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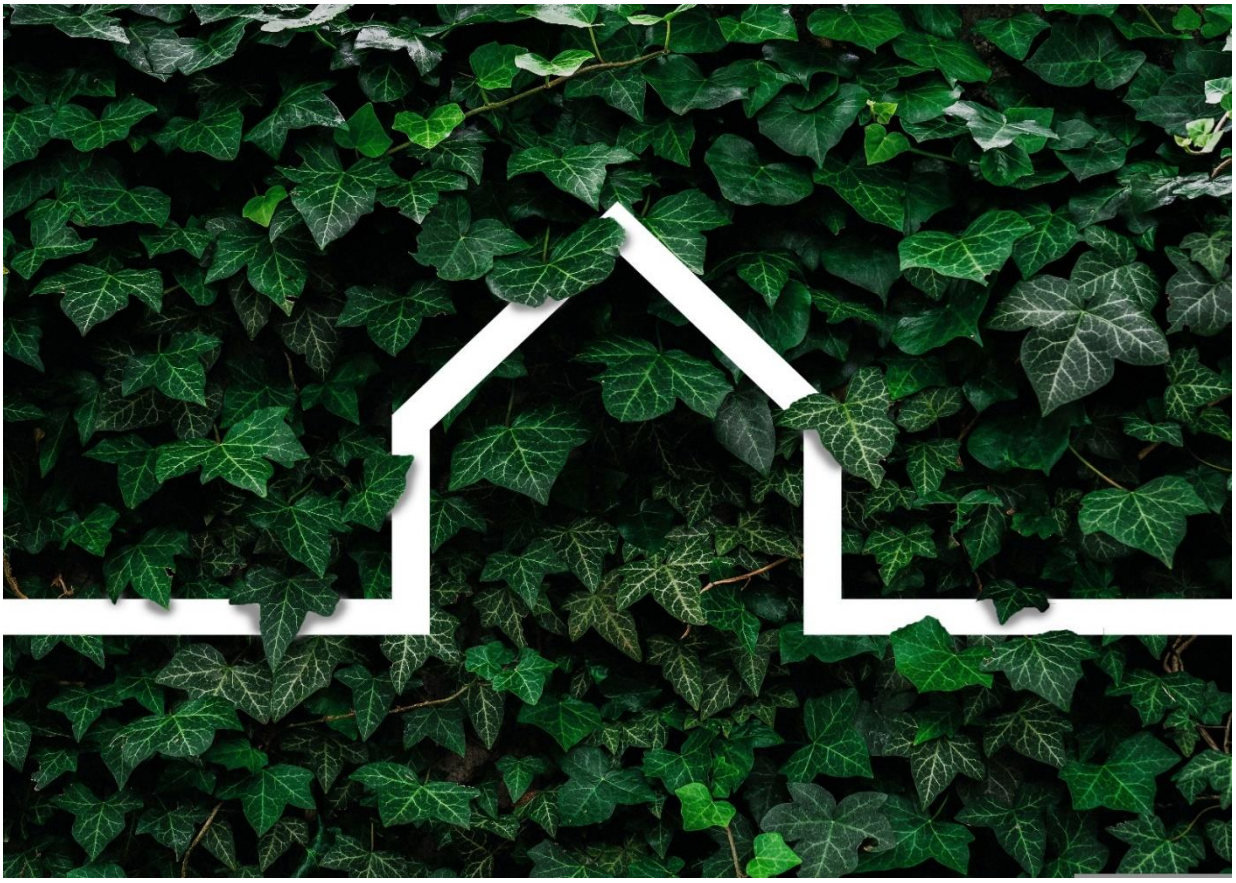

Municipalities' development to ensure environmentally sustainable procurement

Master’s Thesis in the master’s Program Design and Construction Project Management

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Abstract

Sustainable construction has become an important part of the construction industry, and clear and anchored environmental requirements in public procurement are required to ensure that the construction that takes place is sustainable. There is currently a disparity in how different municipalities choose to prioritize their sustainability requirements in public procurement. There are national roadmaps where researchers and industry leaders address challenges and propose improvement measures to deal with the transition to a sustainable construction industry.

The goal of this thesis is to investigate the challenges and barriers that municipalities face today. Because procurement is viewed as a powerful tool for implementing sustainable work, the thesis must identify problem areas to ensure sustainable public procurement. The report is primarily based on empirical data, roadmaps, and national documents, but it is also grounded in relevant field theory.

Governance, resources, and cooperation have emerged as the most significant impediments. We learned about how different municipalities operate through our research and discovered a disparity in how municipalities choose to set requirements for public procurement. When the environment is confronted with economic and organizational issues, a complex problem arises that cannot be handled by a single municipality; therefore, a collaborative effort is required to cope with the necessary sustainable adjustment for the construction industry.

Keywords: Sustainable procurement, governance, collaboration, resources, procurement requirements, partnering

Kommuners utveckling för att säkerställa en miljömässigt hållbar upphandling

Examensarbete inom mastersprogrammet Design and Construction Project Management

KARLSSON, VIKTOR
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Institutionen för arkitektur och samhällsbyggnadsteknik
Avdelningen för Construction Management

Chalmers tekniska högskola

Sammanfattning

Hållbart byggande har blivit en viktig del av byggbranschen och för att säkerställa att den byggnation som sker blir hållbar krävs tydliga och förankrade miljökrav i offentliga upphandlingar. Idag finns det en diskontinuitet i hur olika kommuner väljer att fokusera sina hållbarhetskrav i de offentliga upphandlingarna. Det finns nationella färdplaner där forskare tillsammans med ledande aktörer i branschen tar upp utmaningar och förslag på förbättringsåtgärder för att klara om en omställning mot en hållbar byggbransch.

Syftet med denna uppsats är att undersöka vilka utmaningar och barriärer som finns hos kommunerna idag. Uppsatsen skall peka på problemområden som finns för att säkerställa en hållbar offentlig upphandling, då upphandling ses som ett kraftfullt verktyg för att implementera hållbart arbete. Rapporten bygger främst på empiriska data, färdplaner och nationella dokument men förankras även med relevant teori inom området.

Styrning, resurser och samarbete har framstått som de största barriärerna. Vi har genom vår studie fått en inblick i hur olika kommuner arbetar och sett en diskontinuitet i hur kommunerna väljer att kravställa i sina offentliga upphandlingar. När miljö ställs mot ekonomiska och organisatoriska frågor uppstår ett komplext problem som inte kan hanteras av en enskild kommun, därför krävs en gemensam kraftansträngning för att klara av den hållbara omställning som anses vara nödvändig för byggnadsbranschen.

Nyckelord: Hållbar upphandling, styrning, samarbete, resurser, upphandlingskrav, partnering

Contents

Preface

This Master’s thesis marks the end of a five-year program in civil engineering at Chalmers University of Technology. Many years concluding in a study with the majority of engaging talks, insights, and knowledge, this research has created unforgettable interactions and reflections with a variety of people.

Following this study, we would want to express our gratitude to our supervisor, Göran Lindahl, for allowing us to exchange his insightful knowledge and engaging talks. We'd also want to thank ByggDialog for allowing us to take part in their knowledge. Finally, we'd want to thank all of the respondents and others involed, whom we chose to remain anonymous. We appreciate your time and involvement in making this study possible.

With the excellent knowledge that Chalmers has given us, we foresee a bright future.

Gothenburg June 2022
Jonathan Wallin & Viktor Karlsson

Glossary

BBR - The National Board of Housing, Building and Planning's building regulations

SundaHus - a web-based system for sustainable material choices

Byggvarubedömningen - a web-based system for sustainable material choices

LFM30 - Local roadmap of Malmö 2030

Fossilfritt Sverige - National initiative to make Sweden the world's first fossil-free welfare state

Miljöbyggnad – an environmental certification system designed for Swedish conditions.

LOU - Public procurement is regulated, among other things, by the Public Procurement Act (LOU). The rules for public procurement are based on EU directives.

LCA - Life cycle analysis

GDP - the value of all goods and services produced in a country for use in consumption, investment and export during a given period

EN 15978 - Standard for Sustainability of construction works in Sweden

SIS – Swedish Institute for Standards

1. Introduction

This report is a master's thesis from Chalmers University of Technology's program Design and Construction Project Management program in the Department of Architecture and Civil Engineering. In this introductory chapter, background, research questions, purpose & aim, and limitations are discussed.

1.1 Background

Environmental consciousness has grown significantly in the Swedish construction industry in recent years. Because of its high energy consumption, the industry is commonly referred to as the "40% sector" as buildings account for approximately 40% of the total carbon dioxide emissions (Isaksson, A. & Linderoth, L., 2017). While the government lays greater expectations on society, the construction industry is held accountable as a significant stakeholder, hence construction industry accounts for a large portion of emissions. Municipalities bear a significant part of the responsibility for contributing to lower emissions, whereas procurement is a powerful tool for doing so. All public procurement in Sweden is governed by the Public Procurement act (Upphandlingsmyndigheten, n.d), which puts pressure on municipalities' interpretation to define their procurement. Because of the various types of sustainability systems and contract formats, different municipalities establish varied standards in their procurements, resulting in a discontinuity between the nation's municipalities. This can be perceived as hard to grasp, implying the necessity to join towns to develop consistent and powerful procurements. Furthermore, issues about how and why this adjustment for environmentally friendly construction is required will be fundamental for the background of this report.

1.2 Research Questions

This thesis takes its starting point in the following research questions.

- How do municipalities work with environmental procurement today, does it differ between different municipalities?
- Do municipalities have sufficient tools to set the right requirements and follow up that the set requirements are achieved?

1.3 Purpose & Aim

The purpose is to shed light on how various municipalities deal with environmental standards in public procurement to achieve net-zero emissions. In addition, incentives, and conditions for establishing requirements will be investigated. The thesis aims to uncover patterns, obstacles, and issues in the way requirements are set and should be set. The patterns and conclusions of the thesis can be utilized as instruments to alter environmental standards in public procurement to attain net-zero emissions in the future. The report also aims to present a picture of how entrepreneurs can work proactively and present a future picture of whether their work may change, and thus contribute to this potential change in the industry.

1.4 Limitations

The research will focus on municipalities in Sweden, all the respondents either work in or have a direct relationship with the public sector. Regarding the procurement which will be studied, only the structure and aspect concerning the environment will be examined. Moreover, the results, discussion, and conclusion will be limited to sources concerning Sweden, hence theory will include sources from foreign countries.

1.6 Sustainability & Ethics

This thesis will not touch upon ethical questions; hence this subject will not be elaborated on in the thesis. Moreover, concerning sustainability, this thesis will put its focus on questions concerning environmentally sustainable questions. This is an important control instrument for the construction sector and through this, we highlight the importance of this thesis for sustainability issues. In essence, our thesis touches upon the UN's global sustainability goals no. 9 – Industry, Innovation and Infrastructure, 11 – Sustainable cities and communities, 12 - Responsible consumption and production and 13 – Climate action.

2 Method

This chapter describes the method and the strategic decisions in the study. The choices will be motivated and described in the different parts. In summary, the study will be qualitative, and the comparison will be made through an abductive approach to the literature study.

2.1 Disposition of method

It has been chosen to conduct research based upon a qualitative approach, thus in our case, we used interviews both with expert in advance regarding the report and respondents from different municipalities to collect our data and afterward compile this to get an empirical material on which our analysis will be based.

The report begins with a theoretical foundation, which is then supplemented with important information gathered during the interviews. Peer-reviewed reports, roadmaps, applicable requirements documents, government publications, and other relevant publications for the report from the theoretical framework. The results of the interviews will be compared to the literature to see if there are any patterns between the responses of the respondents and the literature chapter. The interviews will provide a current picture of the industry's position on the subject as well as an overall prediction of what the respondents believe the future will hold. Because different municipalities have distinct organizational structures and resources, the responses also have arbitrary knowledge of the subject at hand.

By interviewing different sizes of municipalities and people with different roles, we can see similarities and differences which may create a frame for areas there might be possible shortcomings. The interviews will also give an idea of how far different municipalities have reached in environmental work and the awareness they have around their procurement requirements.

The analysis of the interviews will provide space for discussion and comparison with literature and government documents, after which the research question will be answered, and a conclusion drawn.

Literature Study	*Aims to:* - Give an understanding of sustainable procurement. - Investigate influences of sustainable procurement within the construction industry. - Investigate barriers to utilizing sustainable procurement.
Empirical findings	*Aims to:* - Give a picture of how different municipalities work with environmental procurement. - Identify trends of what the municipalities see as main drivers and barriers. - Generate a basis for discussion.
Analysis & Discussion	*Aims to:* - Find similarities and differences between theory and empirics. - Understand what changes need to be applied to meet today's road maps within the construction industry. - Propose further research.

2.2 Correlation between theory and empirical data

The study will be conducted abductively, i.e., the understanding of the subject will gradually emerge with the help of theory and empirical data. The reason for the abductive approach is that the interview study is carried out meanwhile the theory is written, and new theoretical parts can be added during the study. By using an abductive approach, the possibility of further supplementing the theory is maintained when interesting or useful findings show up during the interviews. However, a basic understanding of the subject is required before the interviews begin to ensure that relevant and academically useful questions are asked.

2.3 Interviews

The chosen people of interviewing will have varying levels of experience and work in varying organizations, and thus hold varying positions, we have chosen to conduct our interviews using the semi-structured interview method. This allows us to ask follow-up questions or gain insight into certain aspects that may be of interest depending on who is interviewed.

Each interview will be based on the same set of questions, we intend to compare all interviews as fair as possible later in the results and analysis, partly with each other and partly with the theoretical data presented. However, if the opportunity occurs during the interview, certain

questions will be investigated further through follow-up questions. These will not be included in the overall comparison, but if they are thought to contribute, they will be mentioned to provide a broader understanding.

The semi-structured method also places a demand on us as interviewers in the sense that active participation is required to be able to contribute with possible objective follow-up questions. The interviews will be recorded and later briefly summarized; the interviews will also be summarized per section of identified overall headlines.

This thesis aims to focus on the public sector and its effort on environmental issues regarding procurement. We have therefore chosen to place great emphasis on interviews and thus the empirical data to obtain the most accurate picture of the situation feasible. To succeed with this, we have chosen to interview six people with all common connections to both the public sector and procurement. Furthermore, most of the selected interviewees will work for different municipalities in Sweden, except for a few people who are connected to our issue but do not necessarily work for one municipality.

3 Theory

This chapter presents the study's theory. In addition, the chapter aims to provide information about the subject which forms the basis for the study's discussion and analysis.

3.1 Procurement Based on Sustainable Objectives

The environmental effect of the building industry is not new; the subject of conversion and transformation to more sustainable construction, and thus a lower climatic impact, is a well-discussed topic today. In Sweden, the industry accounts for around 4-35% of total emissions divided into 7 categories (Boverket, 2021a). With the output that the sector implies, there is also a considerable quantity of waste, which according to Boverket (2021b) 2018 reached 12.4 million tonnes. This statistic equates to around 35% of total garbage generated in Sweden. Boverket, 2021b) also highlights how just over half of the garbage is rubbish from demolition operations.

As earlier mentioned, the building sector contributes significantly to the detrimental impact on the environment through huge emissions, and progress toward sustainable construction will be critical. Sustainable development may be described in a variety of ways, World Commission on Environment and Development (1987) introducing one of the most well-known definitions, "to make development sustainable is to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs".

Sustainable procurement is referred to as a vital instrument for long-term development. Kalubanga, M., (2012) defines sustainable procurement as being based on the same principles as traditional procurement, with the distinction that sustainable procurement is targeted at a greater adaption and design in terms of sustainable principles. Furthermore, Kalubanga, M. (2012) highlights how sustainable procurement, to a greater extent, deals with the process of acquiring goods and services, especially the influence of the product or service in the three separate areas of the economy, social, and environmental. The use of sustainable procurement leads to a better understanding of one product's components, how it is delivered, and from where it is conveyed. This means that sustainable procurement affects the three different areas mentioned and through that, a greater knowledge of the product or service's impact is created (Kalubanga, M., 2012).

Günther, E., & Scheibe, L. (2006) discusses the potential of sustainable procurement and the benefits it delivers to the building sector. Regardless, there is a vague and confused debate in the literature about the difficulties and problems associated with the implementation of sustainable procurement.

On the one hand, Sourani, A., & Sohail, M. (2011) argue that the three different categories of economic, social, and environmental are not given equal weight in procurement and that environmental factors have been given low importance. Sourani, A., & Sohail, M. (2011) & Walker, H., & Brammer, S. (2009) both continue and illustrate how environmental progress might be interpreted differently. There are indications of a lack of knowledge regarding environmental development, as well as a lack of defined definitions and regulations. Furthermore, it is highlighted how, during environmental development, it becomes critical to

deliver accurate information and to be knowledgeable about the issue to avoid misconceptions and errors.

Nevertheless, committing to using sustainable procuring approaches, increase the initial cost (Brammer, S., & Walker, H., 2009). This is also seen as one of the main barriers to implementation as the criterion in procurement is most frequently considered to be finding the cheapest product or service. One explanation is described as the lack of a long-term perspective, today it is most frequent in procurement with a short-term perspective financially. Moreover, it is important to consider the availability of financing the cost, hence the more sustainable way may increase the initial cost. On the one hand, the increased cost of procuring sustainably has most frequently been considered as one of the main barriers toward the use of sustainable procurement (Brammer, S., & Walker, H., 2009).

Regardless of what has been stated previously, one should evaluate what Preuss, L. (2009) claims. He illustrates how, at first, using sustainable procurement, such as the one outlined above, is often more expensive. But, from a different standpoint, he also explains why this is not always the case. From a longer-term view, the cost is not expected to be higher than it would be without sustainable procurement. It is also worth noting that employing sustainable procurement is expected to promote competitiveness and, as a result, boost intangible assets (Preuss, L., 2009).

3.2 Influences of Sustainable Procurement

This chapter has two major goals: first, to conceive a framework for establishing a lens through which to explore cross-border variance for sustainable procurement. Second, the thesis provides an outline of how sustainable procurement policy is defined and how different major regions are traded. The diagram below illustrates the envisioned framework based on a model of the influence of procurement directives on compliance among EU procurement experts (Geldermann et al., 2006).

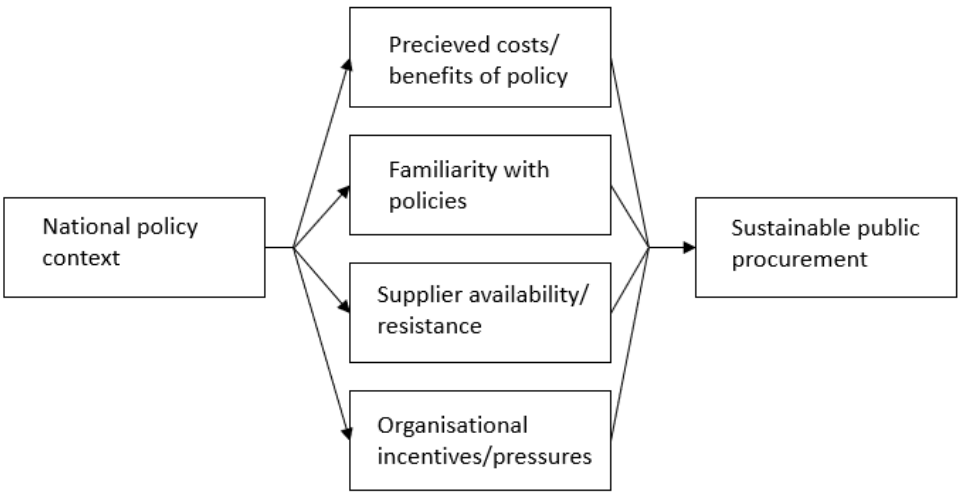

Figure 1. Adapted from Gelderman, C.J., Ghijsen, P.W. and Brugman, M.J. (2006).

The framework is typically beneficial for examining how public procurement policy is implemented. Brammer, S., & Walker, H. (2011) continues by adapting the model to focus on organizational responses to a shared policy environment. Brammer, S., & Walker, H. (2011)

further emphasizes the relevance of a national policy as well as regional differences that might impact how sustainable procurement is employed. Sustainable procurement emerges mostly because of pressure on an organization to execute it, which mainly comes from the environment of the sustainable procurement policy. Figure 1 identifies four distinct influences on sustainable procurement methods, each of which is explored individually below; nonetheless, they may appear to be connected from a practical standpoint (Brammer, S., & Walker, H., 2011).

The first influence discusses the significance of perceived costs and benefits in sustainable procurement involvement. Porter, M.E. & van de Linde, C. (1995) provide instances of circumstances where both sustainability and economic goals are adopted, such as trash minimization; this is crucial to note because sustainable approaches are often seen to be more expensive. For most public organizations facing severe budget limits and competing goals, it is critical to emphasize the benefits of cost-effectiveness and economic viability that sustainable procurement can bring. When environmental concerns are to be included in the purchase process, the most important challenge is to include the economic element in terms of costs (Min, H., and Galle, W.P., 2001). Organizations naturally look for situations where sustainable procurement can contribute to a win-win situation, but they prove to be reluctant when it conflicts with the directives to maintain competition and deliver a cost-effective product (Brammer, S., & Walker, H., 2011).

The second influence focuses on policy familiarity. Only once an organization understands the idea of sustainable procurement and the corresponding government policy can it successfully execute sustainable procurement (Brammer, S., & Walker, H., 2011). Furthermore, for sustainable procurement to take place, the organization must have the necessary skills and instruments in place. Organizations risk lacking the necessary capabilities to properly execute sustainable procurement since sustainability is a difficult issue. According to Snell (2006), the great majority of purchasing professionals considered themselves ill-equipped to implement sustainability via procurement. Other research has revealed that purchasing managers have difficulty incorporating social and ethical aspects into their purchase decisions (Brammer, S., & Walker, H., 2011).

The third influence is the availability of sustainably produced services and commodities Brammer, S., & Walker, H., 2011). Because many commodities and services acquired by the public sector are uniquely customized, it might be difficult to establish sustainable sources of supply in some settings. In general, the degree of interchangeability can have a significant effect on how durable the items are; for example, recycled paper or green power may be seen as more durable than medical specific equipment due to considerably more limited supply sources (Norton, B., 1995).

The fourth influence is organizational pressure and incentives for sustainable procurement. This might vary based on the business's culture or the degree to which the organization supports change and sustainability in general (Brammer, S., & Walker, H., 2011). The extent to which it supports sustainable procurement in top management, as well as whether organizational procedures and structures promote sustainable procurement, are examples of its influence (Brammer, S., & Walker, H., 2011).

3.3 Variation and Barriers of Sustainable Procurement

To provide an overview of the current situation of sustainable procurement. Bremmer and Brammer, S., & Walker, H. (2011) conducted a study in various places in which distinct characteristics of different areas were studied. The study reveals regional differences in how to adapt to sustainable procurement. Despite the fact, even though environmental policy in place for sustainable buying, in most regions, the data indicate that purchasing from small or local businesses, as well as employee health and safety, are the most embedded parts of sustainable procurement, rather than environmental factors (Brammer, S., & Walker, H., (2011). In practice, sustainable procurement is more prevalent in Eastern Europe, Western Europe, and Scandinavia, which have a larger emphasis on environmental aspects of procurement than other countries. There are instances of how the Scandinavian organization focuses on waste reduction targets among suppliers, Eastern Europe focuses on disassembling items, and the United States focuses on a sustainable procurement practice characterized by purchases from enterprises owned by women or ethnic minorities (Brammer, S., & Walker, H., 2011).

Another study, conducted by Brammer, S., & Walker, H., (2011) explored why there may be differences in sustainable procurement across regions. A summary of what is discussed in each interview might be generated by asking open-ended questions about barriers and facilitators in different places. The table below demonstrates how different areas see difficulties in adopting sustainable procurement; all lines could be 100% if all respondents in the region highlighted that difficulty.

Table 1. Perceived barriers to implementing sustainable procurement. Adapted from Brammer and Walker (2011).

	UK (%)	Western Europe (%)	Eastern Europe (%)	Scandinavia (%)	USA/ Canada (%)	Rest of the world (%)	All countries (%)
Financial	48.1	16.3	11.1	10.3	34.6	18.2	30.4
Informational	12.3	12.2	5.6	6.9	7.7	9.1	9.9
Legal	1.9	8.2	2.8	6.9	7.7	0.0	4.6
Managerial/ Structural	21.7	8.2	2.8	3.4	5.8	9.1	11.7
Political/ Cultural	5.7	8.2	2.8	0.0	5.8	18.2	5.7
Product/ Quality	5.7	4.1	2.8	0.0	9.6	27.3	6.0
Priority	8.5	2.0	0.0	0.0	3.8	0.0	4.2

The results show a low percentage of barriers in some of the categories. As an example, Scandinavia has no barriers in terms of political/cultural, product/quality, or priority. In general, seeing that the large barrier points to financial issues, as sustainably produced products were perceived to be more expensive than competitor products (Brammer, S., & Walker, H., 2011). This further implies that given budgets would not allow for the use of sustainable procurement practices, confirming the first factor of the conceptual model described in the previous chapter.

Furthermore, informational issues are a significant barrier to sustainable procurement (Brammer, S., & Walker, H., 2011). This corresponds to the second factor of the conceptual model in terms of how well procurement practitioners understand policies. Moreover, managerial/structural barriers indicate a lack of participation and support. Hence, managerial/structural barriers indicate senior management's absence from and support for sustainable procurement, confirming the fourth factor from the conceptual model (Brammer, S., & Walker, H., 2011).

The policy's implementation of sustainable procurement is frequently impeded because procurement is often to be decentralized in many public-sector organizations. Some of the perceived barriers are disproportionately important in some areas, in the United States, issues such as product quality and access to sustainably produced alternatives rank high. This points to the third factor according to the conceptual framework. In some cases, regions are defined by the availability or resistance of suppliers (Brammer, S., & Walker, H., 2011).

4 Empirical findings

In this chapter, national policies, roadmaps containing initiatives from the construction industry, the most common contract forms, and environmental management systems are used to describe the work's empirical findings.

4.1 The Law of Public Procurement

The Procurement Authority (Upphandlingsmyndigheten, n.d) describes that Swedish public procurement has a turnover of approximately SEK 800 billion annually, which is almost one-fifth of Sweden's GDP. Public procurement is a way of action for public authorities to carry out their purchasing processes. Since public procurement is financed by tax money, the Public Procurement Act acts as a tool to promote competition and create equality between the public sector and its trade deal with private organizations. The purpose is also to ensure, through increased transparency, that the use of tax funds is always used correctly and on commercial grounds (Upphandlingsmyndigheten, n.d.). Furthermore, Sveriges Riksdag (2016) describes those authorities must start from the most economically advantageous tender for procurements. Furthermore, it is described how the tenders are to be "*ranked concerning the best price-quality ratio*", only then, concerning these criteria, the most economically advantageous tender can be considered the most economically advantageous.

The Procurement Authority (Upphandlingsmyndigheten, n.d) describes that public procurement can be used to contribute to sustainable development. Public procurement contributes to making it easier to achieve set goals by setting sustainability requirements in procurements and strategically pursuing purchasing work. Sustainable procurement as part of public procurement should contribute to the transformation of a fossil-free society by reducing the use of hazardous chemicals, plastics, and antibiotics and further creating conditions for technological innovations in the environmental field. The Procurement Authority (Upphandlingsmyndigheten, n.d) further believes that sustainable procurement contributes to international, national, regional, and local environmental goals. For example, towards net zero emissions before 2045 or the global goals in Agenda 2030 (Svenska FN-förbundet, n.d.).

Sustainability efforts and strategic sustainability work are essential for public procurement to become sustainable (Upphandlingsmyndigheten, n.d). Procurement should be seen as a means of control to be able to work strategically, I.e., there must be a plan or policy for how the organization's environmental goals are achieved through purchasing work. Since procurement is part of the purchasing process, it is possible to set sustainability requirements. The procurement authority points to several elements that should be considered in a sustainable procurement:

- *Procure for a non-toxic environment*
- *Procure regarding the climate*
- *Procure for a circular economy*
- *Analyse purchases with environmental spend analysis*
- *Life cycle costs (LCC) for long-term sustainable purchases*
- *Use of an environmental marking*
- *Requirements for systematic environmental management work*

4.2 Fossilfritt Sverige

"Färdplan för fossilkonkurrenskraft – bygg och anläggningssektorn" is a roadmap developed by Fossilfritt Sverige together with leading organizations in the construction industry (Fossilfritt Sverige, 2018). The roadmap is a result due to a decision taken by the Swedish Parliament in 2017 where a proposal about how Sweden should have net-zero emissions of greenhouse gas by 2045, the requirement took effect in 2018. The roadmap explains the current situation and presents several measures to achieve net-zero emissions in 2045. Hence this chapter will be limited to the tools and suggestions relevant to apply in the procurement phase of a construction project.

4.2.1 Current situation

On the 1st of January 2017, legislation on public procurement was to be added in Sweden (Sveriges Riksdag, 2016). The Procurement Act provides greater opportunities and obligations for public procurers to set environmental requirements and life cycle perspectives. The national procurement strategy describes that public procurement should promote innovations, and alternative solutions and be environmentally responsible (Regeringskansliet, 2016). Setting requirements are becoming increasingly common among market participants but is not standardized (Fossilfritt Sverige, 2018). The requirements are designed to regulate greenhouse gas emissions; however, the requirements do not address how this is to be done nor to drive innovation.

Furthermore, there are initiatives by the market to reduce climate impact. One of the incentives is environmental certification systems that have gained a foothold among Sweden's clients and contractors (Fossilfritt Sverige, 2018). Environmental certification systems are based on systematizing the work of informing, increasing, and assessing the environment or climate performance of a facility or building. Climate and LCA-based requirements will be weighed heavier than the current situation soon, and initiatives are also underway for national certification systems for zero-emission buildings (Fossilfritt Sverige, 2018).

4.2.2 Future opportunities and challenges

Market participants emphasize that clear and long-term incentives to drive climate change are of the utmost importance (Fossilfritt Sverige, 2018). In turn, the customer wants to see contractors and consultants who present climate-smart solutions. The customers and contractors want to see the suppliers present climate-smart solutions at the same time as the suppliers want to see the customers and contractors demand climate-smart solutions. The risk is that this round contributes to the status quo and inhibits the transition to climate neutrality. To reduce the risk of roundabouts, a common goal picture needs to be developed where the goals are linked to the business (Fossilfritt Sverige, 2018). Such a climate policy framework could provide a long-term goal picture and at the same time contribute to predictability for long-term investments that are needed for companies to switch to production with reduced climate impact. Since a clear incentive is required from all players in the market, a clear business connection is needed to accelerate the transition, this will help to accelerate the transition to lower greenhouse gas emissions.

Furthermore, there may have been a distortion in the market because climate-smart solutions have traditionally not been able to be priced in the way required to succeed in reducing climate impact. The greenhouse effect and emissions of greenhouse gases have not been valued by the market, which means that products that involve lower emissions have not been able to be exposed to costs, and market prices have thus not been able to reflect society's cost of consumption and production. By instead setting a price for emissions, an opportunity is given to quantify emissions and evaluate reduced climate impact. Clients in procurement situations have an opportunity to show how much they value solutions with a low climate impact (Fossilfritt Sverige, 2018).

At present, the lowest price is most decisive in procurement situations. The construction sector has great potential to contribute value in addition to cost efficiency, but this is forgotten in a situation where the price is of the utmost importance (Fossilfritt Sverige, 2018). However, a high level of competence is required on the part of the customer to contribute with the values required to reduce the climate impact, this high level of competence is generally lacking, which prevents the requirement of reduced greenhouse gas emissions. The contracting authority is a key player in driving the development of skills and criteria for introducing life-cycle-based requirements that reduce greenhouse gas emissions (Fossilfritt Sverige, 2018).

The procuring authority is governed by politics, which requires the politics to be responsible for giving signals about reduced greenhouse gas emissions to all procuring authorities, both publicly owned companies, and public activities. To utilize the opportunity space in the Public Procurement Act, broad research is required both politically and in the management group, so it is not enough to increase the competence of the contracting authority or the ordering agents (Fossilfritt Sverige, 2018). At the same time, compliance with the set requirements must be ensured; this could, for example, be done together with an incentive model for future procurements to reward actors who comply with the requirements.

Climate change can be seen as both a challenge and an opportunity. Small and medium-sized businesses will be able to benefit from switching quickly. However, standardization of climate-smart solutions is required because smaller companies often cannot afford to test proven technology (Fossilfritt Sverige, 2018). By clearly specifying high sustainability requirements,

the whole spectrum is achieved by companies and benefits the entire industry because everyone could compete.

The construction sector is characterized by different forms of contracting, where different forms provide different opportunities to influence. The process of developing a building can vary greatly from case to case. The customer has the overall responsibility to set the right requirements to reduce the climate impact within the given cost framework. The construction company that is hired has, however, limited impact in general, but larger in turnkey contracts because they can contribute with solutions and ensure that the sustainability requirements set can be met within the cost framework (Fossilfritt Sverige, 2018).

In general, business relationships in the industry are seen as too short-term to be able to influence enough, this applies to the entire value chain from material supplier, subcontractor, contractor, and customer. Through collaborative procurements and partnering arrangements, common goals for reduced emissions can be developed. By taking care of more actors' expertise, the chances of sustainable solutions are developed and used. Increased exchange of experience can contribute with good examples to other players in the market and thereby accelerate climate change throughout the Swedish construction sector (Fossilfritt Sverige, 2018).

4.3 LFM30

The first municipality to have signed a declaration aimed at making the entire municipality climate neutral in 2030 is Malmö. To succeed in this, the construction sector also needs to change and reduce its climate footprint. LFM30 is an initiative from the industry that intends to have a positive effect on development but at the same time reduce the climate footprint that the construction sector leaves behind. As described in 2.1, Fossilfritt Sverige submitted a national roadmap in 2018 to have a climate-neutral construction industry by 2045. Furthermore, LFM30 has taken its starting point in that initiative, but with the difference of achieving the same thing only 15 years earlier in the municipality of Malmö. By signing LFM30, you as a player share the view that words should be changed into action and how Malmö should become a role model for others in terms of climate-neutral construction. You will also be obliged to report each year how you worked to take measures that created fewer emissions from both specific projects and the company (LFM30, n.d.).

The reported data must contain four different categories, one is business transfers in Swedish currency, i.e., the percentage change in the company's project/property portfolio or turnover that affects accordance with the climate budget produced by LFM30, which is also described further down in this text. Secondly, the affiliated actors must report their movement regarding emissions of carbon dioxide equivalents, however, this can be reported as a decrease or an increase of in CO2 from the previous year. As a member, you must additionally explain how your organization reduces CO2 emissions from Scope 1-3: Scope 1 covers direct chimney emissions from your own industries and automobiles, scope 2 emissions from acquired electricity, heat, and cooling, and scope 3 emissions from the value chain both upstream and downstream (Johansson, S., n.d.).

By being a member of LFM30, you must also present your own individual roadmap/action plan that describes how you as a company will be able to achieve the goals of a climate-neutral construction in 2030 by describing your actions, strategies, and sub-goals (Holmgren, A., & Erlandsson, M., 2021a). For LFM30, six different strategic focus areas form the basis for being able to succeed to get a roadmap from idea to reality. As a basis for these six different areas, the City of Malmö teamed up with "Sustainable Construction in the South" which is an ideal association to be a network for companies in the construction industry that want to build ecological and sustainable. A feasibility study is made with the aim to present what strategies one should apply to achieve a climate-neutral construction industry Malmö. Based on this, LFM30 has landed in the following six different Strategic focus areas.

- *Business models, incentives, and collaboration*
- *Circular economy and resource efficiency*
- *Design, process, and climate calculation*
- *Climate-neutral building materials*
- *Climate-neutral management, operation, and maintenance*
- *Climate-neutral construction sites and transport*

To succeed in meeting the climate goal that LFM30 stands for, a method and climate budget have been developed. It is designed to be applied at both the company level from the property portfolio but also for the specific construction project. It is also designed to be used on facilities, and buildings, both existing and newly produced (Holmgren, A., & Erlandsson, M., 2021a).

The climate budget is designed according to five different steps, *Calculate, Improve, Target limit value, Negative emissions,* and *ongoing control*. The calculations made are based on LCA methodology and by EN 15978 (Svenska Institutet för standarder, 2011). The first step, calculating, lays the foundation for the next five steps. It intends to calculate the climate impact of a building, new or existing. In the case of new, both the construction phase and the use phase are calculated. Step two, improve, intends to analyse whether there are equivalent products or solutions with a lower climate impact that meet the same customer requirements as a set. The climate improvement measures are made, analysed, and controlled in the early stages and reported on this in a climate declaration.

Furthermore, LFM30 has established templates and other types of aids, among other things, which been developed such a checklist that can form the basis of procurement for how a climate calculation is to be carried out. In addition to using their checklist, LFM30 recommends that the client has full insight into the contractor's climate calculations throughout the project and that the client hires a third-party grass cutter for the calculations and declarations made (Holmgren, A., & Erlandsson, M., 2021b).

4.4 Forms of Contract

When procuring a contract, this can be done via various forms. According to Eriksson, E., & Hane, J. (2014) there are mainly two different forms, turnkey contract, and construction contract, but there are also several other variants, that however, not as commonly used. Eriksson, E., & Hane, J. (2014) continues to describe how the main difference between a turnkey contract and an execution contract is of the Client and the contractor are responsible for the design of the project. The turnkey contract, the construction contract, and the collaboration contract will be described below.

A construction contract means that the client is responsible for the design of the project. This means that the client in his tender documentation to the contractor has a compilation of drawings from both the architect and the designer with technical descriptions that describe in detail what a contractor is expected to perform. It is therefore made clear that the client is responsible for the quality and the technical solutions to be carried out, and thus the full responsibility that the design is fully appropriate and correctly done. Furthermore, a construction contract creates poorer conditions for the contractor's opportunities for new thinking and innovation due to the detailed specification that the customer needs to leave to the contractor (Eriksson, E., & Hane, J., 2014).

For a turnkey contract, a larger part of the project is placed on the contractor compared to a construction contract. With this type of contract, the contractors have the responsibility for the project design and thus also the responsibility for this being carried out correctly about the intended purpose of the product. Unlike the construction contract, the client leaves different framework descriptions to the contractor and thus leaves the freedom to let the contractor himself choose the technical solution that meets the intended functional requirement (Eriksson, E., & Hane, J., 2014). In the case of a turnkey contract, as mentioned the contractor covers complete responsibility, meaning that the contractor is partly accountable for contract faults and partly responsible that the contract's function corresponds to what the parties agreed on. The contractor's functional responsibility indicates that the contractor is liable for the planned usage that the client has disclosed to the contractor within the framework of his commitment to the client (Berg, M., & Sundblad, A., 2017).

Contractors and clients utilize partnering as a form of collaboration during a shared, construction, or turnkey contract. Partnering is not a type of contract, but rather a type of collaboration (Lundström, R. & Overall, P., 2008). The basic process of building solid relationships amongst project participants is known as partnering. According to another definition, the partnership is a management strategy utilized by two or more organizations to achieve specified business goals by maximizing the efficiency of each participant's resources (Larssen, P. F., Engebø, A., Lædre, O., & Klakegg, O. J. (2019). Partnering has been a way of working in foreign contexts since the 1980s, and it has since the early 2000s bbegunto be implemented in Sweden (Kadefors, A., 2002). According to Kadefors, A. (2002) partnership has arisen as an attempt to run construction projects in a new collaborative style to improve the quality and efficiency of the process. All major players are included early in the partnering process and contribute to the greatest potential product. The goal of partnering is to create a collaborative environment in which all parties have complete trust in one another and may play

with open cards. The construction team brings together all the abilities required for a project so that everyone is involved from the start, and they should all work toward the same goal. This is a strategy to avoid the traditional relay race that is common in construction projects. The issue with a relay race like this is that performers are only participating for a brief time before handing it over to someone else, which means no one truly takes responsibility and might have no idea what has been done previously (Kadefors, A., 2002).

4.5 Environmental Management Systems

The independent and non-governmental international organization ISO currently has 160 standardization bodies as members and has since its inception in 1946 published over 22,000 global standards. ISO publishes standards in several categories and to name a few, it includes everything from manufacturing and construction to social responsibility (Svenska Institutet för standarder, n.d.c). Furthermore, there is the standard which with its collective name is called ISO 14000. It is a series of standards that deal with the management of environmental aspects. The series includes ISO 14001, which is the requirement standard for the introduction of an environmental management system.

Because of that ISO 14001 is a requirement standard, one as an organization can be certified against it. When an organization believes it meets the ISO 14001 requirements, there is the opportunity to be examined to determine if one has met all the requirements and thus be certified. Authorities, institutions, and businesses all employ the standard today.

ISO 14001 is an international management system standard that assists your company or organization in focusing on the appropriate things when it comes to environmental planning, implementation, follow-up, and continuous improvement. When you use your resources wisely, an environmental management system provides a cost-effective approach to conducting environmental issues and environmental activities (Svenska Institutet för standarder, n.d.a). The Swedish Institute for Standards, SIS, further describes the process and advantages of the management standard around ISO 140001 which affect environmental aspects within management. Some of the many aspects involved touches:

- *Reduced resource use*
- *Streamlined energy use*
- *Smarter procurements*
- *Lower cost makes waste management*

Furthermore, benefits are mentioned that arise because of the use of the environmental management system. Among other things, it describes how more sustainable products and services are developed from a life cycle perspective and how the business adapts more to a circular economy. It should be mentioned, however, that whoever cannot get this certificate completely, the organization that wants to access the standard and certify itself by it also has certain obligations to follow.

The organization must have a management system that meets the requirements for ISO 140001:2015. The system must also be a natural part of the organization's daily operations, where the management system is also descriptive, and the description is maintained on an ongoing basis. The organization which is to be certified must also have its activities audited by an accredited certifier (Svenska Institutet för standarder, n.d.b).

5 Findings of Interviews

The chapter will briefly present the anonymous interview respondents so the reader may get a sense of who they are. The findings from the interviews will be compiled and described in five chapters later.

5.1 Presentation of interviews

All data gathered during the interviews will be given in the next section. A short presentation of each participant will be described to gain a picture of the respondents. The goal is to present an image of each respondent's position and experience in the issue. The findings will then be utilized as a starting point for further debate and analysis.

The questions are open and of a qualitative nature, the angle of the answers from the different respondents may vary. To present the findings effectively, the answers will be categorized and presented accordingly. The answers will fall into one of the categories listed below, which were formed because of tendencies discovered throughout the interviews. The responses are prepared based on the respondents' reflections and interpretations of the questions; they are not literal quotes from what was said during the interviews, but rather serve as an equivalent of their responses.

The interviewees were chosen from a diverse group of persons of various sizes based on the population of the municipality. The responders, as previously said, have various positions, but they all have a direct or indirect connection to the work issue. All interviewees' will be presented by their roles and the population of the municipality; hence names and organizations will be anonymized.

5.1.1 Project Coordinator

Respondent A works as a project coordinator for a municipality in central Sweden with just over 80,000 inhabitants. He works in a department called to service at a service unit. He, himself thinks that his role should be called construction project manager as he is involved throughout the construction process. He has studied energy and indoor climate worked as a plumbing consultant and worked with energy and procurement. The current position has lasted for 6 years but he has worked with general procurements since 2005 and the law of public procurement for about 7 years.

5.1.2 Procurement Manager

Respondent B works as a procurer for a municipality in central Sweden with about 40,000 inhabitants. She has studied business law and graduated in 2017. She has worked for 2 years in her current position which includes procurement. She is involved in environmental issues and is in the process of producing documents and guidelines for the municipality, so it is a relatively new position.

5.1.3 Environmental Engineers

Respondents C work as environmental engineers for a municipality in southern Sweden with almost 150,000 inhabitants. The first respondent works with sustainability and adaptation for construction. She works with circular construction, recycling, and measures that will reduce the environmental impact. She also runs development projects in the environment and looks at material selection and environmental management systems. She has studied technical biology by the end of 2014, and since then she has niched herself towards the environment and has worked with assignments that include procurement for about 6 years. The other respondent works mainly with real estate and more practically with projects. Among other things, she works with the Building Product Assessment and is responsible for climate calculations and bookkeeping. She has studied to become a university engineer in the environment and has worked with assignments that include procurement for about 3.5 years.

5.1.4 Purchasing Manager

Respondent D works as a purchasing manager for a municipality in southern Sweden with approximately 150,000 inhabitants. She is the head of her unit and works half with procurements and half with support for the business. In the 90's90s studied to be a scientist and has worked in her current position for 7 years. She has worked in the municipal sector for about 25 years now and has worked in various ways with procurement throughout the period.

5.1.5 Project Manager

Respondent E works as a project manager for the same municipality as respondent D, however, he is working closer to the construction business. He is responsible for the project department where they build major new productions and renovations, they mainly build schools and sports halls, etc., with no housing. He studied to be a carpenter and then studied a polytechnic, since then he has worked as a supervisor, site manager, and regional manager. As a civil servant in the construction industry, he has worked for 20 years, however, he has spent the last 6-7 years as a client where he has worked with procurement, among other things.

5.1.6 Environmental Coordinator

Respondent F works as an environmental coordinator for a municipality in central Sweden with just over 150,000 inhabitants. She works extensively with environmental issues for a housing company, partly with environmental requirements in procurements, but also waste management and chemical management. In the early 2000s, she studied an environmental protection program, which is a science-based education. She has been in her current position for 2 years but 5 years in similar positions, she has worked with procurement for 11 years.

5.2 Governance, Requirements, and Environmental Plans

Each interview began with the respondents being asked to define environmental sustainability, and while the responses varied greatly, the general attitude toward the question was broad and difficult to answer. Respondent C emphasized that sustainability is about making the best use of available resources without jeopardizing the lives and development of future generations, whereas respondent A focused more specifically on efficient transportation, purchased products, and their life cycles. In general, there is a link between how resources are used and how to stay within the sanitary boundaries. Respondent E also emphasizes how the environmental issue has become more important in recent years. Previously, most changes were focused on energy management, but in recent years, there has been a shift to a greater emphasis on material selection. Furthermore, respondent F explains that numerous parameters affect the environment in some way, putting pressure on one to have a comprehensive view of what one does to control and monitor the impact. Furthermore, respondent F emphasizes that zero vision is difficult to achieve and that to understand what needs to be done, one must first understand what one is doing now.

All respondents oppose the act and public procurement, which means that politicians set the conditions for municipal civil servants, put in another context - the environmental requirements are set by the municipality's goals and visions. By this, the requirements for environmental sustainability vary depending on the municipality's political government. Respondent A explains that politicians issue directives to heads of operations, who then issue directives to unit heads, then issue directives to one of the project officials. respondent A summarizes this by stating that under the public procurement Act, politicians serve as managers, even if there is a top official. According to respondent B, the basic idea is that the client sets all requirements; typically, the clients are the project managers in the municipality. Respondent B adds that the work with environmental requirements is new, giving the impression that it is almost voluntary, and how she believes therefore different requirements are set in different municipalities. Respondent B's municipality is ion this moment creating an action plan with decisions and intended future requirements. Furthermore, she explained if a requirement is cost-driving, it must be decided by politicians.

Respondent C believes that the environmental sustainability requirements are set by a collaboration between the procurement unit and herself. The procurement unit creates a framework of agreements and decide which environmental sustainability requirements to include. In general, the reasonableness of environmental requirement levels is judged in relation to other requirements, resulting in a conflict of interest. Respondent C could put herself to the test in various projects to determine reasonable requirement levels. Respondent D points out that, contrary to what respondent A believes, it is primarily politicians who make decisions, even though she makes decisions daily. The procurer, in collaboration with a sustainability strategist, establishes the requirements for procurement. Respondent E claims that the municipality has high ambitions, and that the administration's requirements and goals are established by beginning with the municipality's ambitions. Respondent F, who works for a municipally owned housing company, claims that the municipality's governing documents, along with the company board's own requirements, set the direction. However, she claims that there are strict legal requirements that must be followed when rebuilding.

The participating municipalities' climate and environmental plans differ in terms of how far they have progressed in the development. Respondent A claims that they have a climate and environmental plan that is primarily tailored to the needs of the residents, and that it is currently being updated. Furthermore, a climate strategy is being updated, which applies to both municipal operations and private individuals. It is a description of where the municipality is now and where they want to be in the future; it includes information on how to work with purchasing and use of chemicals; and other sections are stepped down and more comprehensive.

Respondent B's municipality has an environmental program for 2030, as well as an environmental activity plan. The plan includes overall goals in various focus areas. The focus areas are that the environment be free of emissions, pleasant, and close to nature, that the project have a self-sufficient supply of electricity, and that the project make sustainable purchases. The concept of sustainable purchasing is somewhat ambiguous; it is open to interpretation and allows for leeway. Respondent B goes on to say that the municipality does not have an environmental expert, so different focus areas are used from case to case.

Respondent C's municipality does not have a climate and environmental plan, but work is to be done of developing one. There is an environmental sustainability program in place today, but it has several levels. There has been a problem in that the environmental sustainability program has been a parallel track to the "ordinary" work and has not been integrated, hence the current work aims to integrate the environmental work at all levels. Respondent continues explaining the existence of documents that govern at the regional level, and the municipality decides which ones it wants. There is also a construction policy stating that projects must use environmentally friendly construction and consider LCA, which will result in new specific requirements being included in the procurement.

Respondent D has a clear environmental plan that calls for it to be climate-neutral by 2030, as well as have a climate-neutral car fleet. The contract's vehicles are primarily subject to requirements, with work machines required to be fossil-free by 2024, posing a significant challenge. The contractor's work is guided by the climate and energy plans, and there is also a quality-of-life program that affects all areas, including the circular economy. Furthermore, there is an environmental purchasing policy in place. Respondent E works for the same municipality and says that all of these are used to develop requirements and goals.

According to Respondent F, the municipality has a sustainability program. The municipal company she works for has a roadmap to neutrality that focuses on activities and how they should contribute to the municipality's environmental plan for 2030.

5.3 Requirements for Procurement

There were clear similarities but also differences in the interviewees' responses to questions about procurement requirements and their intentions with these. When asked what requirements are currently in place to create a better environment, a mixed bag of responses was found. Respondent A describes how his municipality has a strong desire to build more environmentally sustainable structures and that there is a willingness to require certification of their buildings in accordance with some environmental certification system, despite their inability to see what benefit this will provide. Today, they use other methods, such as SundaHus, where the goal is an A or B classification, but it occasionally ends up in a C classification. Furthermore, respondent A describes how to work with requirements based on BBR, and then with a percentage as the lowest requirement for an improvement, which according to respondent A is about a 70% improvement in their municipality compared to BBR requirements. The respondent also describes how to implement requirements for emissions from machinery during construction, which are based on the policy of the Municipality of Gothenburg.

Furthermore, respondent B describes how their municipality has machine requirements, such as machines with the classification of at least Euro 6, and how machines used in the project need to be using environmentally classified fuel. Respondent B goes on to explain how the municipality has specific requirements for the mass handling that occurs, including where it is to be deposited, how it is to be deposited, and reports of quantities and their contents. There are no other specific requirements related to improved environmental construction, aside from the latter and vehicle requirements. It does, however, describe the municipality's desire to become more active and to shed light on the issue of environmental criteria to create a greater emphasis on it.

Environmental management systems, logbooks, an environmental and waste management plan, and climate calculation are among the requirements for procurement in respondent C's municipality. It also describes how the requirement for climate calculation, which is the most recent addition, has only been in place for a year. There are still no requirements related to the calculation, but the reason you have it today is to collect data and then set specific numerical requirements in the future.

Respondent D, like many others, describes how different requirements for vehicles and fuels are set. In the municipality, there is a specific environmental plan that specifies various requirements, the majority of which concern vehicles, fuels, chemicals, plant protection products, and waste management. It is also stated that the use of this environmental plan as a requirement has become a standard within the municipality. As a municipality purchaser, you are not required to include the environmental plan, but everyone should try to use it.

Respondent E, who works in the same municipality as respondent D, goes on to explain how the municipality has also mandated that the materials used need to be set by SundaHus, with priority A, B, and C classifications. Respondent D also describes how, in the case of new production, requirements are set to be at least 25% better than BBR's. The most recent addition to the municipality's requirements for respondent D, are specific numerical requirements. More specifically, this is the maximum number of carbon dioxide equivalents per gross floor area.

The final respondent, F, who represented the municipal housing company, describes how the ambition in new construction projects is to certify environmental according to Miljöbyggnad for each project, but if this is done, it will be with class A or B, according to SundaHus. If there are any deviations from this, the municipality must approve them. She also discusses how the municipality is currently working to create clearer and more stringent governing documents that will make it easier for both departments within the municipality and the municipality's companies to follow.

After the different respondents were asked how their organization worked with different procurement requirements, they were also asked how well they thought their requirements were specified in the documentation. Throughout, most respondents indicated that they believed some of the demands were clear and that there was little room for misinterpretation. Respondent A demonstrates that they conduct regular follow-ups to see how the requirements are being received and can thus confirm that they have formulated their requirements correctly. Respondent C continues to describe how their requirements are clear, but the environmental plan may be considered less clear, as there may be room for different interpretations. Respondent D continues to describe how their requirements are also clear, but that it should be clearly specified because of how LOU does it.

The question was posed to all respondents to gain a better understanding of why the various respondents use environmental requirements. Respondent A stated unequivocally that this is a political initiative in which they wish to fulfil the political directives that have been given. Respondent B goes on to explain how their requirements are used to increase the possibility of sharper requirements for environmental issues by creating a clearer focus on the environment.

Respondents C and D, like A, describe the primary reason for the use of different requirements as a political initiative and goal. C goes on to explain that some of their current requirements are used to collect data and knowledge to create clearer and sharper requirements in the future. The common thread among all respondents is that the various requirements are used to reduce the climate impact, either indirectly or directly; the difference lies in the distinction and focus on the various requirements.

5.4 The Challenges and Incentives of Environmental Requirements

During the interviews, respondents were asked to respond to questions about the various challenges and incentives to use environmental requirements and environmentally sustainable buildings. They have also been asked to describe any criteria in their procurement process that would further reward, say, a construction contractor. Respondent A describes how their point of view includes difficulties in getting more products into SundaHus; he describes how today's products have many different patents, making it more difficult to increase the quantity of good and approved products. Furthermore, the respondent describes how their incentive to create sustainable buildings is about building sustainably, given that building sustainably usually means a higher cost. Respondent B believes that the requirements they have today are reasonable and does not believe that the challenge lies in these requirements; instead, he believes that the challenge will be in future requirements that are more concerned with greenhouse gas reduction, by identifying the right requirements that differ to a greater extent. Respondent B describes how her incentive to build sustainable buildings is based on human

well-being and thus work towards a better and more sustainable environment, but she also mentions that the policy's goals and visions are a clear incentive as well.

According to respondent C, the main challenge is to affect the knowledge surrounding the subject and follow-up, which further describes how a greater knowledge and understanding of why different environmental requirements are used needs to increase with the construction contractor, but the challenge also lies in being able to ensure that the right requirements are set. Respondent C continues to explain how it is resource-intensive to ensure that both the right requirements are set and complied with, and how this can be difficult for some municipalities to achieve. Respondent C also mentions that there has been a shift and that much of the day's work is still manual, which creates both an opportunity and a challenge to allow technology to catch up with technical systems that facilitate the work. Respondent C goes on to describe how you want to contribute to reducing emissions, and how you see a certain prestige in showcasing the various sustainable buildings and solutions that have been achieved; you see great importance in being able to market yourself for their achievements that contribute to more sustainable construction.

Respondent D also discusses how time is a major challenge for him, as well as his own ambition. She means that if your ambition is too high and you choose to invest in everything, you risk having the opposite effect, so you must prioritize, which is also described as a big challenge - prioritize correctly. She describes how sometimes you must kill your darlings and choose to invest more in fewer things rather than half-touching lots. Respondent D describes the strongest incentives to fulfil the politician’s will; with a changeover, some parts become cost-driving. As a result, it is critical to have not only political will but also the residents' will and expectation of the municipality's actions.

Respondent E's financial and material supply challenges are described. Respondent E describes how there are challenges and risks for a financial purpose in the short term. Transitioning to higher environmental standards and sustainable construction also tends to be more expensive, so a willingness and priority to invest in this is required, as it will be both environmentally and financially sustainable in the long run, according to Respondent E. In addition, the problem of material supply is described. New materials will almost certainly be required, and there is thus a risk of developing these new products while also ensuring their availability. Respondent E sees increasing environmental requirements and requiring everyone to contribute to the transition to sustainable construction as a matter of course to meet future environmental requirements and the transition to sustainable construction, which are also the main incentives according to respondent E.

Respondent F describes a scenario like E, but the economic aspect becomes a challenge because many people, according to the respondent, have difficulty grasping a life cycle perspective. As a result, it will be difficult to justify a more sustainable, and likely more expensive, solution or product today that will pay off in the long run. Respondent F also describes how the legislation has not been adapted and how it needs to catch up to drive forward development and adjustment. Respondent F also mentions knowledge of what is right and wrong as one of the major challenges in meeting environmental requirements. For the respondent, it is about being a role model and not causing undue environmental impact; this is also described as the

respondent's incentive, along with being an appealing organization for building sustainable buildings.

When asked if they had other criteria in procurement other than their requirements that rewarded contractors further, most respondents said they did not have anything else that would reward a contractor. Both respondents C, D, and E describe how time and price are usually the deciding factors, and that environmental considerations become a requirement, so there is only a minimum level to achieve.

5.5 Resources and Environments Significance

The respondents were asked how they weighted environmental criteria concerning other assessment criteria, such as economy and quality. In general, it appears that there are no evaluation criteria specifically for environmental work among the respondents. Instead, environmental requirements are established, requiring tenderers to participate and compete in the procurement. Respondent A, on the other hand, states that they have had additional environmental criteria in partnering projects where the contractor can receive bonus points in the tender for environmental work. Respondent C expresses similarly that there are requirements in procurements, implying that only the economy controls in principle. Respondent C goes on to say that the municipality has a laid-back attitude in which no fines or penalties are imposed if environmental work requirements are not met. Respondents B, D, and E confirm the general trend in which prices rule and environmental requirements are answered yes or no. Respondent F claims that environmental regulations raise prices, resulting in a trade-off due to price controls. Respondent F goes on to say that they strive for the lowest possible price for the product while adhering to the environmental standards. However, he concludes that project-specific requirements are beginning to emerge, particularly for new construction where environmental criteria can be implemented.

There are differing views on how much the environment should cost or whether respondents believe there are sufficiently extensive environmental requirements concerning the economy. Respondent A points out that the municipality has good finances and strong growth, which should allow for a greater scope of sustainable construction. However, he goes on to say that the problem is not the economy, but rather the passage of time, as the time for developing new technology has been extended. Respondent A goes on to say that the will exists in the municipality but not the political decision, and that there is also a lack of follow-up. Today's emphasis is on how they build now and how they want to build in the future. That sustainable development is significant should be financially defensible, and with the municipality's good finances, he sees no problem managing change in the coming years. According to Respondent B, the question of how much environmentally sustainable construction might cost has never been tested. The municipality currently has a constrained budget, which means that environmental requirements must take up less space. Respondent C believes that more resources are needed right now, and that current thinking is very short-term. It is more concerned with what it costs today than with what it provides in the future. Respondent C emphasizes her belief that you should work with more long-term thinking, i.e., what the current construction has in store for the future. Respondent D is upbeat and emphasizes that there is a lot to consider before spending money. Furthermore, she explains that more can be done in the construction industry and that better technologies exist than those currently in use. She also

believes that as the industry is forced to implement solutions that they are not used to, recycling will become more common and resources for sustainable solutions will increase over time. She concludes by stating that "more time and skills, i.e., more money," will be required. Respondent E responds that the economy must always be included somewhere as a basis; however, tenders with good climate thinking can come in, allowing the market to react. They do not know if the level is reasonable right now because much of what is being done is in the testing stage. He then discusses their carbon dioxide emissions per square meter of living space, where data is still being collected and can be used as a tool to make better demands in the future. Respondent F believes that, for example, recycling should be allowed to cost more and continues to discuss their new renovation strategy in which you take a little today to avoid incurring excessive costs. Major renovations can take longer and result in more energy-efficient homes. Generally, renovations should not be too expensive because if rents become too high and people do not stay, it is a problem.

In terms of follow-up, each respondent's municipality has different inputs. There is a consensus that more follow-up is required in the projects, partly due to a lack of knowledge even though resources are available to carry out follow-up work, and partly because there is too much documentation to be delivered, which means it falls between the chairs. Respondent A claims that the procurement unit is supposed to follow up on the projects, but there is some difficulty with this. Otherwise, the projects must be monitored through inspection, and the relationship document must serve as the foundation. Respondent A goes on to say that more measurement and logging systems are required, and that this must be addressed during the project rather than after. The administration must also follow up on the energy declaration and manage systems that allow for follow-up. According to Respondent B, there is an environmental strategy where questions can be discussed, as well as a network for neighbouring municipalities where environmental strategists and procurers can meet. There is currently discussion about bringing in consulting help to follow up, which has been approved. Respondent B goes on to say that there is insufficient knowledge within the organizations, which necessitates the use of consulting services. Respondent C actively follows up on projects, and there are people with environmental responsibilities in almost every department.

To find inspiration, the municipality consults with larger authorities such as the procurement authority. Respondent D claims that there are resources available to set appropriate environmental standards but does not elaborate on how this is done. Respondent E is pleased with the municipality's follow-up and believes that many people want to contribute and solve problems. This is followed by measurements, energy calculations, and documented materials; they have also begun to follow up with climate declarations to measure carbon dioxide footprint for a couple of years now. Respondent F responds that more follow-up is required; however, it is currently believed that simply being present on the construction site creates a probability that the requirements will be met. Respondent F concludes by emphasizing the issue of having to submit a large amount of documentation and statistics, which makes it easy to forget.

The respondents were asked if their environmental requirements differed depending on the type of contract and procurement method they used. Respondent A responds that they do not currently differentiate between requirements, but that there is a need for this. Because the client lacks knowledge, a turnkey contract in partnering can be used to ensure more efficient environmental work. To find the right requirements, a construction contract relies on many

resources. Now, the customer level is uncertain; more data is required for the customer to set anchored requirements in procurements. Respondent B finds it difficult to respond to the question because they only work with turnkey contracts but believes that a turnkey contract in partnership produces a better result because the municipality can benefit from the contractor's expertise.

According to Respondent C, they have different requirements for framework agreements. She emphasizes that in the case of a turnkey contract, the contractor must be responsible for the entire environmental work. She also adds that the size of the project determines the reasonableness of the environmental requirements because the municipality generally uses construction contracts, which puts more pressure on the municipality to set the right requirements. Respondent C does not use partnering contracts because they believe they are best suited for unusual or advanced projects. However, the municipality believes that it has good governance and that it knows what it wants. Respondent E does not differentiate between requirements, instead emphasizing that the difference in contract form shifts who is responsible for ensuring that requirements are met, and that follow-up occurs. In a turnkey contract, the contractor is responsible, whereas in an execution contract, the customer is responsible. Respondent F believes that differentiating requirements based on the type of contract is natural. Environmental construction is frequently used as a tool to ensure requirements in a turnkey contract, but in a framework agreement, there are more general requirements, and there are rarely higher requirements than what is stated in the framework agreements.

5.6 Visions and Forecasts of The Future

Respondent A explains that there is no plan in place for how environmental regulations will evolve in the coming years. The municipality must know what they are building today and how much it will cost. They are aware that they are of a certain quality and are not overly expensive, but they lack durability. Sustainability lags because they are unsure what to do, which is, because it is not politically determined what level of sustainability they should maintain. The municipality has a broad strategy but nothing to anchor it with.

Respondent B points out that obtaining a picture of the current environmental requirements and costs is a prerequisite for developing them; only then can they see how the environmental requirements affect and then develop them. There is a need for requirements that the municipality knows will have a positive impact and reduce emissions; in general, this can be explained by the municipality's lack of subject knowledge.

Respondent C emphasizes that environmental regulations must begin focusing on emissions during construction, and that there are plans to do so actively in the coming year. Furthermore, there should be more circularity in procurements, which can be accomplished through, among other things, the possibility of re-use. Furthermore, because the building policy is unspecified, a greater degree of adaptation is required, as are more requirements for ecosystem services, biodiversity, and expanded green areas. Respondent D also emphasizes the importance of incorporating the circular economy and biodiversity.

Respondent E believes that the figures for CO2 emissions should be tightened. There is a plan to gradually sharpen them year by year until they reach climate neutrality.

Respondent F, like respondent C, emphasizes an increased demand for recycling by utilizing demolition contracts and dismantling rather than demolishing. Setting a volume of the building to be reused could be one requirement. Furthermore, respondent F claims that climate calculations, as well as vehicle and machine requirements, will be required.

Most respondents believe that future environmental regulations will be allowed to increase in cost. However, respondent D offers an intriguing perspective on the issue, stating that "economics is made up, but natural laws are real." Respondent D goes on to say that it is not certain that current pricing will be maintained in the future, which will affect how we view environmental issues related to the economy. Respondents B and E believe that the environment will be allowed to cost more in the future and that there will be a new standard that naturally accommodates the environment. Respondent F draws a parallel to organic food, which companies now pay more for, and believes that it will work in the construction industry as well. She adds that she hopes that more emphasis will be placed on viewing environmental work from a life cycle perspective, and that environmental investments will be financially justifiable. Respondent A believes that the environment will be allowed to become more expensive in the future and mentions that his municipality has invested in solar cells. Solar cells are an example of a profitable environmental investment - it shows that it is possible if you want to. He also uses the example of wooden construction rather than steel construction, where it is usually more expensive to build in an environmentally friendly manner. It is clear from the municipality that environmental investments will return money; if politicians have input and knowledge, he believes it will be allowed to cost more in the future.

Respondent C takes a different stance on the issue and believes that future environmental regulations will not be allowed to increase in cost. The municipality is conducting a materiality analysis to determine how much environmental requirements cost and how much they have the potential to provide. By allocating more funds to environmental requirements, the operational cost is reduced; thus, it is critical to view the problem from a life cycle perspective. They also emphasize the importance of streamlining materials, which naturally lowers construction costs. If it is possible to argue for environmentally sustainable solutions, they will be permitted to be more expensive.

The answers to the question related to Fossilfritt Sverige's roadmap for net zero emissions by 2045 are dispersed. Respondents A, B, and C do not believe it is possible given the current rate of change. It will be better, but not completely net-zero emissions. Respondent A believes that a failure is caused by a lack of knowledge and poor management. There is a lack of urgency in addressing the issues, and larger investments are required; additionally, current investments do not focus on reducing emissions.

Respondent C adds that there is a problem with a lack of data on current emissions, which makes setting targets for how much should be reduced difficult. To achieve net-zero emissions, a national adjustment and clarity are required; there is currently a lack of cohesion and a clear direction. In their municipality, there are proposals like LFM30, and they believe it is a key to success with net zero emissions. In conclusion, greater resource efficiency, reuse, and a greater shift to the circular must occur.

Respondents D, E, and F are optimistic about achieving net-zero emissions by 2045. The municipalities that responded to the survey have loftier goals of becoming fossil-free by 2030

and 2035, respectively. Respondent D believes it will be difficult; there is a greater emphasis on energy and transportation, but all materials and gadgets are overlooked. Governing documents have played and will continue to play an important role in the change; however, the fact that goals are set differently depending on the municipality is problematic. Respondent D emphasizes that ambitious goals get things moving; even if politicians want it, municipalities must be given resources to get things moving. Respondent E emphasizes that environmental work has become a hygiene factor, implying that everyone is on the same path and working in the same direction. Finally, respondent F believes that by reducing climate impact and compensating with renewable energy alternatives, it will be possible by 2030.

6 Discussion

This chapter offers a discussion and reflection on the tendencies that have been developed from the empirical data, as well as a possible connection to the theory. Because the report is mostly based on empirical data acquired during the work, the responses and reflections of the respondents will predominantly lead the discussion. Because the most intriguing has evolved because of a divergence in the respondents' responses and reflections, the discussion will centre on the interpretation of these, as well as a relationship to relevant findings in the literature. The discussion should suggest how the work with environmentally sustainable procurement should progress to deal with the modifications required for a transition to comprehensive sustainable environmental activity. Furthermore, the discussion should indicate areas where there is room for improvement and suggestions on how such an improvement can take place.

6.1 Contrast between Respondents' Reflections

This section of the discussion will focus on the differences in respondents' comments and replies throughout the interviews. Because all respondents have different roles, work in different municipalities, and face different challenges, there is a good chance that this is partly to blame. However, there are some topics where respondents answer relatively similar questions to varying degrees, regardless of their roles. This has been a useful tool for identifying areas where significant problems exist in the work with environmentally sustainable development. Brammer, S., & Walker, H. (2011) describe a similar problem in which different regions work internationally in different ways due to different instruments, which can be compared to the situation described in this report in which different municipalities have different instruments. Similarly, to how international environmental goals are the same no matter where you are, a trend in Sweden's divergence in governance can be seen. Sweden has national governing documents that establish an overall framework for working with environmentally sustainable development (Upphandlingsmyndigheten, n.d); however, the governing documents are too open to interpretation, which means that municipalities in Sweden make their own interpretations and set different goals and focus areas depending on which municipality interprets.

Surprisingly, none of the questions asked during the interviews had a uniform answer among the respondents but were instead completely divided into two main categories of answers in which the respondents answered relatively similarly. This result, like Brammer, S., & Walker, H. (2011), can be linked to the way the interviews are performed, with the questions having an open end and leaving room for the respondents' own opinions when no obvious answer is judged correct. An examination of the response areas reveals a personal connection and drive to the subject, as well as the level of attention the subject receives within each municipality. Municipalities with clear frameworks and governing documents respond to questions related to national policy instruments and pay attention to similar topics such as Fossilfritt Sverige (2018) to a greater extent. It has also been revealed that different municipalities are permitted to work with the issue to varying degrees, demonstrating the importance of governance in achieving continuous work with environmentally sustainable procurement across all municipalities. If the smaller municipalities had access to a higher level of continuous governance, the answers would probably not have differed as much as they do now. This analysis is primarily since we observed continuity in municipalities with similar levels of

resources and conditions. This demonstrates one of the trends in Sweden toward clearer national governance towards municipalities, as well as how large the gap for interpretation in the governing documents is.

6.2 Barriers to Conducting Sustainable Procurement

As explained previously, there are several different parts to the work for this report that affect municipalities' ability to engage in environmentally sustainable procurement. Not to mention, clear differences have been discovered between the various municipalities, which can be attributed to their population size on the one hand, and several other factors that are discussed below on the other. According to the report, the interviews were conducted with residents of municipalities with populations ranging from 40,000 to 150,000, which can be seen as both positive and negative. However, it should be discussed how this creates space for different assets on resources and priorities; a smaller municipality has been shown through our data to relate to the possibly smaller size of resources; as a result, a municipality may find it more difficult to prioritize the fact of a change because typically resource intensive. Respondent B, who represented the smallest municipality in terms of population, describes a lack of resources and competence to ensure that one works with the right things meanwhile the right requirements. As a result, one might wonder how a municipality can drive change on its own. When comparing respondent D, who works for a municipality with slightly more than three times the population, there are significant differences in the availability of resources, which is reflected in their adjustment work.

According to the interview compilation, the municipality for which respondent D works has come a long way compared to, for example, respondent B. Respondent D describes how demands today are made to a much greater and extensive extent because there are more resources to ensure which requirements are relevant; they are also working more actively to develop new requirements that will accelerate the transition to procurement that will allow for environmentally sustainable construction. Above all, the resource of competence has proven to be important in coping with the transition and thus laying the groundwork for the right types of requirements in a procurement against an environmentally sustainable one. During the interviews, many of the respondents discussed how they had to create a new position within their organization to gain access to knowledge or hire consultants to ensure that the work was relevant. Smaller municipalities, on the other hand, have demonstrated a lack of opportunity to motivate and employ new services or hire consultants, as this is costly and thus necessitates a political stance.

This brings us to the next set of factors that can be viewed as impediments to environmentally sustainable procurement: communication and politics. Many barriers to change and environmentally sustainable procurement to politics are derived from empirical data. It describes how work is done far down in the organization's trees, but guidelines and goals are adopted in the politics, giving the politics a decisive role in whether a municipality should work. Several describe how there is often ambition and willingness to develop and work in more environmentally sustainable ways, but that one is frequently constrained by politics and budgets. As previously stated, changes are frequently cost driving, and when a municipality works with tax money, it becomes a political decision on how the money should be used and what level of ambition the various projects should have, then about what level of environmental sustainability should have. However, whether it is the most environmentally sustainable

procurement that is the most expensive should be debated; according to Preuss, L. (2009), it is not always the most this kind of procurement that is the most expensive. However, it will be necessary to alter the lens through which the investment is viewed. Preuss, L. (2009) goes on to say that in the long run, the advantages of environmentally sustainable procurement are likely to pay off and are not more expensive, but that it has a higher initial expenditure. This again comes back to how the politics need to consider prioritizing this investment thus it becomes less expensive in the long run. It thus becomes important with communication; for example, decisions about how a municipality should work must be communicated to the entire organization, and because there are several instances through which this must pass, clarity is required to avoid interpretations and misunderstandings.

As it describes both theoretically and empirically how these should determine and guide the municipality's work, politics will be an important key player in the work of switching to an environmentally sustainable procurement. However, one can question how much responsibility local politics has compared to national politics. The size of the municipality has reflected the status of municipalities in environmental work, with the larger municipalities assuming greater responsibility and driving change significantly more than the smaller ones; one may wonder if this reflects a lack of governance at the national level. After all, it is the entire country and the rest of the world that needs to work for better environmental sustainability; therefore, all municipalities should work toward the same goal, rather than the described current situation in which some municipalities have only just begun their work. However, there are clear opportunities for collaboration between small and large municipalities, according to LFM30 (n.d.), a local roadmap that Malmö municipality has agreed to follow. It aims to have a construction industry with net-zero emissions by 2030, and there are clearly defined working methods and requirements that must be followed and have proven to be effective. As previously discussed, a smaller municipality has fewer resources and thus finds it more difficult to achieve roadmaps like this, but given that the entire country must work toward the same goal, shouldn't there be opportunities for municipalities to share information and collaborate?

6.3 Environmental Regulations' Impact on Emissions

The issue of developing the appropriate requirements that genuinely cut emissions has been identified as a big prominent challenge based on the interviews. Finding levels of environmental measures to reduce emissions is difficult owing to a lack of data. As a result, several municipalities define their current activities as cantered on data collection. The initiatives that municipalities have chosen to focus on differ from case to case; one municipality, for example, invests in solar cells, another in mass handling, and yet another in construction machines. The most noticeable common factor is the environmental certification system, “Miljöbyggnad”, as well as logbooks such as “SundaHus” or “Byggvarubedömningen” for logging construction materials. Some municipalities have already begun to declare carbon dioxide emissions, while others have only recently begun to do so due to legal mandates. The issue arises when the period for data collection appears to be too long to meet set requirements anchored to local or national roadmaps. The challenge for municipalities will be to respond to what is sustainable and what level of measures are required to reduce climate impact. The issue of municipalities not having complete control over how they build today is reflected when new and strict requirements are to be set.

The difficulty of establishing requirements anchored to guideline values that in many cases do not exist places pressure on municipalities to monitor and evaluate projects. Today, the part of follow up on the work is itself a problem, it is simply too time-consuming and resource-intensive to follow up on the project. It should be noted, however, that municipalities with functioning follow-up systems are at the forefront of the development of guideline values and improvement measures linked to environmental requirements in procurement. Municipalities in Sweden, particularly the smaller ones, are finding it difficult to set a guideline value for the emissions they want to achieve, making it difficult to set specific requirements for measures. There is a clear picture of which direction to go, but the end goal is somewhat ambiguous. Despite targets for net-zero emissions as early as 2030, there is some doubt that this is achievable.

The problem of data collection and different goals between municipalities can be attributed to a lack of communication between municipalities. To meet future challenges, more communication forums should be established, which should result in increased knowledge in each municipality. In a few isolated cases, there has been an awareness of the work of larger municipalities, where smaller municipalities, for example, draw inspiration from LFM30. One could see this is a critical issue for municipalities to address to expedite their work. Entrepreneurs are a potential link between different municipalities and knowledge transfer across borders, as they could capture and gain a broader understanding of how it works in different municipalities. Working for larger municipalities with more resources, gaining expertise, and then transferring that knowledge to smaller municipalities.

6.4 The Entrepreneur's Capability of Persuasion

By addressing the information gained, one could believe that more forms of procurement where active environmental work is rewarded are required to create an initiative with the contractor. According to empirical evidence, there are two main methods of procuring for the environment: The first is a construction contract or turnkey contract in which a minimum requirement is set, implying that all contractors must meet the bare minimum and where the competition competes solely on price. The second is a procurement with increased collaboration or partnering in which a points system for environmental work is established, resulting in an incentive for the contractor. There is no doubt that a turnkey contract is always preferable to capture the contractor's knowledge of environmental work; however, the trend also shows a customer appreciation for taking care of the contractor's competence as smaller municipalities lack their own resources and rely on the contractor to a greater extent, which is confirmed by Fossilfritt Sverige, (2018). Early in the project, a forum for knowledge exchange is established through partnering, which improves the conditions for more extensive environmental work (Larssen, P. F., Engebø, A., Lædre, O., & Klakegg, O. J., 2019).

Based on the empirical assessment, the contractor can also serve as a tool for knowledge transfer between larger municipalities with more stringent environmental requirements than small municipalities. The contractor can act as a bridge and additional resource to ensure continuous environmental work in more municipalities by gathering knowledge in municipalities with extensive roadmaps. It should be noted, however, that municipalities set the precondition for the contractor's ability to influence through the procurement process. According to the interviews, there is a need to increase the proportion of partner procurements

to deal with more extensive environmental work, as many municipalities do not have enough resources to ensure that the right environmental requirements are set. The empirical data has also raised concerns about the environmental requirements in construction contracts, citing the increased pressure on municipalities to set environmental standards. If there is insufficient knowledge to establish anchored environmental requirements, the project risks missing important components of national roadmaps. It should be noted, however, that there are municipalities that have made significant progress in working with environmental requirements, producing comprehensive roadmaps and control documents for how construction projects are to be carried out regarding the environment. This analysis provides a broad picture of how the empire has evolved in general, and because smaller municipalities outnumber large ones, attention should be paid to how smaller municipalities obtain the necessary tools to deal with change. As a result, we believe that, through a partnering procurement, the contractor can be a part of the solution for transferring knowledge from larger municipalities to smaller municipalities. A contractor in the procurement phase, for example, can demonstrate good initiatives and report on a working method that has emerged through collaboration with a larger municipality where good knowledge and extensive resources placed demands on the contractor in previous procurements. As a result, the contractor can serve as a tool for the municipality to improve its own competence for future sustainable procurements by evaluating what worked well and what did not.

7 Conclusion

The purpose of this thesis was to explore municipalities' abilities to support environmentally sustainable procurement. There have been seen trends as well as obstacles in ensuring environmentally sustainable procurement, the most notable trends, have revolved around government, resources, and collaboration.

Different municipalities' approaches to climate and environmental plans have varied. There are both good examples of local initiatives in which the municipality is at the forefront and as well cases in which the municipality is forced to ignore environmentally important aspects due to governance, resource, and collaboration constraints. There is frequently a desire to contribute to national roadmaps toward net-zero emissions by 2045, but not the policy support required to set environmentally sustainable procurement requirements. This causes a problem; thus, it is difficult to work toward the same goal when different methods are used depending on which municipality you are in. Different conditions are also provided in the various municipalities to ensure environmentally sustainable procurement due to varying political governance. Municipalities are being put to the test and being forced to reinvent the wheel to meet the impending environmental change.

Because empirical evidence has revealed clear differences in municipal size, and thus resource availability, the results show that larger municipalities could reinvent the wheel. Greater resource availability puts larger municipalities in a better position to deal with this, putting smaller municipalities in a difficult position to change at the same rate. However, the lack of follow-up is still a problem, even in the larger municipalities. Due to lack of data in terms of actual numbers which are lacking but will most likely be increased due to the level of presence in the near future and to laws and increased awareness. To meet today's national roadmaps, clear national governance is required, with municipalities having access to a nationwide platform for resource sharing and feedback. As described in the discussion, it is also critical that local policies within the municipality provides clear directives on how one should work within that municipality to achieve the goals set, not only locally but also nationally.

Furthermore, we have seen clear indications that the economic aspect is at odds with the scope of environmental requirements specified in procurements. To deal with the observed change, it is necessary to criticize and further treat the subject, as empirical evidence shows that the economic aspect takes a dominant position in the room, displacing the sustainability aspects. One should also consider how the economic system is a self-created system that determines how much different items cost. Nature and the environment, on the other hand, are not created by humans and thus require our attention.

8 Future Research

Our findings revealed trends that may pose a challenge in dealing with future changes. We developed proposals for future research, thus our work has primarily focused on identifying problems rather than proposing solutions. The following explains why we believe more research in governance, resources, and collaboration is required.

We discovered a flaw in the governance and guidelines for municipalities. To pinpoint how this can be improved, more research on how the guidelines can be specified to make it easier for municipalities to set the right requirements is required. Tools are also required to allow municipalities to ensure that the requirements set are consistent with what other municipalities set. According to the thesis, it has emerged that the work is done by people who are relatively far down the organizational tree. This work was delegated from on high, most commonly from politics. This means that people lower in the organization only carry out decisions that are dictated from on high. We believe that future research should focus on how governance can be concretized and made more direct. This is because it has been discovered within municipal organizations that there are extremely hazy opportunities to make their own decisions and changes further down the organizational chains.

How will smaller municipalities ensure that the environmental standards established are anchored to national roadmaps and other municipalities? We believe that more research is needed on how smaller municipalities obtain tools and a reasonable opportunity to carry out work that larger municipalities with sufficient resources have done.

We have seen how different municipalities have as a starting point to manage the conversion alone for environmentally sustainable procurement, or alternatively, not prioritize the conversion because they lack the necessary resources. In contrast, we believe that collaborations have tremendous potential. Given that we all work toward a common goal and have different availability of resources to justify this change, we believe that future research should influence what a form of cooperation can look like. As described in today's report, there is a great need for data collection, and we believe that future research should focus on how this can be accomplished through collaboration. There are numerous opportunities to develop a common platform for all municipalities to share the knowledge they have gathered.

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10 Appendix

10.1 Interview questions

Background / Introduction

- What is your title / task at your workplace?
- Have you studied? If so, what and when?
- How long have you been working in your field?
- How long have you been working on assignments that include procurement?

Valuation of sustainability

- How would you describe the concept of environmental sustainability?
- What / who controls what environmental sustainability requirements you set in the procurements?
- Do you have a climate and environmental plan in the municipality?
    - If yes - describe the content briefly.
    - If not - which documents govern your environmental requirements?
- How important do you think environmental sustainability is in a procurement process compared to other valuation aspects (eg organization, quality and finances).

The procurement process

- What environmental requirements are usually set in a procurement? (What appears in the tender documents).
- How well do you think your environmental requirements are specified in the tender documents?
- What are your intentions with your environmental requirements in the procurements?
- What challenges or obstacles do you see in meeting your environmental requirements?
- In addition to the requirements, do you have any evaluation criteria that you reward further?
- What incentives do you see for building environmentally sustainable buildings? Which in that case?
    - If not, why not?
- How is the environmental criterion weighted in relation to the remaining assessment criteria? (point)
- Do you think that there is room for sufficiently comprehensive environmental requirements in relation to the economy? What does the environment cost?
- Do you feel that there are enough resources available to ensure that anchored and relevant requirements are set?
    - In what way do you follow up that your environmental requirements are met?
- Do you differentiate between environmental requirements depending on the form of contract and the form of procurement?

Forecast

- How do you plan to develop your environmental requirements in the next few years?
- Do you think that the environmental requirements will be allowed to cost more in the future?
- Fossil-free Sweden has developed a roadmap for net-zero emissions in 2045, what do you think it will look like in 2045?

Extra questions

- Which parts of our interview have been extra interesting and important?
- What should we take with us and put extra focus on in our work?

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