they acquire information from the QEHS-coordinator, but they all state that they would like to get more information regularly and preferably verbally with possibilities for discussion, which today is not done in the desired extent. Seeing that the QEHS-coordinator is not always on site or have other more prioritized responsibilities. In accordance to Zhang, Wu and Shen (2015), an independent QEHS-coordinator in all projects can be a solution for this. Then there would be a knowledgeable and committed person present on site, who guides and helps the project deal with the environmental objectives. Since, just as the

interviewed MT says, the QEHS-coordinator is an important prerequisite to maintain the environmental objectives. *District A* is aware of the possibilities with QEHS-coordinators and are therefore establishing a QEHS-coordinator who is to have the the overall responsibility for quality, environment, health and safety for the whole district. With this new position *District A* have the possibility to develop the QEHS-coordinator role and make sure there is one responsible for each project.

5.5 Recommendations

To address the challenges of communication and integration of Environmental Work some improvement possibilities, based on this study, have been identified.

Knowledge spreading
For *District A* to achieve high environmental performance, increase credibility and to create consciousness among employees an improvement of the knowledge spreading within the district is suggested. This can also increase the credibility of the Environmental Work, which among the PS and CW were an issue.

Sustainable framework
To develop the EMS of *Company A*, to implement the sustainable framework presented by Chawla et al., where feedback is a central part, could be a possibility. The framework could possibly result in more bottom-up communication within the district, since the feedback can create communication between all levels of the company and letting information, knowledge and experiences move up and down in the hierarchy.

One way of implementing the framework could be to have feedback meetings regularly within the projects, at least once every third month, which is the interval for the MT's quarterly reconciliation. There can for example be one feedback meeting per project for sharing and discussions about information, knowledge and experiences.

Clarified and applicable policies
To meet the PS request of clearer policies and to increase the credibility among the PS and CW, a suggestion is to clarify the environmental policy and make it more applicable and concrete for the employees.

Guidelines of what to read
To facilitate the communication of the Environmental Work and to ensure a complete communication of the Environmental Work, *District A* could provide requirement and guidelines of what to read at the internal website.

Intrinsic and extrinsic incentives
To increase the employees' personal willingness to do Environmental Work, intrinsic incentives can be used. However, as the environmental performance of a company cannot be the individuals' responsibility, a recommendation is for *District A* to focus on extrinsic incentives. That would enable them to steer and guide their employees to be able to achieve desired environmental performance.

Independent environmental representative
To maintain the environmental interest parallel to other objectives in the projects, an independent environmental representative is suggested. In *District A* QEHS-coordinators are established, which can be a sort of environmental representative. To make the QEHS-coordinator independent a suggestion is to make the position independent in an economical perspective. The QEHS-coordinator should be working in the projects but paid for by the district, instead of being a part of the project's budget, this would create an independence in an economical perspective and would not affect the project's profit.

6

Conclusions

In this chapter the conclusions of this thesis are presented. Further, suggestions for future research areas and a thesis reflection can be found. Through the theoretical and empirical study, the following questions have been reviewed:

- What kind of information and knowledge is communicated within the district and to whom?
- How is the Environmental Work communicated within the district?
- According to the literature, what are the challenges related to communicating and integrating Environmental Work and how can they be overcome by District A?

It can be concluded that *Company A* is dedicated to reach high environmental performance and hence it is vital for them to have efficient Environmental Work where all employees are participating and contributing. Because of this, the employees need knowledge and information about the Environmental Work in order to create the consciousness and engagement. From the empirical study, it can be concluded that this can be improved. According to the interviewees, they only get a limited amount of information, mostly regarding overall goals and visions of *Company A*. Further, from this study it can be concluded that there is only top-down communication within the district, see Figure 4.2.

However, in accordance with the proficiency levels defined by Siew (2014), the employees have the level of knowledge needed to perform their job assignments. Although, it can be argued that these suggested knowledge levels are not enough when *District A* is reaching for a high environmental performance. The empirical study also showed a lack of credibility among the CW and PS in *District A*. It can be concluded that the reason for this could be that not enough information and

knowledge regarding the environmental efforts done by the company reaches the CW and PS.

Further, it can be concluded that *Company A*'s environmental policy is general and challenging to apply on everyday job assignments, even though Chawla et al. point out the importance of having clear and applicable procedures and policies. *Company A* is certified with ISO 14001, which should mean that the Environmental Work is communicated within the organization. From this study it can however be argued that the Environmental Work is not completely communicated despite the certificate.

In accordance with Olubunmi, Xia and Skitmore (2016), it can be concluded that both intrinsic and extrinsic incentives can be used to enhance the environmental performance of a construction company. Intrinsic incentives, such as human well-being, altruistic and inspirational, can be essential when increasing the employees' personal willingness to do Environmental Work. Extrinsic incentives are instead central for a company to steer and guide their employees to be able to achieve desired environmental performance. As is it the organization's task to take responsibility for their employees and steer them in the desired direction.

Lastly, it can be concluded that an independent environmental representative can be an appropriate option to maintain environmental interest in projects (Zhang, Wu and Shen, 2015). This environmental representative could be a QEHS-coordinator, which *District A* already has in their organization. Nevertheless, the empirical study shows that the QEHS-coordinator role has improvement possibilities, especially to make it independent.

6.1 Further Research

The primary focus in this thesis has been on the Environmental Work of an infrastructure district within a large construction company. The key areas has been on the information content and communication of the Environmental Work and improvement possibilities of these areas. To deepen the understanding of factors affecting environmental performance and identify improvement possibilities for districts within a large construction company, we recommend further research to include more interviewees within the district and to include more than one district in the study. To understand the whole communication stream and information content, further research should also consider the entire company. Furthermore, to be able to identify and evaluate improvement possibilities further several companies could be studied and compared to each other.

As a continuation of this thesis, future research should implement the suggested improvement possibilities to evaluate the outcome for the environmental performance. The improvement possibilities to implement are:

- Clarified and more applicable and concrete policies and directives.
- Requirements and guidelines of what to read at the internal website.
- The sustainable framework presented by Chawla et al. (2018).
- Knowledge spreading among employees to increase proficiency level.
- Using human well-being, altruistic and inspirational incentives.
- An independent QEHS-coordinator.

Additional future studies can also include the external factors this thesis has not considered, for example client requirements. To include the economic factors affecting the Environmental Work is also a future research area, since this thesis proposes improvement and changes without regard of *District A*'s economical business aims.

6.2 Thesis Reflection

This thesis is according to the authors a thorough but quite limited case study, mostly because of the time constraints of the thesis. These constraints have led to that only internal aspects regarding the Environmental Work are reviewed and that only a limited number of employees could participate in the study.

Therefore, our conclusions have been drawn from a relatively small amount of data. Although, these conclusions are still according to the received interview answers and therefore they give an unmodified picture of the employees opinions about the studied issue, which can be of importance for *Company A*.

To consider more affecting factors and do a larger number of interviews to get additional answers and clarifications would be valuable for this thesis and strengthen the conclusions.

Lastly, this master thesis contributes to the Environmental Work of *District A* by identifying and highlighting challenges related to communication and integration of the Environmental Work. Also, by proposing recommendations to handle and overcome these challenges.

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Appendix A
Interview Questions

These are the questions used in the interview. They have been translated to English and altered to make *Company A* anonymous.

Personal questions

- What is you role at *Company A*? What are your job assignments?
- What responsibilities and decision-making power do you have?
- For how long have you been in the industry? For how long at *Company A*?
- What projects have you been involved in? (Type, phase, size?)

Daily Work

- Do you have any work tasks directly related to environmental work? Which?
  - If not, is the environmental work integrated in your other work tasks?
- Do you know how much environmental focus it has been for this project from design phase to now?
- Choices / decisions you need to make, acute or less acute, what are they based on?
  - What could make the choices to be based on the environment instead?
  - How can you avoid making urgent decisions where the environment may be put out of focus?

- How do you think environmental work should go into the projects?
  - Should there be directives where everything is governed, where it is centrally decided how it will be done in all projects, regarding both major things (such as material choices, suppliers, logistics, etc.) to smaller things (source sorting, own transport, etc.)?
  - Should it be freer? (When it comes to things not decided by the client)?
- What are the prerequisites for projects working environmentally friendly?
  - Support functions – working not working? Why? How?
- Which prerequisites are missing or where are the problems located?
  - How does it affect?
  - To what extent ...
  - What is the reason for it?
  - Do you know if you can influence ...
- Do you see any other direct or indirect obstacles or difficulties for the environmental work to be carried out?
  - Why is that a problem?
  - How does it affect?
  - To which extend?
  - What is the reason for it?
  - Do you know if you can influence ...

Information spreading

- What information about *Company A*'s environmental work do you receive?
- Only information about what the company is doing / will do, information about what you can/should do as an employee or what other employees / roles can / should do?
- From where/how do you get information about environmental work?
- Do you get the information in a good / bad way?
  - Effective / ineffective?
  - Easy to understand and take care of

- What is the best way of receiving information?
- Do you have a responsibility to forward information you receive about environmental work? In what way and to whom?
- Are you only forwarding information or are you the creator and first step of the spreading?
- Are you forwarding the information in a good way? What would be the best way?
- What information is available at the intranet? Who can access to it?
  - Can you affect or decide what information that is available at the intranet, how? When?
- Those who cannot access it, do they need the information? Do they receive the information in any other way, how?
  - Is it an obstacle that everyone do not have the same information available? Why? How?
- Do you enter the intranet to read about the environmental work?
- Have you identified any difficulties with how the environmental work is spread and communicated within the district?
  - Why is that a problem?
  - How does it affect?
  - To which extend...
  - What is the reason for it?
  - Do you know if you can influence ...

Responsibility and participation

- Can you influence the environmental work? How?
- Whose responsibility is that the environment is put in focus and continuously worked with? Why?
- Do you feel participation in the environmental work?
- Whom can you turn to if you have an idea etc about any change of working method etc. that would improve the environmental performance?

- If you have thoughts or ideas regarding how work is done or how something should change from an environmental point of view, what do you do?
  - Do you take care of it yourself? Tell somebody else? Who?
  - What is the response?
- Have you ever received tips, thoughts or inputs/ideas from production regarding changes of environmental work or working methods etc? What do you do with them?

Attitude to the company's environmental work

- Do you think it's possible that *Company A* / construction industry can become completely climate neutral in 2050? Why / Why not?
- How do you perceive the attitude towards the new climate neutrality vision is at your workplace? Positive? Negative? Do people care? Interested?
- How do you perceive the attitude at your workplace that the company is trying to invest a lot in the environment? (attitude towards environmental work in general?)
- What do you think about that the company's markets themselves as a leader in sustainable construction? Is it true? How does it feel?
  - Does the green profile permeate the organization?