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AALBORG UNIVERSITY
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PREFACE

This PhD project was initiated in January 2021 and was finished at the end of August 2024 as part of the partial fulfillment of the PhD degree. This research project is an Industrial PhD collaboration with one of Denmark's largest contractors, Enemærke & Petersen (E&P), and Aalborg University at the Department of the Built Environment. The last three years have been an exciting and insightful journey during which I have developed both professionally and personally. My technical background with a master's in civil engineering equipped me to understand the professional content of construction projects. However, this project challenged me to comprehend a field that was previously unknown to me, contractors' tendering processes, which I had not previously encountered in my career. To illuminate these processes, I delved into social science theory, which has been very educational, interesting, and challenging.

First and foremost, I would like to thank the Innovation Fund Denmark, Knud Højgaard's Foundation, and Enemærke & Petersen A/S for funding the PhD project. In particular, I would like to express my gratitude to the Department of 'Clients, Markets, and Business Development' at Enemærke & Petersen for welcoming me and allowing me to be present as an observer and interviewer at, e.g., tender meetings. Next, I would like to thank the research group 'Technology, Organization, and Circular Construction' at Aalborg University for academic sparring in the last year leading up to the completion of the project.

There are several individuals who have played a significant role in initiating and guiding the process of my project. I would like to begin by thanking Kim Haugbølle for contributing to the realization of the project through preparing the application for the Innovation Fund Denmark and for his guidance during the project's initiation. I would like to thank both Jacob Norvig Larsen and Daniel Pihl, who joined as supervisors in the project's final year. A special thanks to the project's main supervisor, Jacob Norvig Larsen for his academic guidance throughout the final year of the project. I would also especially like to thank Daniel Pihl, who provided significant academic assistance as a temporary co-supervisor in the project's final year. Furthermore, I would like to express my gratitude to my company supervisors, Anders Sørensen and Troels Aggersbo, for being curious, engaged, and, not least, supportive throughout the three years of the project. We had numerous inspiring conversations about sustainability initiatives and tender practices, which helped shape the project and provided me with many valuable insights.

I would also like to express my sincere thanks to Susse Georg, Professor Emeritus at the Department of Sustainability and Planning at Aalborg University,

for thoroughly reviewing my thesis and providing detailed feedback on my work, which has been invaluable. Many thanks to Tina Gustafsson, Professor at the Division of Construction and Facilities Management, for hosting me in Stockholm at the Royal Institute of Technology (KTH) in the autumn of 2022, where we had insightful discussions about the PhD process and article writing.

I also appreciated being a part of the 'Circular Built Environment' network, which contributed with inspiring content, study trips, and knowledge sharing across the participants' PhD projects.

Finally, I thank my family and friends, whose support has been indispensable throughout the project, including a special thanks to my husband, Gustaf, for his positive nature and continuous encouragement.

ENGLISH SUMMARY

This thesis explores how Enemærke & Petersen's (E&P) tender practices are being challenged by the increasing preference among clients to procure construction projects through tender with negotiation, where contracts are awarded based on the criterion 'best ratio between price and quality'. As this contract type becomes more prevalent, emphasis shifts from simply differentiating bidders by price to highlighting other values. In this context, the demand for sustainability services and solutions has notably increased among Danish clients. This shift presents new challenges for contractors, who must now incorporate both quantitative calculations and qualitative assessments into their tender submissions, referred to as 'qualculative' practices. The thesis aims to understand how this transition towards qualculative practices affects E&P's tendering processes and their ability to secure projects in an increasingly complex market.

To address this issue, this thesis employs the theoretical approach of 'valuation' from the perspective of actor-network theory (ANT). This approach allows for the study of the social processes involved in the creation and evaluation of value in tenders. Through three sub-analyses, the study provides insight into: 1) how Danish clients 'frame' sustainability requirements in procurement processes, 2) how sustainability values are co-created through tender documents as references and value packages, and 3) how these new competitive parameters impact E&P's organizational capabilities and considerations regarding market opportunities. The main conclusions highlight that clients tend to economize and instrumentalize sustainability requirements in their procurement processes, which often leads to a reliance on familiar market solutions. The thesis also demonstrates that the values attributed to sustainability solutions can be understood as value frameworks that are co-created between clients and tender teams as they work towards establishing a shared basis for action. Furthermore, the thesis emphasizes that these new qualculative practices pose challenges to the contractor's ability to effectively organize and coordinate knowledge. Simultaneously, they also present challenges to the organizational adjustments and investments needed to balance and sustain E&P's diverse market segments, where the demand for sustainability varies significantly in scope.

This thesis contributes to the research field of 'construction management research' (CMR) by offering analytical insights that specifically inform existing research on construction tendering, sustainable building, and environmental decision-making.

DANSK RESUME

I denne afhandling undersøges det, hvordan tilbudspraksisser hos Enemærke & Petersen (E&P) udfordres i takt med bygherrers stigende tilslutning til at indkøbe byggeprojekter under kontrakttypen 'udbud med forhandling', hvor kontrakter tildeles efter tildelingskriteriet 'bedste forhold mellem pris og kvalitet'. Med denne kontrakttypes udbredelse bringes andre værdier i fokus end differentiering af tilbudsgivere på baggrund af tilbudspriser, hvor særligt efterspørgslen af bæredygtighedsservices og løsninger har vundet frem blandt danske bygherrer. Dette skaber nye udfordringer for entreprenører, som nu skal integrere både beregningsmæssige kapabiliteter og kvalitative vurderinger i deres tilbudsafgivning, såkaldte 'kvalkulative' praksisser. Afhandlingens formål er at forstå, hvordan dette skift mod kvalkulative praksisser påvirker E&P's tilbudsprocesser og deres evne til at vinde projekter i et mere komplekst marked.

For at belyse denne problemstilling, så anvender denne afhandling den teoretisk tilgang, 'valuation', fra et aktør-netværksteoretisk (ANT) perspektiv. Denne tilgang gør det muligt at studere de sociale processer, som udspiller sig omkring skabelse og vurdering af værdi i tilbud. Gennem tre delanalyser opnås indsigt i: 1) hvordan danske bygherrer 'framer' bæredygtighedskrav i indkøbsprocesser, 2) hvordan bæredygtighedsværdier samskabes gennem tilbudsdokumenter som referencer og værdipakker, og 3) hvordan disse nye konkurrenceparametre påvirker E&P's organisatoriske kapabiliteter og overvejelser om markedsmuligheder. De vigtigste konklusioner fremhæver, at bygherrer har en tendens til at økonomisere og instrumentalisere bæredygtighedskrav i deres indkøbsprocesser, hvilket ofte fører til en afhængighed af velkendte markedsløsninger. Afhandlingen viser også, at de værdier, der tilskrives bæredygtighedsløsninger, kan forstås som værdirammer, der samskabes mellem bygherrer og tilbudsteams, når de forsøger at etablere et fælles grundlag for handling. Endelig påpeger afhandlingen, at de nye kvalkulative praksisser udfordrer entreprenørens organisering og koordinering af viden, samtidig med at organisatoriske tilpasninger og investeringer skal kunne balancere og opretholde E&P's forskellige markedssegmenter, hvor efterspørgslen efter bæredygtighed varierer betydeligt i omfang.

Denne afhandling bidrager til forskningsfeltet 'construction management research' (CMR), hvor analytiske indsigter særligt understøtter den eksisterende forskning inden for tilbudsafgivning i byggeriet, bæredygtigt byggeri, og miljømæssig beslutningstagning.

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CHAPTER 1. INTRODUCTION

This industrial PhD project was initiated to examine the transformation occurring in the host company, Enemærke & Petersen's (E&P), tendering business, which had witnessed an increase in tenders with negotiation involving competition based upon the award criterion 'best ratio between price and quality'. The emergence of qualitative criteria in client procurements became evident in E&P's tendering department around five years before this research project was initiated in 2021. The tender employees encountered a new set of requirements that diverged from their previous experiences. In this connection, E&P's former head of tendering and current CEO stated the following regarding these changes:

> "*Before, we only had calculation staff for calculating offers. Now we have to deliver so much more […] we have fewer who sit and calculate, but more who sit and write, make diagrams, processes, construction site plans, schedules, logistics plans, etc. for the tenders*".

My inquiry initiates from this quote to address the shift in E&P's tender business towards not only encompassing calculative practices but also competing on qualitative deliveries as the new norm in tendering. This development introduces a new competitive situation for the contractor company. Specifically, the demand for environmental sustainability services has gained a significant weight within the qualitative criteria that E&P must now meet. This influences E&P's marketing of sustainability services, both during the prequalification phase, where bidders are shortlisted to participate in the tender project, and throughout the tendering process, which ultimately decides the awarding of the project to the selected bidder. Consequently, winning tenders is no longer determined solely by the lowest price. Instead, tender submissions necessitate a broader range of competencies, where the response to qualitative criteria must be addressed through qualitative descriptions and visualizations (e.g., diagrams, site plans, time schedules, etc.). Thus, I am curious to understand how this new situation in tendering influences and challenges the practices of E&P.

In this chapter, I will first provide an overview of the background that has led to the increased demand for sustainability services. Subsequently, I will begin my inquiry by exploring the challenges associated with the procurement of sustainability services in construction and the complexities this introduces in managing these services as qualitative criteria, as well as the implications for contractor companies' tendering opportunities. Drawing on the identification of new areas of inquiry, I will present the theoretical framework for this study, followed by the research questions that will guide my investigations.

The increased awareness of sustainable construction

The construction sector develops alongside the increasing general awareness of sustainable development. This awareness is particularly based on the understanding of sustainable development as defined in the Brundtland Report, which emphasizes the necessity of meeting today's needs without compromising the needs of future generations (Brundtland, 1987). The reasons for the increased awareness are also linked to the construction industry's significant negative environmental impacts. Consequently, the construction industry plays a crucial role in reducing greenhouse gases, as buildings are responsible for 40% of Denmark's overall energy consumption and account for 23% of our CO_2 emissions (The Climate Partnership for Construction, 2020). Furthermore, construction and demolition waste accounts for approximately 42% of all generated waste in Denmark (Ministry of Environment of Denmark, 2023). At the same time, the prevailing trend of increased demand for new construction projects, particularly driven by increased migration to larger Danish cities, is resulting in a greater need for building materials and a corresponding rise in waste generation (FRI, 2018). This development imposes additional pressure on the existing resources, thereby underscoring the need for solutions focusing on reusing the existing building stock. Consequently, the market share of sustainability-related demands within the Danish construction industry has been noticeably increasing.

At the nationwide level, the Danish Building Regulations has launched a voluntary sustainability class, focusing on themes such as life cycle assessment (LCA), resource consumption at construction sites, life cycle costing analysis (LCC), and improving the indoor climate (Ministry of the Interior and Housing, 2021). Furthermore, the National Strategy for Sustainable Construction encompasses imposed regulations applicable from 1 January 2023, gradually reducing CO_2 thresholds for new constructions exceeding 1,000 m^2 (Ministry of the Interior and Housing, 2021). These regulations will extend to cover the majority of new construction projects that commence in mid-2025 (Altinget, 2024). Another development in the Danish building sector is the significant increase in certified sustainability projects adhering to the voluntary German standard 'Deutsche Gesellschaft für Nachhaltiges Bauen' (DGNB). The DGNB-DK scheme was implemented by the Danish Green Building Council in 2012 by incorporating and modifying the German DGNB certification system to meet the specific requirements of the Danish context. The DGNB-DK scheme is based on EU standards (CEN/TC350) and builds on national legislation such as the Danish Building Regulations (Mortensen, 2018). Since 2012, the DGNB-DK system has become recognized nationally as the most widely applied certification scheme for sustainable building in Denmark (Guldager Jensen & Birgisdottir,

2018)[1]. At the European level, the EU taxonomy was introduced to the market in 2020 as a classification system with the fulfillment of environmental sustainability objectives applicable to listed companies and financial institutions exceeding 500 employees (TEG, 2020). The first round of the EU taxonomy included six environmental goals, and companies were required to report for the first time in 2022 for the previous financial year (Danish Chamber of Commerce, 2023).

Another significant factor contributing to the increased demand for sustainability services is the revisions to the Public Procurement Act, which came into effect on January 1, 2016[2]. The revisions allowed public contracting authorities to negotiate contract terms, such as price and other criteria, after bids had been submitted (Danish Competition and Consumer Authority, 2016). In particular, tenders with negotiation have become increasingly prevalent in the procurement of larger and more complex construction projects[3], where contracts are awarded based on the 'best ratio between price and quality'. In this way, non-price criteria have gained significant attention in the tendering process, which enables the elaboration and negotiation of topics like health and safety, quality performance, experience, technical strengths, management capabilities, environmental policy, project organization, stakeholder management, etc. The shift towards tenders involving negotiation has also led to heightened demand for sustainability solutions, as strategies for sustainable construction have increasingly taken on a central role among construction actors in recent years. These services can either be included in the procurements as an individual award criterion or alongside other qualitative criteria, such as organizational structure or task execution. All these changes and developments in the sustainability agenda, along with the

[1] The latest version of the DGNB manual, "*Sustainability Certification of New Buildings and Extensive Renovations*" (Green Building Council Denmark, 2023), outlines 36 criteria across six subthemes: process, environmental, economic, social, technical, and site quality. The subthemes of environmental, economic, and social quality carry the most weight, each accounting for 22.5%. These criteria assess a building's sustainability, with each measured up to 100%. This percentage determines if the construction qualifies for silver, gold, or platinum certification, requiring scores of 50%, 65%, and 80%, respectively (Green Building Council Denmark, 2021)

[2] The revisions were part of the implementation of EU procurement directives, such as Directive 2014/24/EU on public procurement (Danish Competition and Consumer Authority, 2016)

[3] According to the Danish Competition and Consumer Authority's analysis of Danish EU tenders from 2019-2020, 54.9% of all procured construction and civil engineering projects employed the contract type 'best ratio between price and quality' (Danish Competition and Consumer Authority, 2022). Additionally, these types of tenders in the construction sector have a significantly higher average contract sum of 106.8 million DKK, compared to tenders awarded based on the lowest price, which average 58.3 million DKK (Danish Competition and Consumer Authority, 2022).

increased flexibility in procuring construction projects with the option to negotiate criteria and 'qualities' beyond price considerations, are contributing to shaping the new market that contractor companies must now navigate.

In the following subsections, I seek to explore specific areas of literature within the field of construction management research (CMR) that examine challenges related to sustainable procurement in construction, the complexities associated with qualitative criteria, efforts to address the procurement of more complex construction projects, and the challenges that new tender conditions pose for contractor companies.

The challenges of sustainable procurement

Incorporating sustainability principles in the procurement process is challenging due to the additional complexities it introduces (Ershadi et al., 2021). These complexities stem from the fact that many sustainability services lack the necessary knowledge, standards, guidelines, prior experience, and established practices. Some of the reasons for this are underscored by Sajid et al. (2024). The emphasis in this study is on how the adaptation of circular design principles is challenged by inadequate information about designing these types of buildings, lack of trust among stakeholders, and the absence of design codes and standards for using recycled materials (Sajid et al., 2024). Building upon this issue of circularity in construction, Giorgi et al., (2022) find that current technological systems are not designed for disassembly and that logistic systems for reused materials remain underdeveloped. This highlights the challenges that certain sustainability solutions, particularly in the context of circular construction, encounter due to the absence of necessary structural arrangements, such as adequate infrastructure systems and legislative frameworks. These underlying issues complicate the procurement of these services, especially when they must be translated into specific and actionable requirements.

Another assumption that challenges procuring of sustainability services is that many parameters in construction are uncertain at the time of procurement. This uncertainty makes the incorporation of criteria such as sustainability and green practices in construction procurement more complex and burdensome (Varnäs, 2008). Ruparathna and Hewage (2015) underscore further uncertainties, including inadequate project funding and deficiencies in policies, regulations, and incentives, which pose challenges to the implementation of sustainable procurement in the construction sector. These studies suggest that the procurement of sustainability solutions adds layers of complexity to the procurement process, not only by complicating the procurement itself but also by generating project uncertainties for building clients. These uncertainties are highlighted in relation to project budgets and the challenge of aligning these services with existing legislation. This leads to the assumption that sustainability

solutions may be associated with increased costs and difficulties in complying with established building regulations. While this may be the case in certain procurement situations, I seek to gain a deeper understanding of the challenges these sustainability services present when they are included as part of the assessment criteria in tenders. Thus, my inquiry seeks to uncover why qualitative criteria involving sustainability services and solutions are particularly challenging to manage during the tendering process.

The challenges of qualitative criteria

When sustainability solutions are incorporated into qualitative criteria, they challenge the balance between what can be quantified and what must be assessed qualitatively. Gottlieb et al. (2024) highlight how calculations and quantifications are often favored by decision-makers for their ability to provide a structured and systematic approach to decision-making, which can potentially reduce subjective biases and personal preferences. It is precisely this dependence on subjective judgments and assessments regarding sustainability solutions that makes the adoption of qualitative practices especially challenging. In comparison, Kreiner (2012) highlights the challenges of assessing the qualities of performances, particularly 'design proposals', which complicate the establishment of clear and measurable criteria for comparison due to their reliance on personal judgment. Although my focus is on the qualitative criteria for sustainability solutions rather than design proposals, I still argue that this issue is relevant because it relates to the challenges involved in evaluating qualitative performance. Consequently, we also observe how CO_2 emissions, life cycle costs, and sustainability certification schemes are gaining traction due to their ability to be quantified in construction. In this connection, Varnäs et al. (2009) underscore that one reason for the limited application of environmental procurement preferences is the difficulty in formulating criteria that are specific, measurable, and verifiable (ibid, p.1218). However, when environmental evaluation criteria are applied, they often focus on the environmental expertise of the project organization and their approach to managing environmental aspects (ibid, p.1219). This suggests an assumption that qualitative criteria related to sustainability solutions may benefit from focusing on the project organization's experience and approaches to managing these services. In addition, Caldwell et al. (2009) find that procuring complex environmental practices requires more focus on project organization, communication, and stakeholder management than on formal specifications. This reflects an underlying assumption that qualitative criteria should increasingly emphasize how bidders approach the organization of sustainability solutions, rather than merely adhering to formal instructions and specifications. Therefore, this assumption offers insights that suggest sustainability solutions may be more reliant on organizational competencies than on technical capabilities.

Other studies are concerned with the level of detail when formulating qualitative criteria related to sustainability performance. Thus, to develop competitive criteria that accommodate circular initiatives in procurement, Leising et al. (2018) emphasize that these criteria should focus on cooperation goals and trust-building rather than detailed specifications. Similarly, Sezer (2017) advocates moving away from detailed requirements by suggesting that improved waste management in building projects can be achieved if the client's demands are clear but not too specific. Both studies suggest that establishing qualitative criteria for sustainability practices requires a degree of flexibility that enables bidders to actively engage in the co-development of these solutions. This approach seeks to address the complexities associated with sustainability solutions, wherein the client not only requests the delivery of specific services through procurement but also expects bidders to qualify these solutions. Thus, this suggests an assumption that clients might not be solely responsible for influencing how sustainability solutions should be approached when setting the qualitative criteria. As construction tasks become more complex, I seek to understand how these challenges are addressed through contractor selection and contractual arrangements. This issue will be explored in the following subsection.

Managing complexities in construction tasks through contractor selection and contract forms

There are studies that specifically examine the advantages of selecting contractors based on non-price criteria. Doloi (2009) argues that traditional criteria, such as prioritizing the lowest bid for contractor selection, are misaligned with the increased complexity of construction projects. Instead, greater emphasis should be placed on evaluating technical strengths and management capabilities. Similarly, Goel (2018) emphasizes that contractors should be prequalified using criteria beyond the commonly used ones, such as financial capability and past performance, by giving greater importance to environmental policies and bid capacity. Therefore, there is a recognition that contractors' performance must be assessed using different criteria than those previously emphasized (e.g., the ability to submit low-cost bids), as construction projects are becoming more challenging. This complexity arises from factors such as more advanced procurement systems (Doloi, 2009) and the continuous addition of deliverables during construction, such as regulatory compliance, sustainability documentation, and digital models/drawings. Managing more complex construction tasks also means that the role of the contractor has become more intricate. As a result, contractors are now required to adapt to changes that were not previously within their scope of practice, including those driven by digital advancements and more stringent sustainability requirements, to remain competitive in the tendering process.

Other studies emphasize the need to reconsider the conventional project-based procurement approach to manage the complexities associated with sustainable performance. Thus, De Valence (2010) finds that traditional 'design-bid-build' contract forms do not encourage the development of new knowledge or technologies during tendering. In this regard, Larsson et al. (2022) suggest that integrating long-term maintenance responsibilities into the procurement process can incentivize contractors to engage in early exploration of sustainable solutions. Similarly, Akintoye & Main (2007) examine how collaborative approaches such as partnering and public-private partnerships benefit large contractors by enabling the distribution of shared risk, access to innovation, and achieving increased resource efficiency. These studies highlight the potential of adopting alternative contract forms to tackle the complexities of sustainability services by reorganizing the traditional roles and tasks of project participants. Thus, there is an assumption that these procurement processes allow for a prioritization of establishing long-term project objectives and fostering a more integrated organizational structure among project participants. However, the forming of alternative collaborative constellations such as partnerships is not a solution itself for resolving complex problems in construction but rather serves as an enabler (Frederiksen, 2021). As previously mentioned, the increased use of tenders with negotiation also reflects an effort to manage complex tasks in construction by enabling improved flexibility for clients to assess and negotiate on qualitative criteria presented in bidders' proposals. Tenders that incorporate negotiations and place greater emphasis on qualitative criteria thus function as an 'enabler' for addressing more complex issues early in the process prior to contract formation. Nevertheless, the potential for fully addressing complex task fulfillment through these negotiations is not given. However, as qualitative criteria become increasingly prioritized in procurements, it places bidders, including contractor companies, in new competitive situations where they must find ways to market their services beyond pricing. I am therefore interested in examining how these changes present challenges to contractors' tender practices.

The challenges of new terms in tendering for contractors

I will begin by exploring the factors that drive contractors' decision-making processes when determining whether to bid on tender projects. For example, Hartono and Yap (2011) identify the primary determinants for bidding as 'the rate of returns', 'revenues', 'project backlogs', and the strategic importance of the project. Notably, the strategic importance to the organization can result in aggressive bidding, which potentially leads to lower bid mark-ups (ibid, p. 590). Olatunji et al., (2022) similarly emphasize that contractors' bidding decisions are particularly influenced by the additional value that the tender project may contribute to the organization's reputation, strategic objectives, and competitive advantage. This, in turn, motivates contractors to pursue opportunities to acquire new skills that support their strategic objectives (ibid, p. 2431). Although

potential earnings are highly considered in bid decisions (Hartono & Yap, 2011; Olatunji et al., 2022), the opportunities to improve strategic positioning also influence bid decisions and the practices contractors consider adopting. This is particularly relevant within the context of the sustainability agenda. As sustainability requirements become more integrated into qualitative criteria, they present contractors with new strategic opportunities in their bid decisions.

However, contractors' tender preparation does not come without its challenges. During tender meetings, Laryea (2013) specifically emphasizes that contractors' tender preparations are shaped by discussions on project risks, client circumstances, project features, the scope of work, completion deadlines, bid pricing strategy, contract terms and conditions, winning strategy, and competitors. The requirement for contractors to address all these factors poses challenges to the deliverables and the necessary knowledge for preparing tender submissions. One of these challenges is capturing project histories that tender teams can utilize in future tender submissions (Shokri-Ghasabeh & Chileshe, 2014). However, gaining this knowledge is accompanied by challenges such as inadequate employee time and constrained resources within contractor companies. Specifically, coordinating project debriefings is difficult due to employees' involvement in multiple projects and the time pressures encountered as projects near completion, which often result in the failure to document key learnings (ibid, p.113). Another challenge when contractors must respond to qualitative criteria is understanding client interests and market trends thoroughly. Thus, Urquhart and Whyte (2018) underscore how contractors must understand tendering as a constantly shifting target influenced by changes in client demands, market conditions, and corporate requirements. As contractors are not only faced with finding the most cost-efficient methods to meet client requirements in tenders (Loosemore & Richard, 2015), the inclusion of qualitative criteria further complicates established contractor practices. Thus, it introduces new demands on contractors' deliverables such as detailing relevant past project experience and responding to qualitative criteria that identify the client's most important agendas to differentiate from competitors. As emphasized earlier, I am particularly interested in examining the qualitative criteria related to sustainability requirements Thus, I will now shift my attention to how sustainability requirements challenge contractors' practices.

To meet clients' sustainability requirements, larger contractors must establish a common language for sustainability, based on objectives and controls, to select subcontractors and suppliers committed to the sustainability agenda (Ershadi et al., 2021). This presents a challenge as large contractors must not only develop strategies to meet these requirements internally within their own organization but also depend on their chosen partners to be aligned with the established direction when passing on client demands. Thus, compliance with sustainability

requirements creates difficulties for larger contractors because they must manage a diverse range of stakeholders, including smaller craft businesses and suppliers, throughout their value chain. This situation necessitates extensive and interdisciplinary coordination and communication efforts to ensure that all parties adhere to specified sustainability requirements. Another challenge for large contractors is identified by Sezer (2015) as the lack of client demand to implement sustainability measures. This, in turn, leads to the absence of both competitive and economic incentives to pursue these initiatives (ibid, p.150). Similarly, Buser and Carlsson (2020) underscore that contractors develop energy-efficient solutions only when clients clearly express their interest, and translating these into regular practices remains challenging. Thus, the challenge arises from contractors moving from one project to another, which often results in a tendency for routines to revert to established and traditional practices (ibid, p.110). Both studies find that sustainability requirements should be driven by client demands to be realized in practice. This assumption underscores the critical issue that contractors are constrained by the requirement for client-driven demand for sustainability practices to achieve the financial incentives associated with their adoption.

While studies emphasize the benefits for contractors to implement sustainability strategies for competitive advantage (e.g., Tan et al., 2011; Sanboskani et al. 2022), the demands of sustainability pose challenges to contractors' existing structures and practices. Thus, contractors' performance has historically been evaluated based on their ability to deliver construction projects optimized from a time and cost perspective. Furthermore, Orstavik et al. (2015) state that production activities generally follow a rather 'stable' approach, where changing existing practices is not an integrated part of most building projects' objectives. Therefore, the sustainability agenda calls for new approaches to evaluating construction performance and incentivizing competition that prioritizes values different from those traditionally emphasized. This situation opens up new areas of inquiry into how competition based on qualitative criteria is influencing contractors' tender practices and more specifically, the preparation of tender submissions. This also entails studying client demands related to sustainability requirements that contribute to shaping this new competitive situation for contractors. In the next subsection, I will present the theoretical and analytical bases that will guide my study of these new areas of inquiry.

Studying tender practices through the theoretical lens of valuation

To shed light on the challenges that qualitative criteria pose to tender practices, this thesis draws on the theoretical lens of valuation. I argue that this perspective is particularly appropriate, as tender processes involve a series of compromises that both clients and contractors must navigate during procurement and tender submissions. These compromises entail prioritizing and making decisions about

which interests, desires, and options should take precedence over others, thereby shaping both the procurement criteria and the content of tender submissions. Consequently, a variety of social negotiations unfold, which I argue are further complicated by the competitive situation for contractors to consider a broader range of tasks during tender submissions beyond merely striving to submit the lowest bid price. Thus, it is essential to study these social processes that establish, evaluate, negotiate, provoke, maintain, construct, or challenge the value of 'something' (Doganova et al., 2014), and specifically in this case, 'environmental sustainability requirements'. To fully understand these social processes of value, I also argue for the necessity of drawing on the notion of framing (Callon, 1998a). Framing refers to the process of creating a defined context by determining and reaching an agreement on what should be included and excluded, while also outlining how the participating elements, both human and non-human, are expected to interact within the established boundaries. I argue that the processes of framing and valuation are mutually dependent. Thus, the framing of e.g., sustainability requirements determine which inputs are considered and prioritized that form the basis for ordering practices related to producing value and/or assessing value (Kjellberg & Mallard, 2013; Vatin, 2013).

Furthermore, my approach to the framework of valuation is rooted in actor-network theory (ANT), which means that my perspective on valuation is informed by an ANT-based understanding of what this entails. Drawing upon actor-network theory, I argue that the tender documents applied by tender employees are not just insignificant representations, but they are part of doing things as 'devices' (Latour, 1987). From the perspective of Actor-Network Theory (ANT), devices are considered performative, which means that they play an active role in constructing the reality they represent (Callon, 2007). I argue that these 'devices', or non-human actors, are essential to the messy knowledge production involved in preparing tender submissions. Thus, the preparation would not be possible without the participation of these 'devices'. This entails tools for performing calculations, procurement criteria to guide responses to sustainability solutions, images from completed projects to showcase past performance, communication media (such as email, Teams, etc.), and many other entities that contribute to the generation of specialized knowledge.

Historically, E&P's tender employees have been used to secure projects by offering the lowest bid price as a calculative practice. However, as of today, contractors are increasingly expected to address a wide range of issues in their tender submissions such as collaborative relationships, organizational structure, sustainability initiatives, etc. This necessitates skills and attention also to the qualitative aspects of the proposals. Therefore, the concept of 'qualculation' (e.g., Callon & Law, 2005) is particularly relevant to these challenges faced by contractors. The concept of 'qualculation' redefines traditional quantitative

calculation by incorporating qualitative elements such as judgment and evaluation (Callon & Law, 2005; Callon & Muniesa, 2005). Drawing on the concept of 'qualculation' helps illuminate the multifaceted nature of tender practices that involve qualitative judgments when addressing non-price criteria (such as environmental sustainability requirements) and quantitative calculation when determining bid pricing. However, these two approaches are not mutually exclusive, as both involve varying degrees of calculation and judgment. For instance, qualitative judgment is often used to inform bid price calculations, and similarly, qualitative assessment in responding to non-price criteria relies on quantitative data to support persuasive arguments, such as the economic savings from proposed solutions.

I argue that the theoretical lens of valuation, combined with the vocabulary associated with adopting an actor-network perspective, sheds light on the social negotiations of value that occur during tender activities. This approach also involves examining how the participating actors, both human and non-human (e.g., tender documents, calculation tools, standards, regulations, etc.), collaboratively shape the processes underlying contractors' tender practices. The next section will therefore present my overarching research objective along with my research questions, which are informed by this theoretical and analytical approach.

1.1. RESEARCH QUESTIONS

As earlier addressed, the construction industry is known for its significant negative environmental impacts, which stresses the importance of gaining a greater understanding of environmental sustainability requirements in tendering from a contractor perspective. Focusing on environmental sustainability initiatives in the early stages of tendering has considerable potential to create more value in both the public and private construction sectors. The previous subsections also highlighted the potential of selecting contractors based on assessment criteria other than pricing. Although tenders based on the lowest price have historically dominated the tender practices at Enemærke & Petersen (E&P), the incorporation of qualitative assessment criteria in procurement is increasingly becoming the norm. Furthermore, environmental sustainability requirements are gradually playing a role in determining E&P's possibility of getting selected and awarded as part of qualitative assessment criteria for tasks within the growing market segment of sustainable construction. However, there is a need to understand why qualculative practices in tendering, especially those related to environmental sustainability requirements, are so challenging to manage in practice from a contractor's perspective. This overall objective of gaining deeper insight into these challenges is pursued by studying:

"How does the shift towards qualculative practices involving environmental sustainability requirements challenge and influence the tender processes of a building contractor company?"

To fully cover the breadth of the above research objective, the following research questions are addressed:

1. *What characterizes the market for environmental sustainability in tendering and the different ways that building clients frame sustainability requirements during procurement?*
2. *How are environmental sustainability requirements co-created in the tender documents (also referred to as 'devices') of a building contractor?*
3. *Which organizational challenges and considerations do environmental sustainability requirements present for employees involved in the tendering processes of a building contractor?*

The first research question adopts a client perspective to study the tendencies in procurement within the sustainability market of the Danish construction industry. In this way, the initial analysis provides a contextual pre-understanding that informs the study of the next two research questions. The second and third research questions take on a micro-perspective by examining the tender practices within the host company of E&P. More specifically, the second research question seeks to understand how environmental sustainability requirements are co-created by analyzing specific empirical data related to work practices in and around tender documents. This also includes case examples of references and value packages from E&P's tender business. The third and final research question addresses the implications of environmental sustainability requirements in terms of organizational challenges and considerations for the employees involved in the tendering processes at the host company of E&P. The overall structure of my thesis and additional details regarding the individual analytical chapters are addressed in the final subsection below.

Structure of the thesis

This thesis is structured into eight chapters following the monograph format, and I will below provide a brief description of the content for each chapter.

Chapter 1. Introduction

In this chapter, I have presented the PhD project and the transformation that E&P is facing in their tender business, where sustainability services are increasingly in demand. I also highlight the context of both voluntary initiatives and mandatory sustainability requirements that influence the Danish construction industry. Additionally, I address the specific problem I aim to explore further by critically problematizing the field of construction management

research. This also provides an opportunity to shed light on the theoretical lenses of the study, followed by the research objective and research questions that I will pursue in this thesis.

Chapter 2. Theory
In the second chapter, I will present the theoretical perspective of valuation that informs my vocabulary and analytical approach. Additionally, I will highlight the elements of the theory that I find most relevant for studying my research objective. Furthermore, the chapter will reflect on how this theoretical framework is applied in my research work.

Chapter 3. Research Design
In the third chapter, I will present my research design, beginning with addressing the research paradigm guiding this study, followed by my methodological choices for the three analyses, and my role as an industrial PhD student. Furthermore, I present the empirical data that has informed my study and how I have worked with these data sources, including reflections on their limitations.

Chapter 4. The Market for Sustainability
In the fourth chapter, I begin the first sub-analysis, which aims to address the first research question. This analysis investigates how clients frame sustainability requirements in procurements of building investments, thereby illuminating the priorities, decisions, and omissions that define these processes.

Chapter 5. Valuation Devices in Tendering
The fifth chapter shifts the focus to examining the practices of contractors, with attention to addressing the second research question. This analysis explores two essential tender documents or 'devices' employed to meet qualitative criteria in E&P: 'references' and 'value packages'. Each of these devices is analyzed separately, with a focus on their application within E&P's work practices and through selected case examples. Additionally, the analysis of value packages incorporates the client's perspective.

Chapter 6. Tendering Processes at E&P
The sixth chapter draws upon the analytical insights from Chapters 4 and 5 and aims to address the third research question. This analysis considers how the increasingly complex demands in the tendering business influence E&P's evaluation of market opportunities, drive changes in organizational capabilities, and present challenges in balancing market advantages with commitment to the sustainability agenda.

Chapter 7. Discussion
The seventh chapter provides a separate discussion of the three sub-analyses,

with a focus on how the analytical issues and insights presented can be further elucidated through the theoretical framework underpinning this study. Additionally, I will examine how my findings contribute to the existing body of research and explore the practical implications that these insights hold for practitioners in the construction industry.

Chapter 8. Conclusion

In the closing chapter, I will revisit the research questions and overall research objective. Each research question, along with the overall research objective, will be addressed individually, with a summary of the main conclusions derived from my three analyses and the subsequent discussion.

CHAPTER 2. THEORY

The theory chapter consists of three main parts. First, it introduces this study's theoretical perspective on valuation, along with valuation studies that inform my research approach. The second section focuses more specifically on how theoretical sub-concepts and approaches support the analysis concerning the study of valuation practices. In the final section, I will explain my perspective on the analytical domain of valuation and the relationships between the applied concepts in my thesis work.

2.1. THE THEORETICAL PERSPECTIVE OF VALUATION

My research focuses on how environmental sustainability requirements achieve qualities when competing on qualitative criteria in tenders from a contractor's perspective. This area of study entails the clients' framing of sustainability requirements in procurements to the contractor's practices of translating and addressing the sustainability requirements. Furthermore, this study examines how these affect the host organization's capabilities and competencies. To shed light on these analytical issues, this thesis draws on the theoretical perspective of valuation. This perspective on studying tendering processes helps to highlight the interest in constructing buildings tailored to specific desires and needs. However, procurements and tender submissions cannot accommodate all considerations, which compels clients and contractors to find compromises among many different interests, desires, and solutions. As a result, both parties are 'forced' to prioritize and decide which interests, desires, and options should take precedence over others and therefore carry more weight in the procurement criteria and proposals in the tenders. To examine these prioritizations, weightings, and attributions of value, I choose to draw on valuation, as this theoretical perspective provides me with the vocabulary to discuss and address these processes. My standpoint in valuation is rooted in actor-network theory (ANT), meaning that my approach to the perspective is based on an ANT understanding of what this encompasses. The perspective of valuation allows for the examination of the context in which value is framed during the creation of procurements, tender submissions, and evaluations. This approach follows how the system of exchanging goods and services operates and, thus, how something gains its value because it is exchanged in a particular way, under specific conditions.

The field of valuation studies is rooted in the tradition of science and technology studies and has also gained attention through the lens of Actor-Network Theory (ANT) among scholars (e.g., Doganova, 2019; MacKenzie, 2006; Kjellberg &

Helgesson, 2006; Helgesson & Kjellberg, 2013). Science and Technology Studies (STS) emerged in the 1970s and 1980s as a distinct interdisciplinary field that focuses on different questions than those addressed within existing disciplines, such as linking science and technology with social structures and practices (Rohracher, 2015). Studies within STS are interested in examining the content of science and engineering, such as scientific facts, technologies, and objects, from a social analytical perspective (ibid, p. 200). Thus, science and technology studies begin from the assumption that science and technology are fundamentally social activities and, therefore, are active processes that should be studied as such (Sismondo, 2010). The field is particularly focused on investigating how scientific knowledge and technological artifacts are constructed. This also involves understanding how the material world contributes to the production of knowledge (ibid, p. 11). Theoretical directions within the field of STS include the social construction of knowledge (SCOT) (e.g., Pinch & Bijker, 1984), actor-network theory (e.g., Callon, 1984), and feminist standpoint theory (e.g., Harding 1991). Furthermore, recent approaches within STS have increasingly focused on understanding contemporary social and political issues and challenges, such as climate change and system transitions, the governance of innovation and technological change, as well as processes of marketization and valuation (Rohracher, 2015). I will now delve deeper into my approach to studying valuation processes.

Doganova et al. (2014, p.87) define valuation as any social practice that establishes, evaluates, negotiates, provokes, maintains, constructs, or challenges the value of 'something'. I argue that an ANT perspective is particularly suitable as my theoretical lens for examining the research objectives of this thesis. In the examination of how the value of sustainability is established and maintained, an ANT perspective enables sensitivity to how this is supported by social and technological networks and the role of non-humans such as tools and frameworks that tender employees and clients use to co-create the social reality they are part of. Latour (1993) argues that only by considering both we can properly study and understand our social life because if we focus on human actors (e.g., specifically their actions, speech, and thoughts), we only capture a partial view of social life. Furthermore, things are made rather than given from an ANT perspective, which allows for a sensitivity to study empirical situations in terms of how associations are made and the effects that play out (Georg & Justesen, 2017). This is beneficial in the situations of studying 'valuation' to describe how networks of interaction are involved in the establishment and maintenance of value within a defined boundary. This entails not only situations where 'something' has value, but the value is established because that 'something' participates in a specific context where it becomes meaningful, such as concrete actions, statements, or descriptions where they are made, said, or shared.

The following sections will elaborate on how the theory will specifically support my analysis, in which I have identified themes that are particularly relevant to the focus of my thesis. The first section focuses on valuation practices and how valuation practices can be studied through the lens of narratology (section 2.1.1). Furthermore, my analysis is sensitive to the interactions within the contractor's tendering processes, which leads to the next section on 'Processes of Social Ordering' (section 2.1.2). The purpose of the second section is to explain and elaborate on aspects of valuation practices by presenting sub-concepts that will support my analysis.

2.1.1. VALUATION PRACTICES

This section focuses on valuation practices. Thus, this thesis examines situated work practices, such as the role of tender employees in establishing and maintaining the value of sustainability proposals during the creation of tender documents. This establishment of value can be perceived as the consequence of the process of social work comprising a diverse variety of activities with the intention of making things valuable (Helgesson & Muniesa, 2013 p.6). Similarly, the tender employees at E&P engage in a range of activities to make their sustainability proposals valuable for their clients.

These valuation processes are challenging due to their dynamic nature, where Vatin (2013, p. 47) emphasizes the importance of studying work as a productive activity to account for these inherent dynamics. Thus, the same 'thing', such as a financial asset, can be valued in various ways depending on who is valuing it, for example, auditors or investors, and the circumstances, such as a political project or personal good (Helgesson & Muniesa, 2013, p. 7). I, therefore, argue that the establishment of 'value' is also situationally dependent, where E&P's employees must adapt their work efforts to the specific situation they are in, such as the client segment, client's project budget, and project type. However, the creation of value does not occur in a definitive moment nor in an entirely unambiguous and transparent manner. Rather, it manifests through a dynamic nature that depends on the context and the actors involved. Consequently, the value of proposed sustainability solutions will vary depending on the clients they are facing and the projects they aim to participate in. Furthermore, this creation of value is also dependent on the individuals who create the solutions in terms of the skills, personalities, interests, and knowledge they bring to the table. Additionally, the circumstances under which the solutions are developed play a crucial role, including factors such as time constraints, opportunities for collaboration, and limited resources. Hauge (2016) also points out that the dominant tendency is to study valuation performed in connection with a specific device involving an 'unambiguous interface', such as a ranking system, guidelines, rating, or model. This thesis also addresses that E&P's employees engage in the

performance of valuation practices through the preparation of tender documents, which involve work activities aimed at both assessing value and producing value (Vatin, 2013). These valuation practices are likewise contingent upon the individuals within E&P's organization who are involved and the perspectives they bring (e.g., production-optimizing or development-oriented). These perspectives play a crucial role in determining how value is created and shared, as well as the decision-making basis behind them. I will briefly present some valuation studies from which this thesis draws inspiration.

My thesis work involves studying the sustainability market, and thus, requires construction actors to explore and navigate various market solutions. This mirrors the challenges accountants face in standardizing emission rights within carbon markets, as described by Mackenzie (2009). Both scenarios involve actors dealing with unfamiliar requirements and deciding on appropriate classifications, especially when past practices are insufficient. Furthermore, my thesis work involves studying how certain values of sustainability solutions are established. In this context, I draw inspiration from the study by Greeson et al. (2020) where the examination of waste generates new forms of value in various settings. Additionally, I draw inspiration from Greeson's (2020) study, which emphasizes the critical role of timing and market responsiveness in preserving value when examining used goods. Other valuation studies investigate how rankings influence social practices, such as organizational work procedures and decision-making processes (e.g., Espeland & Sauder, 2007; Esposito & Stark; 2019; Strandvad, 2014; Kreiner, 2012). These studies work as inspiration sources for my thesis work in the study of E&P's tender business being subject to a form of ranking as they rely on continuously winning projects. This involves decoding how their tender submissions are ranked compared to their competitors and in relation to their own objectives, such as earnings targets and client loyalty. Furthermore, this thesis explores how tender evaluations impact organizational capabilities to sustain performance according to the competitive parameters under which they are assessed.

The production of value can likewise appear through the study of documents, where the value of, for example, sustainability solutions is accounted for. The next subsection delves into how valuation practices can be understood through narratology, with an emphasis on the narratives constructed within and around documents.

Valuation practices through the lens of narratology

This subsection addresses valuation practices from the perspective of how value is created through narratives, as my thesis work involves the study of tender documents. This is explored particularly in the context of the narratives crafted to persuade clients to select their proposals. This prompts an examination of how

the theory facilitates our understanding of the interconnection between valuation studies and the application of narratology.

A narrative can be characterized as a set of events, or actions, that is put together chronologically for the story to be emplotted (Czarniawska, 2010). Once the characters and the plot are in place, a story is constructed (ibid, p.64). The conception of what entails the notion of 'characters' can extend beyond the human agency, and thus, reflect narratology's influence on Actor-Network Theory (Urhammer, 2016). Consequently, Latour (2013) was inspired by Greimas, one of the founders of narratology, regarding the sensitivity to non-human characters, where folktales involve multiple non-human characters that contribute to the unfolding of events. Narratives have gained attraction within valuation studies (Muniesa & Ossandon, 2023), where 'valuation' is argued by Muniesa and Ossandon (2023) as a 'narrative accomplishment'. To understand what this means more precisely, it is described as an analysis of the long chains of signs, which involves understanding of its processes or devices in terms of what it is made of or what it tells. This entails focusing on the content and significance of discourse as well as assessments thereof (ibid, p.5). I will examine this perspective more closely through selected valuation studies.

In the study of an entrepreneurial venture's business model by Doganova and Euyquem-Renault (2009a), narratives unfold in terms of describing how the company meets the customer's needs, how their partners are part of generating value for the product, and how they calculate encounters by translating the value of relationships with potential investors. I draw on the inspiration of how value is created in business models, as they involve elements of storytelling from clearly indicating the outlined characters along with their plausible motives and a plot that evolves around how value is offered (Magretta, 2002). Thus, narratives in tender documents also address how the company's services/products will generate value for clients, the roles, and motives of participants (e.g., how the company's employees and/or partners contribute), and the value of the offered services/products. Other valuation studies examine how design is valued in terms of delivering future earnings from a narrative-semiotic analysis (Aguiar, 2023) and the selection of candidates in academia focusing on the dramaturgy of evaluation (Hamann & Velarde, 2023). The study by Aguiar (2023) examines a report on 'The business value of design' published by McKinsey & Company and unfolds how value becomes intertwined with upper management concerns, user experiences, contributions to the business bottom line, and perceived as an ongoing event. Similarly, in my empirical context, tender submissions also entail particular frames of action that bring characters together and activate them in particular ways, so that the value of proposed situations may be convincingly delivered to fulfill clients' wishes and needs. The study by Hamann and Velarde (2023) presents a 'value framework' that originates from application guidelines,

which constitutes the frame that the candidate's performance is assumed to occur within and is tied to the organization's expectations and requirements (ibid, p.81). From here, the evaluation process of candidates involves situations where they both submit to and are subjected to a multiplicity of frameworks (ibid, p.84). This can be compared to my thesis work in terms of how clients' procurement criteria similarly constitute some sort of 'value framework' in the values that are predefined for bidders to respond to and how this response ultimately serves as a value framework in the reproduction of these values.

Valuation can be understood as an ordering activity where the relative emphasis is on signification (Kjellberg & Mallard, 2013). Thus, the next section unfolds the concept of social ordering through the lens of Actor-Network Theory (ANT), which will supplement my analysis in investigating how sustainability achieves qualities. From an ANT perspective, human and non-human actors are treated symmetrically, and thus, there is a sensitivity towards studying material objects in the construction of social orders (Law, 1992). The focus on materiality in valuation is important because, even though the materiality of a given object does not solely determine the assumptions of its value, it is part of exercising a number of constraints on how its value can be determined (Caliskan & Callon, 2009 p.388).

2.1.2. PROCESSES OF SOCIAL ORDERING

This second outlines the fundamental elements inherent in an ANT perspective that entail studying processes of social order in society, where agents, texts, and devices all form part of and are essential to the networks of the social (Law, 1992). Thus, this section delves into how the theory can support the examination of tendering processes, which consist of humans, nonhumans, devices, and relationships. All of these serve as entities to organize the world within tendering and to create necessary knowledge e.g., regarding proposed tender solutions. In my understanding of contractors' tender processes, there are two distinguishing characteristics that the theory should help us better understand. The first characteristic is that tender processes are heavily instrumentalized through the presence of non-human actors, where written documents are exchanged both internally within the contractor's organization and between the client and the tender team. These 'non-humans' (e.g., tender documents) are not innocent representatives but play a role in persuading others when they are presented (Latour, 1986), thus through a series of organized micro-negotiations. They engage in a patterned network that also becomes a matter of organizing and ordering those materials (Law, 1992). The second characteristic of the contractor's tender processes is that the practices involved in preparing tender documents include calculation, qualitative judgment, and evaluation, which collectively constitute the concept of qualculation (Callon & Law, 2005; Callon

& Muniesa, 2005). These characteristics will be further elaborated in this section, which draws on an exploration of theoretical core concepts and specific studies that this thesis seeks to draw inspiration from or build upon.

In examining the contractor's tendering processes, a multitude of activities unfold in the production of essential knowledge aimed at responding to client interests. This knowledge is distributed in a network of actors. It is only through the combination of these actors and the maintenance of the relationships between them that knowledge emerges (Law, 1992). For example, it is through experienced employees to perform calculations, tools to execute these calculations, drawings to measure material consumption, employees to describe sustainability solutions, images from previous projects to appear in references, media to share information with each other (email, Teams, etc.), and much more, that specific individuals in particular contexts possess specialized knowledge. Thus, written tender documents and supplementary tools (such as spreadsheets and calculation instruments) participate in micro-negotiations during their preparation regarding what should be prioritized and de-prioritized, as well as 'how they are put to the test' when being allocated to the contract awarding. This parallels to Latour and Woolgar's *'Laboratory Life'* (1986), whereby knowledge production is heavily instrumentalized through, e.g., paper drawings, technical tools, and chemical preparations. Thus, I also argue that the preparation of tender material is also part of messy knowledge production. For example, in the lab (Latour & Woolgar, 1986), material substance is transformed into a figure or diagram, which can be read and understood by other employees. These are also referred to as 'inscription devices' that are part of creating 'order' from 'disorder' that enables the researchers a foundation for continuing their work (Latour & Woolgar, 1986). I will return to the concept of 'inscription device' to further elaborate on what it entails. Furthermore, life in the lab can be seen as a system consisting of organized persuasions whereby written sentences, figures, and diagrams are applied to persuade colleagues with the help of inscription forms such as citations, quotes, and tables (Hastrup, 2020). These persuasions are linked to recruiting others to their point of view e.g., to secure funding or gain recognition (Latour & Woolgar, 1986). In the same way, I argue that something as abstract as the execution of a construction project becomes readable and understandable when contractors respond to the client's criteria. These criteria are translated into quantitative calculations of materials and labor hours captured in the bid price, and they unfold into tasks, schedules, and organization in the written tender documents. Thus, the contractor's tender material depicts the early process of the potential materialization of a building's creation ('new build projects') or transformation ('renovation projects') organized as a series of persuasions to stand competitively strong among other bidders. However, these are worthless without displacement (Latour, 1990), as the tender material's displacement to the clients is a crucial element in determining their 'worth'. Thus,

it is within the specific situational context, where the tender documents are relocated into the clients' network and undergo changes involving evaluations that determine their value.

I argue that tender documents are actively part of doing things, and thus, I draw upon the concept of inscription devices, or referred to in this thesis as 'devices', which is defined by Latour (1987, p.86) as: "*any setup, no matter what its size, nature, and cost, that provides a visual display of any sort*". From the ANT perspective, devices are performative, which means that they are actively engaged in the establishment of the reality that they describe (Callon, 2007). This is rooted in relational materiality where both humans and non-humans acquire qualities due to their relations with other entities (Latour, 2005). I argue that tendering processes consist of an association of heterogeneous entities such as tender documents, specifications, standards, criteria, clients, contractors, tools for calculation, etc. The relationship between these entities can be described as the notion of social-technical agencement (Callon, 2007). 'Agencement' is the French word for 'arrangement' and refers to the arrangement of these elements. These agencements or arrangements are equipped with the ability to act in various ways which depend not only on the actions of tender employees or other participants but also on the 'things' that are put into use (Drawing on Callon, 2007 p.13). In this context, tender documents, or other things that tender employees use (such as drawings, budgets, and standards) act as either intermediaries or mediators. Intermediaries transport meaning without transformation, while mediators have the ability to transform, translate, distort, and modify the meaning they are supposed to carry (Latour, 2005 p.39). Furthermore, inscription devices can take many forms, and the concept has been further developed by Henderson (1991). Thus, she uses the term 'the conscription device' to describe the role of engineering drawings (Henderson, 1991). This is a form of subcategory of devices that can occur in specific situations. Thus, she argues for attention towards the network-organizing process of their creation, where these types of devices enlist group participation and are holders of knowledge creation that gets modified through group interaction toward a common goal (Henderson, 1991 p.456). Similarly, the preparation of tender materials can consist of 'conscription devices' where participants' interactions may be tied to communication around a tool, such as illustrations on a board, which can be difficult to follow if one is not present in the room. Based upon these I will now shortly present a few studies that this thesis draws inspiration from.

Contractors' tendering processes are closely related to architectural competitions. In Gottschling's (2016) study, an architectural competition is examined through the progression of 'briefing documents,' which outline the client's requirements, to 'submissions,' which are the documents architects and contractors submit for selection, and finally to the 'evaluation tools' that appear in the selection process.

Similarly, this thesis also examines the documents (or 'devices') that are utilized during the tendering process, with a focus on their preparation, content, and evaluation. I also argue that tender documents can be compared to the role of project files (Sage et al., 2010), as many elements are made to act as one (ibid, p.633). The elements entail the knowledge of planning, cost, communications, and procurement as well as other standards (ibid, p.632). Project management is coordinated through the Project File where inputs in terms of following defined processes equal predictable outputs in successful projects (ibid, p.633). In the context of my research, building projects' initiation is also coordinated through tender documents where certain inputs (such as competitive bid price or project task descriptions) are tied to certain expectations of delivering successful outputs (e.g., winning projects).

In the study by Ewenstein and Whyte (2007), visual representations assist in the knowledge work of an architectural firm by symbolically conveying meaning to articulate and understand design ideas. They also manifest in practice as material entities that practitioners can interact, as they generate knowledge individually or collectively (ibid, p.82). In comparison, tender documents facilitate the knowledge work of conveying meaning to clients' needs and wishes through written descriptions, calculations, and visual representations. Additionally, tender documents are also subject to knowledge generation during their preparation, where opinions and ideas arise and develop. Furthermore, I argue that tender documents function essentially as a form of 'sales materials', where written descriptions and visual representations are connected to persuasive sales arguments aimed at convincing clients. Consequently, this thesis also draws inspiration from the study by Justesen and Mouritzen (2009), which examines 3-D visualizations and photos in a developer's annual reports, where these visual representations act as mediators to persuade the audience of the firm's capabilities and future prospects. This is why I choose to place much emphasis on studying nonhumans/'devices' in my thesis. The production of knowledge around them, the negotiations involving them, and their role in creating and reshaping social relationships are crucial for a comprehensive understanding of tendering processes. Moreover, tendering processes encompass both quantitative activities, such as calculations, and qualitative activities, such as descriptions and statements. Consequently, these processes can be considered 'qualculative practices'. I will now elaborate on what this entails.

The role of qualculative practices and the relation to market transactions

Tender practices are emergent and interactive in the activities that unfold, including the roles of clients, tender employees, tender documents, and other 'devices' involved in co-creating the final tender material. Together, they contribute to the co-creation of the tender material. If these actors (e.g., tender

employees, calculation tools, standards) disappear, the tender itself also disappears. This means that they all contribute to the tender, and if any of these actors are removed or disappear, the tender changes accordingly. Furthermore, the co-creation process of tenders is characterized by many diverse activities. Thus, this thesis draws on the concept of 'qualculation' to analyze how responding to new terms in tendering, which encompass both qualitative and quantitative activities, challenges the host company's tender practices. Qualculation redefines the notion of calculation to also include qualitative aspects such as judgment and evaluation (Callon & Law, 2005; Callon & Muniesa, 2005). Cochoy (2002) introduced the concept of 'qualculation' in relation to consumer behavior when they were faced with the possible choices of goods that not only involve price-based elements but also quality-based rational judgments. However, 'qualculation' has also been applied in research focusing on economic elements in markets (Callon & Law, 2005; Callon & Muniesa, 2005) and the roles in project management for a construction project (Georg & Tryggestad, 2009).

In the contribution by Callon and Law (2005), they argue that the possibility of 'qualculation' depends on the material arrangements in which they are produced, such as bank statements or examination systems. Callon et al. (2002) describe 'qualities' as a dynamic process of qualification and requalification, wherein the establishment of 'qualities' involves characteristics that are temporarily stabilized to be attached to a product or service. Thus, allowing it to be (temporarily) traded as a good or service in the market (ibid, p.199). Callon and Law (2005) also bring up the concept 'non-qualculation' that refers to situations where the process of qualculation is not possible due to the absence of necessary material arrangements or if the involved elements resist being organized or measured (Callon & Law, 2005). Nevertheless, this thesis will not explore the boundaries between qualculation and non-qualculation, as I argue that tender practices consist of material arrangements that facilitate the organization and comparison of the diverse elements (e.g., client criteria, quantitative data, or qualitative insights) to reach decisions and judgments. Callon and Muniesa (2005) focus on how goods are made calculable, where the calculative steps can be connected to requirements of algorithmic formulation or align more closely with intuition or judgment. Thus, the practice can take place between qualitative judgment and quantitative calculation – referred to as 'qualculation' (ibid, p.1232). Furthermore, making goods calculable is part of studying market transactions. For a market transaction to be realized, the good or service must be objectified with objective properties and singularized by placing the object into the buyers' world (ibid, p.1232-1234). The objective properties are part of enabling the application and transfer of property rights. Whereas the singularization represents the process of making these properties valuable for the buyer (ibid, p.1233). This is also where the process of attaching goods to consumers plays a crucial role (Callon et al., 2002). Thus, companies' competitive advantages depend on their ability of

attaching consumers by detaching them from the networks built by rivals. Consequently, the good or service leaves the world of supply to become entangled in the networks of sociotechnical relations that constitute the buyer's world (Callon & Muniesa, 2005). In this process, the good or service can be defined by a set of characteristics that establish its singularity (Callon et al., 2002). Thus, this allows for the consumer to make choices, as the good or service has been provided with properties that produce distinctions (Cochoy, 2002). In this thesis, sustainability initiatives within contractors' tender materials are conceptualized as goods or services that require precise specification of their distinct properties and measurable characteristics such as pricing. Additionally, these initiatives must resonate effectively with clients. This is achieved by facilitating attachment through the adjustment of their properties to integrate into the clients' world, with the aim of differentiating them from the solutions proposed by competing bidders. Callon et al. (2002) also emphasize that in order to capture consumers, products or services involve the establishment of a resemblance, thereby creating a connection between the consumer's prior attachments and the new offerings being proposed. This means that contractors must also recognize the importance of ensuring that the solutions they propose are connected to elements familiar to the client, such as existing preferences, needs, or experiences.

This thesis also finds inspiration from the study by Georg and Tryggestad (2009), where the qualculative role of construction management is explored by, in particular, tracing the project budget and other devices such as architectural drawings. While this thesis does not specifically focus on budgets and drawings, it will examine the preparation and impacts of tender documents, including qualitative criteria, through the lens of the qualculative practices. These tender practices are distinguished by the inclusion of qualitative judgment when addressing non-price criteria (such as environmental sustainability requirements) and quantitative calculation when offering bid pricing. I argue that both qualitative judgment and quantitative calculation are intrinsically interconnected within tender practices. For example, sustainability solutions are also applied as input to the bid price calculations. Similarly to the study by Georg and Tryggestad (2009), tender practices involve evaluation processes that depend on multiple devices for calculation and qualitative judgment, which can only be completed and stabilized through the mobilization of these devices. Thus, they play a crucial role in the 'framing' of tender practices. Consequently, framing helps maintain our social order, where part of this relies on the relationships between diverse actors that include both humans and nonhumans. This will be elaborated further in the next subsection.

Framing and social ordering

The concept of framing is used in my thesis work to study the context of the host company's tender practices that involve navigation in the market for sustainability. Consequently, contractors' tender practices are significantly shaped by the market demands they must meet to submit competitive bids. Market demands are also influenced by the tenders submitted by contractors for various projects. Clients formulate their expectations regarding contractors' capabilities in delivering sustainable solutions based on past tender experiences, participation in sustainability-focused networks, ongoing projects, and other related factors. These expectations shape the criteria outlined in the procurements. Contractors, in turn, respond to the client's sustainability requirements, anticipating the types of sustainable solutions that will be favorably received, and adjust their responses accordingly. Hence, the interaction between them is reciprocal, with both parties continually responding to each other's expectations. This involves framings that help maintain order in the considerations taken into account, which will be further elaborated on.

The notions of framing and overflowing have been applied within ANT by, e.g., Callon (1998a), who was inspired by, among others, the sociologist Goffman (1974). The inspiration lies in Goffman's theater metaphor, where the concept of framing can be compared to a stage (Callon, 1998a). The stage constitutes a frame that decides on the inputs taking into consideration within a bounded space, where interactions and decisions unfold as the actors have agreed on the frame in advance. Shared assumptions are established within the frame and make it possible to decide on what should be included and excluded within its defined boundaries. Framing is part of making elements 'stable' which can be compared to our daily social life. Thus, framing causes us to act 'predictably' in certain situations. When we shop at the supermarket, we behave in specific ways; we have expectations of others in the supermarket (other customers, the cashier, the person stocking shelves, or the one cleaning), and we expect people to pay with cash or card (and not with shirt buttons or by trying to barter items). We also have expectations regarding the arrangement in the supermarket such as shelves filled with uniform products, and thus, ideally with multiple items of the same kind.

In the context of this thesis, building upon the example in the introduction of this subsection, the action of requesting 'sustainability initiatives in a tender' is a framing that encompasses expectations: The client anticipates particular responses from the contractors who submit tenders. It is likely that there is an expectation for the tender submissions to incorporate certain trends or buzzwords, such as DGNB, circular economy, recycling, waste management, etc., given that these topics are already widely discussed within the industry. Contractors, upon receiving the procurement criteria, also hold prior

expectations before reviewing them. Similar to the client's perspective, due to the circulation of these topics within the industry, contractors may anticipate that this type of client addresses sustainability in a particular manner. However, sources of overflowing can appear, as certain elements in the framing become fragile and may require re-framing (Callon, 1998a). Thus, unanticipated consequences or incompleteness of its frame can lead to overflows beyond the defined boundaries. This fragility in the frame arises in scenarios where expectations are not met, such as when actors behave contrary to anticipated norms. For instance, drawing on the supermarket example, an individual might attempt to pay with shirt buttons. Other instances include circumstances that deviate from expected outcomes, such as a bus failing to arrive at the designated bus stop.

The concept of 'framing' in the context of market analysis inherently suggests examining how markets are constructed through various framings (Callon, 1998b) that involve devices, negotiations, and a multitude of actors (Doganova & Karnøe, 2014). This entails that framing defines the effectiveness of the market where economic activities are framed through these networks which is part of defining the role of different actors, methods of calculation, and the boundaries of market transactions (Callon, 1998b). My thesis work aims to study the interaction of priorities such as standards, beliefs, tools, or other contextual factors that inform and constitute the framing of sustainability in relation to requirements, strategies, and market solutions. To do so, I draw inspiration from studies that use framing as an analytical approach to understand the development and maintenance of certain concepts or practices. The study by Georg and Justesen (2017) examines the framing of an environmental accounting framework. This framing was informed by field notes, documents, and interviews with the project management to establish the frame of what should be delineated and concretized in the building design together with how environmental accounting was mobilized in the project (ibid, p.1069). Another study is by Troje and Gluch (2020) that builds on semi-structured interviews among procurement professionals in the Swedish construction sector to examine the framing of social procurement that involves, among other things, the inputs of how they frame their professional identity in relation to social sustainability. In this framing, the need for a personal drive was emphasized, leading to three distinctive identities: 'the idealists', 'the problem solvers', and 'the pragmatists' (ibid, p.62-63). A third study by Doganova and Eyquem-Renault (2009b) investigated the framing of business models from three ventures and included internal corporate documents, presentations, and interviews with founders regarding the business models' descriptions and with partners concerning their roles in the offerings and their influence on strategic orientations such as targeted markets. The framing of the business models unfolds through their narratives, calculations, and the managing of tensions within framing and overflowing (ibid, p.19-27).

Common to the abovementioned contributions is that the framing evolves around 'something' more or less tangible such as an accounting framework, social procurement, and business models. Furthermore, these framings serve as establishing an agreed-upon frame attached to a specific purpose e.g., to design a green building (Georg & Justesen, 2017), mitigate issues of exclusion in the job market (Troje & Gluch, 2020), and commercialize technological products (Doganova & Eyquem-Renault, 2009b). This thesis finds inspiration from these studies by exploring how the concept of framing contributes to examining the establishment of value, priorities, decision-making, and other aspects through people's statements, texts, and actions. Additionally, my thesis will draw inspiration from how framings are connected to specific objectives, such as clients' goals to procure sustainable building projects or tender employees' efforts to participate in and compete for tender projects with sustainability criteria.

The next and final section will summarize how the overall theoretical framework of valuation will support my thesis work. This involves elaborating on the relationships between the application of an analytical approach focused on valuation practices and presented sub-concepts such as qualculative practices and framing.

2.1.3. MY THESIS WORK AND THE VALUATION PERSPECTIVE

My thesis work primarily adopts a valuation approach that entails focusing on the study of social practices involved in determining the value of 'something' (e.g., Doganova et al., 2014). The perspective of valuation allows me to examine valuation practices that surround the establishment and maintenance of value related to my empirical context of environmental sustainability requirements in tendering. Studying valuation practices is multifaceted because they include processes that are dynamic, context and situationally dependent, and emerge as an outcome of active and ongoing efforts (Muniesa, 2011). These valuation efforts are part of relationships and interactions aimed at creating a form of social order in the actions that are undertaken. Valuation processes thus also become a matter of organizing social practices around the weighting of significance. This leads me to how valuation practices must also be studied through the theoretical lens of Actor-Network Theory. Thus, I argue that the study of valuation practices during tender processes cannot occur without the participation and contributions of both human and non-human actors. Written tender documents, standards, and supplementary tools (such as spreadsheets and calculation instruments) are part of creating 'order' from 'disorder' that enables employees to conduct tender practices. This brings me to the importance of drawing upon the notion of 'qualculation' that helps in clarifying these practices as 'qualculative' characterized by activities related to calculations, judgments, and evaluations. I draw on 'qualculative practices' to examine the challenges that these practices entail when

E&P's employees must compete under new terms in tendering such as responding to qualitative criteria. Furthermore, the concept of 'qualculation' is intertwined with and dependent on the notion of valuation. My interpretation suggests that valuation processes in tendering rely on qualculative practices (e.g., through calculations, qualitative assessments, and judgments) to help determine the value of 'something'.

Another key concept in my thesis work is 'framing' which helps in clarifying what I mean by valuation in contextualizing the interactions and expectations of the actors involved. Once a framing has been created and the interactions in a network are occurring independently of their surrounding context (Callon, 1998a), a process of ordering, 'valuation', within a given frame takes place in the identification of significance (Kjellberg & Mallard, 2013). The frame decides on what counts and how it is counted (Bruszt & Stark, 2003). This framing process is a necessary step in valuation practices and often goes unnoticed when the value of 'something' is established. I also argue that it is challenging to distinctly separate the theoretical constructs of framing and valuation. They are mutually dependent on each other, as the framing of sustainability helps determine which inputs are taken into consideration and how these distinctions of what is prioritized feed into the contributions that influence and shape value. These prioritizations and decisions are also tied to construction actors' previous participation in making descriptions of 'sustainability' valuable in procurements and tenders. I argue that the thesis benefits from applying both concepts to the same analytical issues. This implies using both concepts together, as framing allows for the examination of constructions that include 'something' in a calculation, a statement, an assessment, or a tender document. Thus, the use of framing helps examine how actors calculate, assess, and describe by assembling other actors, both human and non-human, within their frame. This specifically entails recognizing what clients and tender employees incorporate into their framings of sustainability in a given context e.g., in a tender document, during meetings, or discussions (e.g., interviews). This entails paying close attention to which elements are emphasized or downplayed through verbal and written statements and can also involve the use of specific terms, concepts, devices, and visual representations to structure their understandings of situations related to untangling the concept of 'sustainability'. Additionally, it may include the use of specific terms, concepts, devices, and visual representations to structure their understanding of situations where 'sustainability' must be considered.

In the discussion chapter, my thesis work draws particular inspiration from Callon's work, among others (Callon & Muniesa, 2005; Callon et al., 2002; Callon, 1998a; Callon, 2007), to approach my analytical insights from a market perspective. This includes examining how sustainability services are made calculable by clients in their procurement processes, exploring the role of tender

documents in market transactions, and analyzing how sustainability initiatives and services in tender documents are objectified and singularized for the purpose of attaching these to clients. This approach aims to deepen the understanding of the context in which both clients and contractors operate. Specifically, it seeks to shed light on how both parties engage in the qualification of sustainability solutions and how these processes pose challenges for contractors in capturing the attachments of sustainability services to various client segments. I argue that incorporating the market perspective is crucial, as it directly addresses the essence of tender processes, which are fundamentally about facilitating market transactions. Clients engage in the market of sustainability solutions and options when they procure the bundle of services and products that underpin their construction investments. Conversely, contractors, acting as suppliers, are positioned in competitive environments where they must find ways to position themselves more advantageously than their competitors. Additionally, contractors are faced with analyzing market trends, including societal shifts and client preferences, to consistently generate the value that is sought after.

CHAPTER 3. RESEARCH DESIGN

From the theory chapter, we gained insight that this thesis adopts a valuation approach rooted in an actor-network theoretical perspective. This chapter builds upon the overarching approach and focuses on how 'valuation' is examined, specifically by delving into my empirical data sources and the transformation from 'raw data' to the identification of analytical themes. The research design chapter comprises two main parts. The first section introduces the research paradigm, the applied methodological approach, the case company Enemærke & Petersen, and my role as an industrial PhD student. The second section presents the collection of empirical data sources such as the literature search, documents, informal conversations, interviews, and observations. This section also provides explanations for the selection of my datasets and discusses how these choices influence my analysis, particularly in terms of the resulting analytical limitations. Lastly, the section presents reflections on working with the empirical data by addressing the research methods of interviews, text analyses, and analyzing field material as well as considerations regarding data limitations. This includes explanations of what informs my datasets within my analytical approach and theoretical position. Thus, I will unfold the details of specific aspects I seek to identify and examine during my analysis, along with the purpose of doing so.

3.1. METHODOLOGY

This study gathers qualitative data by adopting a qualitative or interpretive approach as opposed to, for example, a positivist approach. This means that the analysis of the qualitative data does not observe probabilistic relationships, which the positivist approach relies on (Schweber & Chow, 2023). Instead, this study is concerned with asking 'how' and 'why' questions to explore environmental sustainability in tendering. For example, by investigating how clients and employees from the host company consider and place emphasis on this subject in different practical situations, such as procurements and tenders, organizational capabilities, and strategic direction. Furthermore, my analytical approach focuses on studying valuation practices that unfold in and around tender documents and their relationships to other 'things' (e.g., calculation tools, spreadsheets, etc.) and interaction with human actors such as employees, clients, and other collaborators (e.g., engineers/architects). At the same time, being an industrial PhD student at a contractor company provided me with exclusive access to data for studying tendering processes. I am therefore grateful for the opportunity, as a PhD student, to get up close to the inner workings of the tender practices at Enemærke & Petersen (E&P), which provides a unique contribution to understanding the activities that take place behind closed doors and within selected parts of the

organization. Thus, this type of knowledge is typically inaccessible to 'outsiders' due to its commercial sensitivity and confidential nature that encompass considerations related to strategic activities and objectives concerning market segments, client relations, organizational capabilities, and future investments. This section provides further elaboration on the scientific perspective of this thesis, the applied methodology, the challenges of new norms in tendering at the case company E&P, and my role as an industrial PhD student.

3.1.1. RESEARCH PARADIGM

The study of valuation processes can be taken ontologically from a pragmatist viewpoint (Muniesa, 2011), where this thesis underscores my approach to study valuation is rooted in an actor-network theory (ANT) perspective. The pragmatic idea of valuation is coupled with the emphasis on the activity, process, or practice that involves 'valuation' rather than considering something as just having a 'given' value in itself (Muniesa, 2011). This ultimately means that the value of 'something' is considered as the outcome of an action through processes that happen in practice (ibid, p.32). As highlighted in the theory chapter, these processes are emergent, interactive, and relational. Thus, both humans and non-human actors form part of and are essential to the networks of the social (Law, 1992) which also entails practical situations surrounding valuation processes. In particular, the pragmatist philosopher John Dewey draws on the idea of transactions being processual and that all phenomena both organisms and objects are sequences of events, which resembles the assemblage thinking in ANT (Bridge, 2021). Based on this understanding, I will explore how a pragmatic approach to ANT's ontology can be understood and thereby, contribute to shaping the research paradigm that I adopt as the lens for approaching my empirical data.

Philosophical worldviews can both be defined as the ontology in terms of beliefs that one has about the nature of the world, and epistemology in terms of the ways knowledge of that world is created (Niemimaa, 2014). Realism and constructivism represent two main ontological distinctions (Egholm, 2014). Realism perceives objects, relationships, and characteristics as existing independently from our understanding of them in the world, whereas constructivism perceives objects, relationships, and characteristics as part of our understanding of them. Thus, in the constructivist ontology, social phenomena can only be studied with the meaning that the researcher gives them (Egholm, 2014). ANT encompasses elements of constructivism because it considers how certain things become truth and realism because it does not only focus on social structures (bid, p.186). However, ANT also has roots in semiotics (ibid, p.187), which plays an important role in pragmatism focusing on human action and experience (ibid, p.168-169). Lee and Hassard (1999) underline that ANT's main

principles include epistemological pragmatism and ontological relativism, a perspective that Latour also characterizes as "*a variable ontology*" (Latour, 1992). Hennion and Muecke (2016) argue that there are similarities between ANT and pragmatism in terms of how realities are constructed through interactions. They underscore the emphasis on practical consequences when actors participate in shaping their surroundings (ibid, p.297-298). Taking a pragmatic approach in ANT helps to recognize qualities as different phases of action (Bridge, 2021 p.422). Especially, the pragmatist philosopher John Dewey's conception of pragmatism is helpful in studying the recognition of qualities or 'valuation'. He argues that there is no such thing as value, but 'value' can only be established through processes of valuation (Muniesa, 2011). Pragmatic research places an emphasis on a range of methods including mixed, qualitative, and quantitative approaches (Saunders et al., 2009). Pragmatists recognize that there are many different ways of interpreting the world and conducting research because multiple realities may exist (ibid, p.151). Thus, this perspective provides many opportunities for conducting research, where researchers can be creative, as long as they get close to the practical unfolding of the realities. Egholm (2014) emphasizes the alignment of 'pragmatism' and 'ANT' in following the same pragmatic concept of truth. In this perspective, truth is assessed based on the interactions between individuals, institutions, and propositions, and something is considered true when the results of the study explain phenomena and events (ibid, p.229). I argue that pragmatism has influenced recent directions of ANT, a viewpoint supported by, e.g., Hennion and Muecke (2016), Bridge (2021), and Lee and Hassard (1999). This viewpoint will be further explored throughout this subsection.

Epistemology means the study of the theory of knowledge, and it includes how we know something and how knowledge is produced (Egholm, 2014). Epistemological questions in my thesis thus involve; how can I gain knowledge about valuation as part of tendering processes? And what methods should I use to obtain that knowledge? There is an epistemological distinction between subjectivity and objectivity, which is tied to the question of how things are defined as either true or untrue (ibid, p.28). Objectivity attempts to create a distance in the form of the absence of observer bias in relation to the subject matter, and subjectivity points out that the researcher cannot be separated from the subject matter (ibid, p.29). Callon (1984) pinpoints three central principles when conducting an ANT analysis: 1) Agnosticism or impartiality in terms of the researcher maintaining a neutral stance of the actors in a controversy, 2) A generalized symmetry in terms of equally treating human and non-human actors, and 3) Rejection of 'a priori' distinctions between the social and natural. As highlighted, the epistemology of ANT considers the world as connected in networks based on a generalized symmetry, whereby non-social phenomena can act as 'something' due to social interactions in the network (Law, 1992). The

epistemological stance of symmetry means that observations are equally focused on human and non-human actors and, thus, unfold the procedural nature of the world (MacLeod et al., 2019). The idea of ANT is to examine how networks arise, the tracing of existing associations, the movement of actors, the enrollment process of actors, and how the networks can obtain temporary stability. Therefore, the notion of 'actor' may apply to individuals or physical objects and, thus, objects may have the same level of agency as a person. Social is considered as a relationship of something that is both connected and assembled and, thus, the social cannot be defined as a material or property (Latour, 2005). However, the distinction between 'actants' and 'actors' is articulated as follows: 'actants' can be anything from humans and machines to symbolic references that participate in the network, whereas 'actors' have projects and interests, and thus things they are trying to do (Feldman & Pentland, 2005). Modell et al. (2017) argue that the epistemological position of ANT has a great emphasis on empirical research the aim of which is to trace unique descriptions while remaining open to different routes in the analysis. Muniesa (2015, p.82) underlines that ANT's combination of material semiotics is inherently pragmatic with the consideration of references as a materially traceable operation that includes displacement and circulation. The difference between the two epistemologies is that knowledge in pragmatism is achieved through abductive analysis known as 'a qualified guess', whereas knowledge in ANT is achieved by inductively following actants (Egholm, 2014). The inductive approach in ANT unfolds by not having any preconceived categories and remaining open to gaining detailed descriptions of the multiple phenomena when observing what takes place 'on the ground' (Nimmo, 2011). Thus, ANT is particularly suitable for conducting close empirical studies of 'affairs on hand' (Latour, 2005).

I adopt a pragmatic approach within the ontology of ANT to study valuation processes, where the knowledge-constituted interest originates at the micro-level (Egholm, 2014 p.169) and focuses on the interactions between individuals and the tools they use to perform collective actions. The pragmatic approach not only perceives humankind as relational and anti-essentialist (things are made rather than pre-determined) when focusing on the actions of both humans and non-humans. However, it also considers people's intentions as process-oriented, relational, and context-dependent (Egholm, 2014 p.228).

3.1.2. METHODOLOGICAL APPROACH

Based upon this study's research paradigm, a pragmatist standpoint within the ontology of ANT is applied to examining valuation processes. This entails a methodological approach, where valuation is considered as an action (Muniesa, 2011). The idea of 'action' can be understood as a process or a mediation of something that occurs in practice and something that is done to something else

(ibid, p.32). This means that 'value' is not just given but is made through interactions in networks of activity and thus, context-dependent, and situational. To study these valuation processes, specifically in situations that concern environmental sustainability in tendering, the methodological approach draws on a range of different empirical data sources. The methodological approach for this thesis is considered to be ethnographic in fragments, which means that the approach is, to some extent, inspired by ethnographic methods, while simultaneously being guided by theory to identify specific 'things'. An ethnographic approach involves observing actors within their organizational setting, which allows the actors to express their experiences (Whyte et al., 2016). However, I have not been interested in understanding all experiences that revolve around the everyday practices of tendering at the host company. Instead, I have been attentive to participate in company meetings as an observer that evolved around tender practices of 'sustainability'. Thus, my methodological approach is centered around the case study of E&P's tendering business with the particular angle of examining activities related to dealings of environmental sustainability requirements. This entailed participating in meetings where tender projects significantly prioritized sustainability requirements, or where the primary focus of the discussion was E&P's efforts in addressing these sustainability requirements. This does not imply that I have not observed employees' actions and behaviors in situ by being present as an 'employee' in the company. Such observations have both consciously and unconsciously informed my contextual understanding of how tender projects are spoken about, discussed, and disseminated among employees.

My pursuit of identifying specific 'things' involving tender practices related to sustainability has led me to explore various branches of qualitative research methods, which not only include observations. Thus, my empirical data collection also consists of informal conversations, staged interviews, and document analyses. In this way, I explore the same phenomenon of 'sustainability in tendering' across time, place, and empirical situations. This approach allows me to tackle the phenomenon from different perspectives. It enables me to study how efforts of conducting 'sustainability practices' in the context of tendering are expressed through discussions at internal company meetings, and conversations with clients and employees at E&P. These efforts also expand to written documents from selected completed tender projects at E&P that provide a unique insight into how these present sustainability requirements and solutions. The empirical contribution of tender documents allows me to analyze detailed and rich descriptions. Furthermore, the study of and around these documents helps examine their active role in the social processes involved in tender practices and understand how they contribute to co-creating social actions and decisions. However, this should not be understood as suggesting that the presence of 'non-human actors' is solely examined through the lens of tender documents. A

valuation approach grounded in an ANT perspective also emphasizes the inclusion of all actors, both human and non-human, participating in and shaping practical situations. This is evident, for instance, in my observations and interviews, where tools (e.g., Excel sheets, process diagrams, board, etc.), standards (e.g., sustainability certification schemes, calculative standards, etc.), and other entities also act as participants in my understanding of studying the social processes in tendering.

Figure 1 illustrates the conceptualization of my research design for examining valuation processes as the overarching theoretical framework that informs my study. As previously highlighted, my methodological approach has focused on empirical situations (e.g., through documents and observations) and 'staged' conversations and interviews to trace efforts of sustainability in procurements and tenders. This has resulted in three distinct themes in my analysis, which I will address further below the figure.

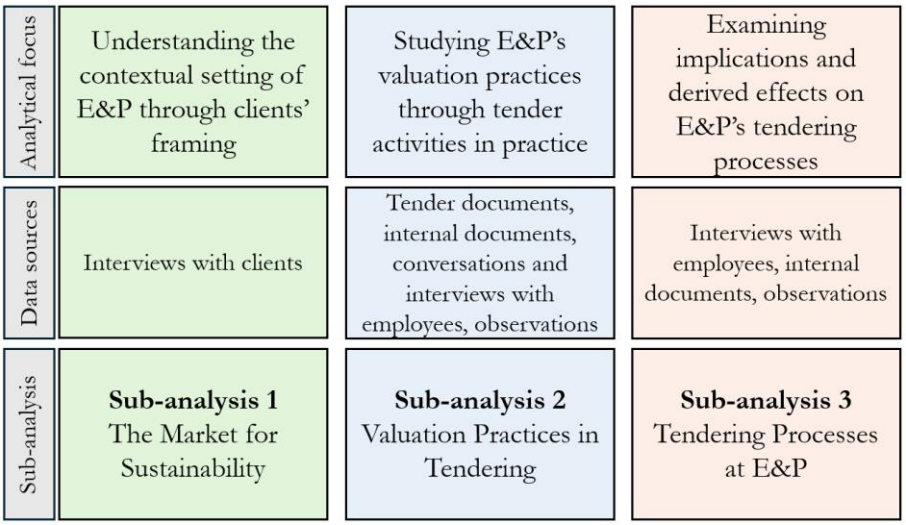

Figure 1. The research design of the thesis

In the first sub-analysis, I draw on interviews with clients to analyze the market for sustainability. My analytical approach involves examining the context in which E&P's tender organization operates, with a particular focus on the 'framing' of sustainability from the client perspective. I argue that client interviews provide unique insights into the sustainability market by exploring viewpoints, priorities, actions, and stakeholder involvement that inform the framing of clients' sustainability strategies and procurement requirements. In the second sub-analysis, I draw on a variety of data sources to illuminate 'valuation practices in tendering', with a particular focus on 'tender documents' as the primary analytical subject. This analytical section aims to investigate valuation

practices at E&P such as tender employees' efforts to establish the value of sustainability solutions during prequalification and tender submissions. Although it is possible to concentrate solely on valuation practices through conversations, interviews, and observations, I argue that tender employees' work efforts in and around tender documents constitute the core of these practices. Thus, the evaluation of E&P's submitted tenders ultimately determines whether E&P's tender teams manage to create the intended value for their clients in practice. The third sub-analysis examines the impact of competing on new terms in tendering, where I draw on interviews with employees, internal documents, and observations from team meetings. This sub-analysis builds on the preceding sub-analyses by examining the implications of clients' market demands and E&P's tender practices of competing in sustainable tender projects. The purpose is to highlight the challenges that the sustainability agenda poses to E&P's strategic direction and considerations regarding the value they must deliver in their services and products. I argue that interviews with E&P's top management and the analysis of internal documents provide the necessary insights for studying the priorities and considerations behind strategic decisions, sustainability objectives, and organizational changes in tendering. For example, obtaining the same insights exclusively through observations of internal meetings would have been challenging, as the top management meetings at E&P are held behind closed doors. Additionally, there would be no guarantee that these meetings would specifically focus on the strategic direction for sustainability and tendering.

The next section, '3.2 Data and Methods', elaborates on how my data sources were selected, thus, highlighting both the strengths and weaknesses of these methodological choices. This includes detailing the limitations associated with my choice of informants (e.g., interviews) and other information sources (e.g., documents). Additionally, I will delve into the analytical approaches I have employed and how the use of theory within 'valuation' has influenced the individual sub-analyses. Before reaching this section, I will first introduce the case company Enemærke & Petersen and explain my role as both a 'researcher' and 'employee' within the organization.

3.1.3. ENEMÆRKE & PETERSEN AND THE CHALLENGES OF NEW NORMS IN TENDERING

In this subsection, I will briefly introduce the host company, Enemærke & Petersen (E&P), and elaborate on the recent changes in the tender practices that have been the focus of this study's analysis. E&P was founded in 1975 and initially focused on renovating roofs and facades. In 2000, E&P was acquired by Højgaard & Schultz, now referred to as MT Højgaard Holding, which currently comprises five subsidiaries. The strategic intent behind the acquisition was to enhance MTH's position in the renovation market and to extend its geographical

footprint beyond the Greater Copenhagen region (Byens Ejendom, 2000). Over time, E&P has expanded its services and now undertakes a wide range of construction projects, particularly in the areas of residential buildings, schools, daycare centers, and office spaces. E&P including its subsidiaries had a turnover of 2.3 billion DKK in 2021, 3.65 billion DKK in 2022, and 3.88 billion DKK in 2023, and it is one of Denmark's largest building contractors in terms of revenue. E&P is a nationwide contractor and has offices in Ringsted, Odense, and Aarhus as well as project offices in Copenhagen, which belong to two larger partnership projects. With approximately 700 employees, E&P is the market leader in the renovation of public housing and within strategic partnerships with three larger framework agreements, which include both renovation tasks and new construction projects. Additionally, E&P serves as both a lead contractor and manages in-house production activities with its own craftsmen specializing in carpentry, masonry, plumbing, painting, and scaffolding. These in-house production activities are also carried out at E&P's own construction factory located in Glostrup. Furthermore, E&P owns two contractor companies based in Jutland and holds a 20% ownership stake in a builders' market in the capital region that specializes in the reuse of construction components and materials.

E&P's order book in 2022 in terms of turnover showed the following division of business areas: 1) New build and renovation in the East accounts 30%, 2) Strategic partnerships 26%, 3) Project development 25%, 4) Subsidiary companies 11% and 5) The West market (new build and renovation) accounts for 8%. Appendix A provides additional information about E&P including the organizational chart and details concerning the tender business. The latter covers the development of contract forms, the distribution of won contracts across business areas, the prevalence of tenders evaluated on the lowest bid pricing, and the various types of sustainability requirements in tenders.

E&P has developed significantly as a business. In particular, alternative collaboration forms such as strategic partnerships and integrated project delivery (IPD) projects have gained ground and account for a significant part of the revenue. In the following quote, E&P's Chief Operating Officer (COO) addresses the expansion of new types of construction projects and the consequent changes this has prompted:

> "*We are in contact with considerably larger construction tasks than we were 10 years ago. Also, more complex tasks. We have received a larger share of new construction compared to renovation. And then this with the fact that many of the buildings we do today are done in a more formal collaboration with an earlier involvement*".

E&P is increasingly involved in tenders that represent new forms of collaboration and the larger size of the contracts also means that E&P is less frequently required to submit bids determined solely by the lowest bid price. We also observe how more complex construction tasks are linked to projects where E&P becomes involved at an earlier stage. Furthermore, E&P's former head of tendering and now CEO states that the business has gone from 'lowest price' tenders to 'best ratio between price and quality' tenders, which represents a new way of conducting tenders:

> "*10 years ago, it was very much only 'lowest price' tenders that dominated the market – it was like that, whether it was the social housing sector or the public sector, it was the lowest price that you competed on. Unless it was a turnkey contract, where you had to include some text for a given project. But since then, the tenders have changed with the introduction of tenders with negotiation […] the market has changed significantly with the fact that there is now a much larger supply with negotiation and the best ratio between price and quality tenders rather than the lowest price tenders*".

In this above-mentioned quote, the former head of tendering and now CEO states how the supply of 'best ratio between price and quality' tenders constitutes most of the submitted tenders. At the beginning of the introduction, I included a brief excerpt of the quote below to set the stage for the study. I will now present the complete quote, in which E&P's current CEO elaborates on how these new norms influence tender practices:

> "*Before, we only had calculation staff for calculating offers. Now we have to deliver so much more […] we have fewer who sit and calculate, but more who sit and write, make diagrams, processes, construction site plans, schedules, logistics plans, etc. for the tenders. And I think it is very interesting and thought-provoking how much it has taken over the last few years - and especially the last five years. That we, as contractors, are also starting to have to take in new skills other than those that are technical and professionally based in craftsmanship and production, but we actually need to have new skills that are educated and have a background in communication, presentation, project planning, visualization, and graphic design*".

E&P's current CEO emphasizes that the company's tendering process must encompass more than merely calculating competitive bid prices. This represents a transition from calculative practices to approaches that are progressively more capable of handling deliverables related to qualitative assessment criteria. In this context, the growing demand for sustainable construction is particularly relevant, as management of sustainability requirements frequently forms part of the qualitative criteria. These requirements involve, among other things, increased documentation for material selection, initiatives for recycling and reuse, the adoption of more environmentally friendly practices on construction sites, and

compliance with procedures related to sustainability certification schemes. These changes in E&P's tender business necessitate prioritizations of adopting new competencies among E&P's tender employees, including writing and graphic design skills, as well as gaining a deeper understanding of client interests, market trends, and knowledge of sustainability solutions.

Tender employees at E&P experience that sustainability requirements can appear as either an individual criterion or in conjunction with other criteria (e.g., organizational structure or project solutions). The response to these qualitative criteria takes place through the submission of 'references' and 'value packages' during the tender process. Figure 2 below illustrates an example of a typical tender process involving negotiations, spanning a total timeframe of 125-145 days, or approximately 4-5 months, and includes two rounds of negotiations from procurement to the final awarding of the contract. E&P typically participates in EU tenders, involving tender projects exceeding 40 million DKK, which necessitates the inclusion of the European Single Procurement Document (ESPD) in the PQ application. This document primarily addresses the bidder's financial status in terms of key figures and equity.

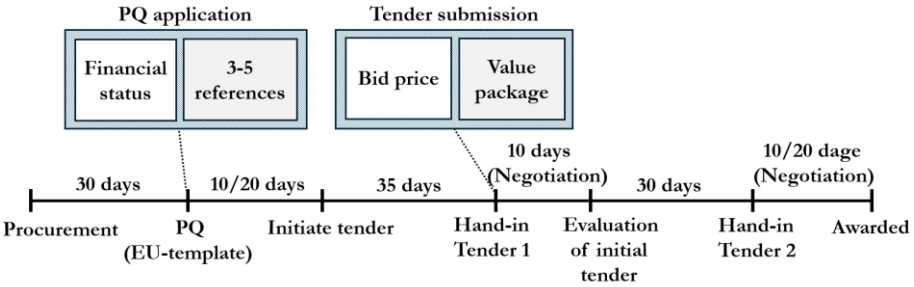

Figure 2: An example of a tendering process with negotiation

As illustrated in Figure 2, references are part of the initial prequalification process that determines whether E&P will be selected to participate in the final tender rounds. References are brief descriptions of a bidder's completed or ongoing projects. The purpose is to showcase experience that aligns with the tender project such as similarities with the contract's sum, project type (e.g., office/housing), and/or relevant expertise in specific areas e.g., sustainability initiatives. Once E&P is prequalified and invited to submit a final tender, value packages become relevant. A tender submission includes the bid price and an explanation of how the qualitative criteria are met, which is outlined in the 'value package'. A value package comprises written descriptions and visuals detailing how the project team plans to execute the tender project. This enables bidders to present specific solutions, such as those addressing sustainability issues, or organizational structures that, together with the bid price, form the foundation

for negotiations to determine which of the remaining 2-5 bidders will be awarded the contract.

As an industrial PhD student, I was affiliated with the 'Customers, Market, and Business Development' department at E&P (see Appendix A), which is the support function within the organization responsible for business areas such as prequalification, market analysis, PR communication, tender communication, business development, and sustainability. In the next subsection, I will further elaborate on my role as an industrial PhD student within the organization.

3.1.4. MY ROLE AS AN INDUSTRIAL PHD STUDENT

Qualitative research involves the storyteller being portrayed as a 'scientific' character, whereby choices are made as to whether we as agents appear in the text that is produced (Golden-Biddle & Locke, 2007). I acknowledge that my presence has influenced my research, particularly in my interviews with E&P's top leaders, interviews with clients, and through my observations where I was physically present at most meetings. However, my approach has not been oriented towards 'action research', where I intentionally attempted to contribute to E&P's tendering activities. Rather, I have prioritized observing and inquiring into the practices as they naturally unfold. Langley and Klag (2019) highlight the dilemma of conducting qualitative work in that field involvement has the potential for deep understanding but 'being close' to the studied phenomena may also reorient what is aimed to be understood, which is referred to as 'the involvement paradox'. The position of an Industrial PhD student encompasses the role of a colleague and, simultaneously, a researcher who studies the same environment that they are part of. At times, it was a difficult situation to manage, especially because my role as a colleague began before the start of the PhD project, where I worked as a 'sustainability consultant' for four months. This gave rise to challenges such as 'going native' when "*concerns about the socialization of the researcher into local practices and beliefs to such a degree that these can no longer be seen clearly*" (Langley & Klag, 2019, p.516). Conversely, four months is not a long time to become truly 'native', as the socialization process often requires more time to fully integrate and become involved in E&P's daily activities. However, I was aware of the risk of taking 'statements' for granted when making field notes. In the last year of the project, I therefore prioritized distancing myself from the host company, where empirical material needed to be reviewed and analyzed. Striking a balance has been challenging, as my focus has been on identifying 'specific things' through the examination of work efforts related to sustainability. Concurrently, my approach to studying valuation processes rooted in an ANT perspective necessitates an understanding that all statements should be viewed as positions and expressions of particular interests.

Furthermore, I constantly reminded myself that, as a researcher, I was also part of co-producing the meaning that is created when people are brought together and 'staged' (Weick, 1995; Langley & Klag, 2019) in, for example, interview situations. Hence, I was the one who was crafting the 'storyline' when I asked interviewees specific questions, and I was responsible for getting back to the meaning (that I was pursuing) if the interviewee decided to reorientate the focus. I strove to maintain an 'objectivist stance' as an interviewer, observer, and reviewer of documents. However, I do acknowledge that my role and actions in the situations of gathering data cannot be entirely objective. I occasionally observed that my role became intertwined with my empirical field of study. For instance, in an interview with E&P's former CEO, it was noted that my position as an industrial PhD focusing on sustainability would not have existed five years ago (prior to the interview in 2021). However, as of 2021, the company perceives greater value in adopting a development-oriented approach to bring knowledge closer to the organization. Such statements provide a contextual understanding of the host company's development and illustrate how my role aligns with this agenda. Thus, my position cannot be completely free from bias in terms of my affiliation with the host company and due to my professional background as a civil engineer. However, I did not act as a 'key actor' in the observations I made. My role was predominantly passive with few inputs as a participant observant, which allowed me to minimize my involvement. For instance, I provided insights during observed tender meetings based on my experience as a sustainability consultant within the company, where applicable. However, I did not participate in the writing of submitted tenders, nor did I extend my involvement beyond activities related to my previous role.

Another dilemma that arises when one holds both the role of a colleague, and a researcher is the gray area surrounding what was said and what I chose to record in my field notes as data. As a colleague, I also participated in conversations that occurred outside the meetings I was part of, for example, lunches and social gatherings (e.g., Christmas parties and summer gatherings) at the office. I characterize these conversations as 'off the record', and it would also be unethical of me to document personal opinions. However, if a relevant discussion arose, it helped me to focus my attention on 'these insights' in the meetings I attended. In such instances, I emphasized the overarching 'issue' in my field notes. This approach facilitated a more comprehensive contextual understanding of the organizational issues from the company's employees, including those (e.g., project leaders or site managers) beyond my immediate colleagues in the department of 'Clients, Market and Business Development' (CMB).

3.2. DATA AND METHODS

This section presents the overview of the empirical data, outlining how the data was collected, chosen, and analyzed. All the collected data was originally in Danish and, therefore, the chosen quotes from interview transcriptions and written text from project documents have been translated into English. The translations were carried out so that they were closely aligned with the original wordings and linguistic expressions to avoid any misinterpretations or distortions of meaning during the translation process. While it is inevitably challenging to completely avoid distortions in translation, I have strived to minimize them as much as possible. For instance, I had a native English speaker proofread my translations of documents and interview quotes.

3.2.1. FINDING LITERATURE

My approach to the literature review was informed by two primary directions. Firstly, I sought existing literature within the domain of construction management research (CMR), particularly focused on sustainability in contractor tendering. This research field is relevant to my study because construction management literature addresses how construction actors attempt to organize and make the world tangible, particularly in areas such as sustainability, economics, project management, quality, occupational health and safety, and digitization, among others. Furthermore, construction management literature has a tradition of examining these subjects from a social science perspective, which serves as a source of inspiration for my work. The purpose of diving into this research field was to obtain a contextual understanding of the current literature relevant to my empirical focus of studying contractors' tender practices and identifying relevant cornerstones that would support the empirical direction I intended to position my study. Thus, I was also interested in the literature that addressed sustainability requirements in procurements and the potential benefits or challenges these posed to contractors' competitive positions. Secondly, I aimed to identify literature related to my theoretical orientation within 'valuation studies' and the associated sub-concepts, including relevant studies that adopted the approaches of 'Actor-Network Theory' and 'framing'. In this context, I was more interested in the theoretical application, analytical frameworks, and methodological approaches rather than the empirical focus areas of selected studies.

To find relevant literature within the field of construction management research, the review strategy included the steps of searching in databases such as 'Springerlink' and 'Scopus' using search strings related to procurement, tendering, and contractor organizations. The search terms included the intersection of contractors and tendering: 'contractors' prequalification', 'contractors' tendering

processes', 'contractors' bidding practices', and 'contractor's winning OR competitive strategies'. Furthermore, search terms related to contractor practices and sustainability demands (e.g., related to procurements and selection criteria for green/sustainable building projects) were applied due to the study's focus on understanding how contractors work with integrating and developing sustainability practices. The initial step was to assess relevance based on the title and abstract and whether the papers examined the processes of procurement, tendering or bidding, building clients' strategies, contractors' practices or were closely related to comparable practices of project-based construction companies (e.g., work practices of engineers or architects). Another step was to follow the track of references in core studies from the initial search, which decoded the discussions among scholars occurring within the research field. Given the construction industry's local conditions and distinct characteristics in terms of practices, legislation, and development (e.g., within the sustainability agenda), I chose to prioritize studies from Europe and other Western countries. Thus, the delimitation of location was to avoid discussing findings based on construction practice that differs substantially from Nordic construction practice. Another priority was the focus on recently published studies and ensuring high research quality by choosing studies from peer-reviewed journals and book chapters. Finally, the studies chosen for review were all related to the construction industry and the built environment. Thus, I argue that, e.g., procurement and tender practices within other industries will lack the necessary preconditions for understanding the roles of construction actors (e.g., contractors and clients) as well as the work processes and organizational value chains that are taking place in building projects. However, my search approach also evolved over time as I became more acquainted with the construction management literature, thus, in relation to specific authors, topics, case studies, etc.

The literature search for studies related to 'valuation' had a different approach as the field represents a relatively recent development within the tradition of science and technology studies. These studies were not chosen based on the context of the construction industry, but rather based on the methodological approaches underlying the investigation of valuation practices. The majority of these studies were sourced from the journal 'Valuation Studies', which adopts an interdisciplinary approach within the field of social science and humanities. I strived to select studies that extensively drew upon or were inspired by examining valuation processes from an Actor-Network Theory perspective. In my selection of valuation studies, I focused particularly on the analytical insights these studies offered, which serve as key sources of inspiration for my own analytical approach to valuation processes. Furthermore, in my quest for literature to underpin my analytical approach, I specifically sought out relevant studies that draw on 'Actor-Network Theory' and 'Framing'. Many of these studies were found by tracking references from core studies within the domain of CMR e.g., from the Journal of

Construction Management and Economics. These were also selected to serve as sources of inspiration, for example, how framing and concepts within ANT contribute to examining valuation practices through people's statements, written documents, or situational actions. Additionally, the selected studies within valuation, ANT, and framing were not prioritized by the year of publication due to the emphasis on the theoretical and methodological approach rather than 'new contributions'.

The next subsections will specifically address the data sources I collected, which form the empirical basis for my three sub-analyses.

3.2.2. DOCUMENTS

Following objects can help to complete the picture of activities or the way of life under study (Czarniawska, 2014). The tender practices in the host company consist not only of the employees but are also formed in the interaction with other heterogeneous entities such as numerous documents. However, I use the collected documents for different purposes, and this distinction is important to highlight. Some of the documents serve as a direct 'object' of analysis, whereby selected written expressions are presented and analyzed. I refer to these documents as '*direct analytical documents'*. Other documents are used indirectly in the analysis in that the content is not directly quoted; these are called '*indirect analytical documents*'. Finally, a group of documents is used for contextual purposes to obtain a deeper understanding of the company's practices and processes. I refer to these types as *'contextual documents*'. I gained access to the tender documents and other internal documents via the host company's internal data drive. However, if this was not possible due to the documents being unavailable for various reasons, I have also obtained documents via email from employees at E&P.

Table 1 presents an overview of the applied documents in the study. All the written material is in Danish and, therefore, the title appears in both Danish and English. Furthermore, the project names that appear in the documents have been anonymized and replaced with fictional names. These fictional names such as 'Wooden building', 'The Waterside buildings', 'The Patchwork', and 'The Reliance' continue to figure in the analysis.

Table 1. Datasets applied as part of the data collection

Purpose of use	**Type and year**	**Title**	**Description**
Direct analytical documents	*Tender document*, 2022	'*Træbygning Referencer*' [Wooden building references]	Compromising the four references applied in the analysis
Direct analytical documents	*Tender document*, 2021	'*Træbygning udbudsbetingelser*' [Wooden building – tendering conditions]	Describing the client's tendering conditions
Direct analytical documents	*Tender document*, 2021	'*Ny Skole og Fritidscenter i x – udbudsbetingelser*' [New school and leisure center in x - tendering conditions']	Describing the client's tendering conditions
Direct analytical documents	*Tender document*, 2021	'*Patchwork – Ny skole og fritidscenter i x*' [The Patchwork - New school and leisure center in x]	The value package for the new construction school 'Patchwork'
Direct analytical documents	*Tender document*, 2021	'*Patchwork metodebeskrivelse – Ny skole og fritidscenter i x*' [The Patchwork method description]	The value package for the new construction school 'Patchwork' responding to the applied methods
Direct analytical documents	*Tender document*, 2021	'*Patchwork organization & CV – Ny skole og fritidscenter i x*' [The Patchwork organization & CVs]	The value package for the new construction school 'Patchwork' responding to the organization and showcasing the project team via their CVs
Direct analytical documents	*Tender document*, 2021	'*Udbudsbetingelser – strategisk Partnerskab i x i 2022-2025*' [Tendering conditions – strategic partnership]	Describing the client's tendering conditions
Direct analytical documents	*Tender document*, 2021	*('Kundenavn') & Reliance – det strategiske partnerskab'* [('Client name') & The	The value package for the Reliance

		Reliance – the strategic partnership]	
Direct analytical documents	*Tender document*, 2021	*'Referat fra 1.forhandlingsmøde'* [Report from the 1st Negotiation Meeting]	Written notes from the first negotiation meeting concerning the tender 'The Patchwork'
Direct analytical documents	*Tender document*, 2021	'*Endeligt tilbud, Evalueringsrapport, strategisk partnerskab'* [Final tender, evaluation report, strategic partnership]	The client's evaluation of the submitted tenders of 'The Reliance'
Direct analytical documents	*Internal strategic document*, 2022	'*Strategi 2025 – Dialogpakke E&P'* [Strategy 2025 – dialogue package E&P]	E&P's strategic targets of 2025
Indirect analytical documents	*Internal tender document*, 20XX	'*PQ procesdiagram*' [PQ process diagram]	Describing the systematic and chronological processes of PQ
Indirect analytical documents	*Internal strategic / sustainability document*, 2021	'*Strategiske mål på bæredygtighed frem mod 2025'* [strategic objectives on sustainability towards 2025]	E&P's sustainability objectives towards 2025
Indirect analytical documents	*Internal process document*, 2023	*'Tilpasninger i organisationen'* [Adaptations in the organization]	News on E&P's intranet regarding organizational changes related to tender employees and new roles in sustainability
Indirect analytical documents	*Internal tender document*, 2023	*'Afgjorte PQ sager'* [Decided PQ cases]	Statistics on the success rate of getting prequalified from 2016-2023
Indirect analytical documents	*Internal strategic document,* 2023	*'E&P deltager i arbejdsgruppe omkring renovering i DGNB'* [E&P participates in a working group on renovation in DGNB]	News on E&P's intranet regarding their involvement in providing inputs to a revision of the DGNB

			system for renovation projects
Indirect analytical documents	*Internal strategic document,* 2023	*'Nyt DGNB-kriterie kan få flere udsatte ledige i job i byggeriet'* [New DGNB criterion can help more socially marginalized and unemployed people find jobs in construction]	News on E&P's intranet regarding E&P's contribution to a revision of the DGNB system for social employment initiatives
Indirect analytical documents	*Internal tender / sustainability document,* 2022	'*Bæredygtighed – evaluering i tilbuddene'* [Sustainability – evaluation in the tenders]	An internal document that collects tender evaluations from clients on sustainability descriptions
Indirect analytical documents	*Sustainability document,* 2023	*'Find de "lavthængende" bæredygtighedstiltag på byggepladsen'* [Identify the 'low-hanging' sustainability initiatives on the construction site]	An external presentation held by E&P's head of sustainability in February 2023 hosted by an interest organization. The presentation is about tips for realizing cost-effective sustainability initiatives in tenders
Contextual documents	*Internal tender / sustainability document,* 2022	'*Bæredygtighed – evaluering i tilbuddene'* [Sustainability – evaluation in the tenders]	An internal document that collects tender evaluations from clients on sustainability descriptions (*'contextual documents*')
Contextual documents	*Internal strategic document*, 2022	'*Forretningsplan KMF 2022'* [business plan CMB 2022]	The CMB department's business plan that was presented at a team meeting
Contextual documents	*Internal tender documents*, 2016-2021	'*Tilbudsstatistik 2016-2021'* [Tendering statistics 2016-2021]	Statistics on 'won/lost' tender projects, tender price, contract form, and winner price. Tracked annually and monthly

Contextual documents	*Internal tender/ sustainability documents*, 2022	'*Bæredygtighed i tilbud April 2022'* [Sustainability in tenders, April 2022]	A presentation of some examples of sustainability requirements in E&P tenders
Contextual documents	*Internal strategic document*, 2022	*'Bæredygtighed i E&P – Koncepter, værdipakker og ydelsesområder'* [Sustainability in E&P – concepts, value packages and service areas]	Presentation of sustainability concepts together with examples of projects and contributions to DGNB and the SDGs
Contextual documents	*Internal strategic document*, 20XX	*'Ny fortælling- med respekt for vi kommer fra – og det vi står med'* [New narrative – with respect for where we come from – and what we are dealing with]	Powerpoint slide reflecting on E&P's prior, present, and future role as a contractor
Contextual documents	*Internal process document*, 2023	'*E&P Organisation juni 2023'* [E&P organization June 2023]	E&P's organizational diagram
Contextual documents	*Internal tender document*, 2018	*'Forhandlingsproces'* [Negotiation process]	Powerpoint slide on the process of negotiation
Contextual documents	*Internal tender document*, 2021	'*Referat af forhandlingsmøde – Enemærke & Petersen'* [Summary of a negotiation meeting]	Notes from a negotiation meeting
Contextual documents	*Internal process document,* 2021	*'Erfaringsudveksling fra DGNB projekt 'The Waterside buildings'* [Knowledge sharing from DGNB project *'The Waterside buildings'*]	Thursday's theme meeting on DGNB, which is a monthly internal knowledge-sharing meeting on different topics
Contextual documents	*Internal tender/strategic document*, 2021	'*Sammenhæng til E&P's strategi og værdier'* [Connection to E&P's strategy and values]	Powerpoint presentation on strategic objectives in tendering

Contextual documents	*Internal tender document*, 2021	'*Reel effekt eller fordyrende proces? Tilbudsgivers syn på bæredygtighed i udbud i byggeriet'* [Real effect or cost-increasing process? The bidder's perspective on sustainability in construction tenders]	A presentation I conducted (with inputs from the former head of tendering and head of sustainability) on E&P's sustainability-related tendering activities presented at a law conference
Contextual documents	*Internal sustainability document*, 2022	'*Bæredygtighed på byggepladsen, Inspiration og eksempler fra E&P'* [Sustainability on the construction site: Inspiration and examples from E&P]	Thursday's theme meeting regarding experiences with sustainability initiatives at the construction sites
Contextual documents	*Internal process document,* 2022	'*Årets udvalgte begivenheder 2022'* [Highlighted events from the year 2022]	Presentation at a CMB team meeting outlining the main events/activities in the year 2022 from E&P
Contextual documents	*Internal strategic document,* 2022	*'GENBYG + E&P, hvad betyder det?'* [Rebuild + E&P, what does it mean?]	Thursday's theme meeting regarding E&P's investment in a builders' market specializing in the reuse of construction components and materials
Contextual documents	*Sustainability document,* 2023	*'Markedsdialog om bæredygtighed'* [Market dialogue about sustainability]	Internal presentation from a training seminar held at the holding company MT Højgaard Holding for the employees in September 2023 by the head of sustainability at E&P on the topic of how E&P communicates sustainability in tenders

I will particularly focus my attention on explaining the selection of documents that are part of forming the basis for my second and third sub-analysis (Table 1, marked in orange). The selection of the marked 'tender documents' is utilized in my second sub-analysis, where examples of four references and two value

packages from E&P are analyzed. These were chosen based on an extensive review of a larger set of documents within references and value packages. The criteria for my selection included that they had to be completed cases and that the sustainability descriptions were thoroughly detailed and reflected upon. This also meant that each document carried significant importance in the selection criteria ('references') and the award criteria ('value packages'). In examining the selected references and value packages, I have attempted to supplement the analysis with insights from the three different client organizations that included one pension fund and two municipalities. Unfortunately, it has not been possible to obtain clients' statements through interviews, as they declined to comment for legal and secrecy reasons. Moreover, it should be noted that I tried to obtain these client statements a few years after the completion of the tendering processes. In a phone call with a client from 'The Reliance,' I was informed that they could not comment on anything beyond what was written in their evaluation report of the submitted tenders. This client argued that it would not be proper or appropriate to comment specifically on one particular tender over another. Furthermore, the client stated that recalling specific details of the evaluation would not be possible, as it was completed two years ago. A client advisor for another client ('The Reliance') denied having knowledge about the evaluation of sustainability solutions for the submitted tenders. To address this shortcoming regarding the clients' perspectives, I have included the 'evaluation report' from 'The Reliance' and the 'Report from the 1st Negotiation Meeting' of 'The Patchwork'. These documents contribute to the clients' perspectives on how they perceive E&P's proposals on the two value packages. Another potential shortcoming is that these tender documents are context-dependent and may thus require an understanding of the specific context in which they were produced. However, I will later elaborate on my presence as an observer during selected tender meetings for 'The Reliance' and 'The Patchwork,' which will help address this issue. This will provide context as to why these two tender projects were particularly important for E&P's tender teams to win and highlight the contributions of E&P's employees to their development. I would also like to underscore the strengths of incorporating tender documents in my analysis. These documents provide insights into the priorities and commitments of E&P's organization through proposed practices and strategies, as well as their efforts to achieve specific sustainability objectives and criteria.

In the third sub-analysis, I examine an internal strategic document 'E&P's strategic targets 2025' to gain insight into the future sustainability priorities of E&P's organization. Although this document is a product of its time and context, produced in 2022 (and not from 2024), it is still argued to provide relevant insights into the work efforts aimed at meeting client demands in the markets that E&P's organization seeks to pursue and maintain.

3.2.3. FORMAL ROUNDS OF INTERVIEWS AND INFORMAL CONVERSATIONS

The data collection consists of informal conversations followed by two formal interview rounds. I argue that both of these formats enrich my analysis. Informal conversations aim to comprehend the context in which my informants, employees at E&P involved in the tendering processes, perform their daily tasks, and the challenges they encounter. The format of semi-structured interviews allows for an in-depth exploration of how the 'sustainability agenda' is perceived by my informants in two different settings, namely from the perspectives of selected clients and E&P's top leaders. This provides insight into the diverse perspectives, attitudes, and experiences that exist when 'the same issue' is presented, specifically how sustainability requirements are considered in relation to procurements ('clients') and how sustainability demands challenge E&P's organization ('E&P's top leaders').

Informal conversations with employees

The PhD project was initiated in January 2021 during the COVID-19 pandemic and the first few months were influenced by the shutdown of offices. Employees at the host company based at the headquarters in Ringsted were thus encouraged to work remotely. Having no prior experience with tendering in my former job positions, I aimed to understand the roles and activities of employees involved in tendering since I could not observe the day-to-day activities from the beginning. From January 2021 to May 2021, eight meetings were held primarily via Teams due to the office shutdown (Table 2). The purpose of the conversations was to gather insights into the employees' experiences and perspectives regarding their roles in tendering. The company supervisor of the PhD project (formerly the head of tendering, now the CEO) assisted in identifying employees who could cover the broadness of the tendering activities. The primary objective was to gain an understanding of the diverse roles involved in the tendering process. In this context, the head of sustainability was also identified as a key participant due to his frequent involvement in providing inputs related to sustainability responses.

The employees in E&P were invited via email to gain access to many sources of knowledge and facets within the same context of the organization's internal tendering processes. This ensured knowledge about the initial phases of tendering (market analyzing work and prequalification) to employees involved in creating the tendering material (tender communication and tender calculation). Other relevant contributors were also identified, including the head of sustainability to discuss sustainability requirements, the portfolio director in a strategic partnership to address the differences in tendering activities in a

partnership contract form, and finally, the strategic decision-making perspectives in tendering from the former head of tendering.

Table 2. Informal conversations with E&P's employees

Role in the organization	In-person / online	Minutes
Former head of tendering (current CEO)	E&P head office	120 min
Market and relation coordinator	E&P head office	75 min
Prequalification (PQ) and marketing coordinator	Teams meeting	70 min
Project leader of tendering calculations	Teams meeting	60 min
PR, prequalification, and communication responsible	Teams meeting	60 min
Head of sustainability	Teams meeting	60 min
Tendering communication coordinator (former)	Teams meeting	60 min
Portfolio director in a strategic partnership	Teams meeting	60 min

The topics of conversation revolved around their roles and work tasks in the company's tender business and their perspectives on meeting environmental sustainability demands. The conversational setting was characterized by an unstructured interview format defined by the interview person who was responsible for managing the structure and leading the conversation (Justesen & Mik-Meyer, 2010). The conversations were not audio-recorded, but they were documented through written field notes and sketches. This approach allowed the employees the freedom to choose what they wanted to share, such as details about their work tasks, broader reflections on internal tendering procedures, or specific instances related to the handling of environmental sustainability requirements. The informal and unstructured approach also reflected where I as a researcher found myself when starting the data collection. Thus, my initial task was to comprehend the inner workings of tendering activities to establish the context and understand what is happening in E&P's tender business. The aim was to gain a deeper understanding of the contextual setting in tendering to determine which angles and perspectives to pursue further.

More specifically, the informal conversation with E&P's head of sustainability has helped focus my efforts on identifying the references and value packages that I should pursue. This conversation also provided insights into the tender communication approaches for preparing the suggestions on sustainability solutions within the value packages and identified relevant tender meetings for me to attend as an observer. My conversation with E&P's PQ and marketing coordinator has been directly applied in my second sub-analysis regarding the tender work on references. A potential shortcoming in this context is the

possibility of significant changes in the practices related to the preparation of references and the selection of PQ projects from 2021 (when the conversation occurred) to the present (as of 2024). Nevertheless, I argue that my presence in the office and continuous observations from team meetings have provided me with the contextual understanding necessary to present data that still reflects E&P's current work practices. Furthermore, I argue that my general analytical findings remain relevant in 2024, where I have subsequently continued to have interactions with the PQ coordinator e.g., during my participation in team meetings.

Formal interviews with the company's top leaders

An interview represents an interaction that is recorded and/or documented in words, and the answers provided in the interviews can be formed into producing narratives, used as a special type of observation, or to collect samples of the dominant discourse (Czarniawska, 2014). I pursued the extraction of narratives in the interviews with eight top leaders at E&P concerning the historical development of the company's tender practices, and how environmental sustainability requirements (and will prospectively) influence the internal organizational activities as well as required competencies. I have specifically selected E&P's top leaders for interviews due to their strategic oversight of the organization. Moreover, they are responsible for the decision-making processes that integrate sustainability efforts within E&P's organization, which allows insights into the primary focus areas, priorities (such as investments), and potential changes in recruitment or resource allocation.

The interviews (Table 3) were held in the summer of 2021 (June to August), which was at the beginning of my PhD project. Therefore, I have been particularly attentive to selecting quotes that exemplify specific strategic decisions from that period and ensuring that the chosen quotes remain relevant to the overarching reflections on the challenges faced by E&P's employees in addressing sustainability requirements in tenders. The interviews were audio-recorded to then be manually transcribed in Danish word-for-word and included 40 pages of transcriptions. The format of the interviews was semi-structured in that they had an interview guide with predefined questions, although there was room for deviations and elaborations (Justesen & Mik-Meyer, 2010). The leaders were invited through email, and the interviews were conducted face-to-face with a few exceptions, e.g., two of the leaders were located at the Jutland office.

Table 3. Interviews with E&P's top leaders

Role in E&P	In-person / online	Minutes
Director of division EAST – new buildings and renovation	E&P head office	23 min
Head of clients, market, and business development	Teams meeting	35 min
CEO (former)	E&P head office	29 min
Head of HR	E&P head office	16 min
Head of business area – new building and renovation (COO)	E&P head office	65 min
Former head of tendering (current CEO)	E&P head office	35 min
Director of business area WEST – new buildings and renovation (former)	Teams meeting	29 min
Partnership director (former)	Teams meeting	20 min

I allocated thirty minutes for my interview questions; however, the duration of the individual interviews varied (Table 3). Given the fast pace at E&P and the top leaders' busy work schedules, shorter interviews were chosen. In retrospect, I could have allocated more time for the interviews, as some of the top leaders revealed additional insights beyond my planned questions. Furthermore, it is important to set aside time to warm up the conversation and introduce the project and the purpose of the questions. Nonetheless, I argue that E&P's top leaders contributed with interesting perspectives that suited the purpose of my analysis. I intended the top leaders to reflect on some of the same questions, but several questions needed to be adapted because of the individual leader's role and responsibilities in the organization. In this way, the interviews had a dual focus, aiming to foster both broader reflections regarding the business and more specific insights related to each leader's respective area. For instance, I asked all the leaders to describe the current business characteristics including the strategic objectives and the most significant changes to the company's business over the past ten to five years. Specifically, the head of Human Resources (HR) was asked about the necessary competencies among employees and future recruitment strategies to deliver on sustainability requirements, whereas the former head of tendering was asked questions about the influence of sustainability requirements when bidding on projects including the work tasks involved in preparing the tender material.

As mentioned earlier, the interview had a narrative interview format focusing on the stories that the interviewees told and the buildup of their stories (Kvale & Brinkmann, 2009). Thus, the narratives could both occur spontaneously or be induced as part of the questions (ibid, p.173). The top leader's narratives were expressed in various ways. For example, narratives emerged about the company's early beginnings and how the company managed to enter new business areas and grow significantly in size. Other narratives focused on the influence of sustainability requirements in tenders, e.g., the challenging conditions for clients to maintain the prioritization of requirements when financial budgets weighed heavier. Kvale and Brinkmann (2009) highlight that narrative interviews can serve three different purposes such as turning a specific episode into a novel, addressing a life story, or based on memories. Regarding memories, the topic often extends beyond the individual's story (ibid, p.176). Thus, the leaders can be seen as informants sharing their experiences in the shape of recalling past and current work efforts related to addressing sustainability demands within the same organization.

Interviews with E&P's top leaders have been particularly used in the third sub-analysis of the thesis to examine the implications for E&P's tendering processes when competing on new terms that entail responding to qualitative criteria. In this way, excerpts from these interviews, in the form of narratives from E&P's top leaders, help inform the analysis of the competitive aspect of this new reality. This has offered insights into how E&P's historical development has shaped its current tender operations, perspectives on market opportunities for sustainability, and opinions/attitudes on specific strategic decisions related to sustainability investments characteristic of that time. The third sub-analysis has additionally been supplemented with more recent documents and observations (in comparison to these interviews from 2021) to mitigate the risks of presenting 'outdated' information about E&P's strategic considerations.

Formal interviews with clients

The first round of interviews provided insights into E&P's core business areas, which created the basis for the selection of clients. With assistance from the two company supervisors, different types of clients were identified to gain insights into sustainability requirements within E&P's core business areas that involve the market segments of public renovation/refurbishment projects, large-scale new construction, and strategic partnerships. The range of clients varies from social housing organizations, municipalities, one university, pension funds, and developers, categorized within the three market segments (Table 4). Furthermore, informants were selected based on their experience and roles within the organization, particularly their knowledge of sustainability requirements in prior and ongoing procurements and/or the strategic direction of sustainability objectives for the organization's future construction projects.

The second round of interviews differed as they involved external interviewees. This required the email invitation to include a more detailed introduction of myself as a researcher, the PhD project, and the purpose of the interview. In particular, the purpose of the interview, i.e., to unfold sustainability requirements in procurements challenged some of the interviewees, who showed resistance by expressing that the organization was not far along the road with this agenda. This resulted in not everyone accepting my invitation for a meeting, and other interviewees required a bit more persuasion by providing additional information, e.g., through a phone call conversation. It was important to emphasize to the interviewees that the interview would not only address the organization's own sustainability objectives but also future considerations and more general viewpoints on the subject. Thirteen interviews with clients were conducted in the spring and summer of 2022 (March to August) in person or via Teams (Table 4). I aimed to conduct the interviews at the interviewee's workplace in cases when the location was on Zealand and Funen. Each interview was audio-recorded with the permission of the interviewees and fully transcribed word for word. Furthermore, the interviews were conducted in Danish to ensure that the respondents (R) could express their viewpoints in detail. The transcriptions of the thirteen interviews included 97 pages in total and were reduced to 60 pages of selected quotes for interpretation.

Table 4. Conducted building client interviews. Category: 1. Public renovation and refurbishment projects, 2. Large-scale new build projects, and 3. Strategic Partnerships

Role/Roles in the organization	**Category**	**Non-profit**	**In-person / online, minutes**	**R**
Chief consultant and head of sustainability Procurement lawyer, Municipality	3	X	Online, 50 min	R1
Project head, Pension fund	2		Physical, 32 min	R2
Senior project leader Head of project development, Social Housing Organization	1	X	Physical, 47 min	R3
Partnership responsible, Social Housing Organization	3	X	Physical, 35 min	R4
Project head, Social Housing Organization	1	X	Physical, 45 min	R5
Senior Development Manager, Pension fund	2		Physical, 35 min	R6

Head of project development, Developer	2		Physical, 38 min	R7
Project leader, University	1	X	Physical, 60 min	R8
Project head, Pension fund	2		Online, 35 min	R9
Head of project and innovation, Social Housing Organization	1	X	Online, 43 min	R10
Head architect, Municipality	1	X	Online, 25 min	R11
Sustainability manager, Developer	2		Physical, 36 min	R12
Head of project and development, Social Housing Organization	3	X	Physical, 41 min	R13

In line with the first round of interviews, the interview format was semi-structured, and statements enabled the re-production of narratives. I prepared the questions in an interview guide with many of the same questions related to organizational objectives of sustainability requirements including prior experiences and potential future developments. Some of the questions differed due to the interviewee's job position, which influenced whether their work tasks were at a strategic or more operational level. Both perspectives were relevant for gaining insights into the strategic decision-making processes and the more operational perspective of procurements. Furthermore, there are differences in how requirements are incorporated between private and public clients (obligated to follow the Danish Procurement Law), which also required some adjustments to the questions. For example, public clients were asked specifically about prequalification requirements and the award criteria formulated in the procurements. While private clients were questioned about their process for selecting the project team (including the general/turnkey contractor) and the specific sustainability requirements they take into account.

The interviewed clients are all in the process of incorporating environmental sustainability requirements in the procurements at different stages. Hence, some clients are still not fully prepared in terms of an overall sustainability strategy for the organization, whereas others are further ahead with defined strategic targets, implementation plans, and research-related activities. The interview format was not necessarily designed to prompt narratives (Czarniawska, 2014), but the openness of the questions allowed clients to reflect on different aspects of the topic within environmental sustainability requirements. When a spontaneous

narrative occurred, I strived not to interrupt the interviewee but to ask elaborate questions to get a more coherent narrative. An example is from a public client who I asked about their experiences with how strategic partnerships were facilitating the implementation of sustainability requirements. The chief consultant (R1) initiated a narrative about how a strategic partnership provides incentives for development initiatives among the participants and continued by giving an example of a circular partition wall under development. These spontaneous and unexpected responses were also interesting sources of information, as they offered perspectives beyond what I had initially anticipated.

As a representative of the host company E&P, the narratives also resulted in clients sharing experiences with E&P and their relations with specific employees, as I would characterize as 'promotional'. I was not necessarily interested in the narratives going in this direction, as I was more interested in performing the role of a researcher without my role as an employee affiliated with the host company interfering. Another source of narratives evolved around the individual interviewee's individual opinions and attitudes toward specific environmental sustainability solutions. In this context, it could be difficult to determine whether these attitudes were representative of the organization or were expressions of personal preference. It is important to underline that individuals' experiences within the same organization may vary significantly. Thus, the interviewees only provide a one-sided narrative of how things are in their understanding of the organizational context including how they perceive experiences regarding sustainability requirements. Nevertheless, I attempted to filter out client statements that seemed more reflective of their own personal opinions.

The data collection for these interviews was conducted approximately halfway through the PhD project's duration, thus making the client statements representative of that period. This may present potential shortcomings, as emerging themes and agendas in the sustainability field might become more prominent by the end of the PhD project (beginning of 2024). Nevertheless, I argue that the clients' insights regarding organizational prioritizations of sustainability initiatives for their projects remain relevant for characterizing the potentially conflicting agendas and dilemmas that arise along the way. The client interviews have been used to inform my first sub-analysis, which focuses on the market for sustainability. These interviews provide insights into how clients approach sustainability strategies, objectives, and more specific requirements when procuring construction projects. I will further elaborate on how the client interviews have been analyzed for this purpose in the subsection '3.2.5 Working with the empirical data'.

3.2.4. OBSERVATIONS

The purpose of the participant observation method is that it allows the researcher to participate and study everyday life e.g., in a workplace that is part of the studied environment (Justesen & Mik-Meyer, 2010). Having a workstation at the headquarters in Ringsted and participating in selected tender meetings, provided the opportunity to observe the interactions of the employees as they unfolded in practice (Justesen & Mik-Meyer, 2010 p.100-101). The aim was also to get a deeper contextual understanding of how the employees involved in preparing tenders addressed sustainability requirements. In this context, tacit knowledge can be particularly noticed through observations, where ingrained, specialized, and culturally conditioned habits are expressed in ways that are not normally verbalized (Justesen & Mik-Meyer, 2010; Schrijver, 2021).

Observations were conducted from April 2021 to October 2023 (Table 5) with the aim of participating in meetings where environmental sustainability requirements were either part of specific tender projects (*'Tender meetings'*), discussed more broadly on how to address them (*'Sustainability communication in value packages'* and *'Evaluation of sustainability requirements'*) or part of day-to-day practice (*'Prequalification meetings'* and *'Clients, Markets, and Business Development (CMB) team meetings'*). The head of sustainability was involved in selecting the meetings based on an assessment that discussions about environmental sustainability would naturally unfold among the participants. With the exception of the 'day-to-day' meetings (PQ and CMB team meetings), I attended the meetings in which the head of sustainability participated, as his involvement in tender meetings meant that discussions on sustainability initiatives were part of the meeting agenda. The observations were documented through field notes taken on-site, with a focus on reproducing a higher level of detail when environmental sustainability discussions took place. The field notes were descriptive and focused on capturing what was being said with a distance to objectively depict the events without my own subjective judgment.

Table 5. Participation in internal tender meetings

Meetings	Project / meeting type	Participants	Mee-tings	Time period	Minutes in total
Tender meetings	Strategic partnership 'The Reliance' for schools and daycare centers	Head of sustainability (E&P), Head of markets (E&P), representatives from the architect firm, and engineer company, and one	5	April 21 to May 21	480

		communication consultant			
	New school construction 'The Patchwork'	Head of markets in West (E&P), tender calculation (E&P), representatives from the architect firm, and engineer company	6	April 21 to June 21	930
	Non-profit housing renovation	Head of tender calculation, tender communication employee, head of sustainability	3	August 21 to September 21	150
Pre-qualification meetings	Evaluation of projects in early procurement (PQ)	PQ coordinator, leaders from tender calculation, head of markets, an employee from tender communication, and legal support staff	4	January 22 to March 22	240
Sustainability communi-cation in value packages	Evaluation of how to communicate sustainability in the forthcoming value packages	Head of sustainability and a tender communication employee	2	May 22 to June 22	300
Evaluation of sustainability requirements	Evaluation of sustainability suggestions from E&P's tendering material of two non-profit housing renovation projects	Tender communication employees, head of sustainability, head of tender calculation	1	October 22	120
Clients, Markets, and Business Development (CMB) team meetings	Team meetings in CMB that were conducted two times a month	Employees at CMB (tender communication, sustainability, business development, PQ)	Appro x. 68	January 21 to October 23	Approx. 680

Czarniawska (2014) divides observations into '*indirect observation'* (without the approval of people observed) and '*direct observation*' (with the acceptance of the people observed). The conducted observations were direct, and my own participation ranged from a more 'stationary' observer to one participating and doing the same things as the people being observed (Czarniawska, 2014). During

the meetings at which I was physically present, there were instances when my input was requested. These situations occurred especially in the project's initial phase when I had recently taken on the role of an internal sustainability consultant within the company. This meant that I had already built up prior knowledge about the company including experiences with ongoing sustainability practices, which appeared as topics of discussion in some of the meetings. An example was from a sustainability workshop for a strategic partnership tender ('The Reliance') during which specific insights about the company's work related to green construction sites were requested. In my previous role, I had been in dialogue with subcontractors and building suppliers regarding which development initiatives could be implemented in practice, which meant that I had to share this knowledge. However, I tried to keep my two roles somewhat separated by sharing the knowledge I had gained earlier without further involving myself in the new tasks at hand. In the role of a researcher, I was aiming to take on a more distanced position while simultaneously concluding my previous work tasks.

Some of the meetings included stationary observations, which allowed me to 'preserve an attitude of outsidedness' (Czarniawska, 2014). I also participated in online meetings (e.g., '*Tender meetings for new school construction*') which especially allowed me to be a 'fly on the wall' in that my presence was unobtrusive. An example from online observations during meetings concerning the development of the value package for the construction of a new school ('The Patchwork'), for which the participants were in Jutland, and I was essentially the only one not physically present. From this vantage point, it was possible to exclusively focus on the interactions between the participants that were unfolding in the meeting room visible on the screen. The drawback was that inquiring about specific statements made was challenging as I was not an equal participant in the same physical space. I also discovered that it was more challenging to follow and document conversations closely over an online connection as the background noise from an open-plan meeting room was reproduced with distortions. Consequently, my focus shifted towards making less detailed notes and recording the essence of conversations during which sustainability initiatives were discussed.

I will now specifically detail how I have applied the various observations in my analysis. Most of the observations were not documented in great detail, which has primarily resulted in these serving a contextual understanding of E&P's tender practices. In my second sub-analysis, however, observations from PQ meetings are applied to gain insights into how projects are selected and discussed among the participating employees at E&P. Observations from 'Sustainability communication of value packages' also inform my second sub-analysis based on detailed notes and photographs to unfold the work efforts of responding to

sustainability requirements. Furthermore, I incorporate observations from my participation in the development of the value packages 'The Reliance' and 'The Patchwork' to specifically understand E&P's role, including their contributions and their motivation for participating in these particular tender projects. Observations from CMB team meetings have been useful for understanding the strategic issues within the sustainability agenda that concern E&P's employees for the development of the themes presented in my third sub-analysis. Regrettably, I did not record any of the meetings on video, and only a few were documented through detailed notes. This also meant that my notes did not provide detailed documentation of the participants' interactions, and statements from individual participants were documented only in a few cases. Consequently, I have been particularly attentive to how and to what extent these observations could be applied as sources for direct analysis. However, I argue that they enrich my analyses when applied, as they provide unique insights into the daily practices involved in E&P's tender work.

3.2.5. WORKING WITH THE EMPIRICAL DATA

This study uses various types of data sources, such as transcriptions from formal interviews, field notes from informal conversations and observations, as well as internal documents. This subsection provides a closer examination of the main elements of the presented data, with a focus on analyzing the two formal interview rounds, text analyses of tender and strategic documents, and the observations applied for direct analytical purposes.

Analyzing the interviews

An interview is both a shared exchange of views and a collection of views on the topic in question (Kvale & Brinkmann, 2009; Czarniawska, 2014). This may result in challenging conditions when attempting to understand attitudes or other things beyond the interview in the search for the underlying reality (Czarniawska, 2014 p.29). In the exchange of 'sustainability requirements and initiatives' when interviewing clients and E&P's top leaders, I found that it could be difficult to get to the core of 'reality'. However, it is important to underscore that when operating within the perspective of valuation and actor-network theory, many 'realities' are at play. For instance, each individual has their own perception of reality. Thus, while the host company aims to present a unified and progressive image externally, each top leader possesses distinct perspectives and interests in promoting various aspects and thereby different realities of the sustainability agenda. Sustainability objectives have strategic implications for the organizations both within the host company and among the interviewed clients. Thus, organizations tend to use narratives as a means of promoting and maintaining their activities over time (Sergeeva & Ninan, 2023). These narratives serve to shape a desired future, convincing audiences, justifying actions, and promoting

past achievements (ibid, p.3-4). Therefore, in the analysis of the interviews, I was attentive to the way in which organizations wish to appear when it comes to being part of the sustainability agenda. Consequently, the interviewees especially emphasized 'positive narratives' (e.g., frontrunner projects within sustainability) throughout their statements, potentially skewing the overall picture in terms of the individual organization's progress in achieving sustainability objectives across the entire project portfolio.

As previously mentioned in this section, my data collection consisted of two interview rounds. However, I will first present the analysis of my second interview round, the 13 client interviews, because these data inform my first sub-analysis. In my first sub-analysis, I focused on examining what clients prioritize when framing sustainability requirements and objectives as part of their procurements for current and future construction projects. In this context, the concept of 'framing' (Callon, 1998a) was particularly suitable for examining the actors and entities that individual clients include in their frame within the specific context of the 'sustainability agenda'. This also creates an awareness of what is given less importance or not considered. My interview framework included questions about experienced sustainability requirements from completed and ongoing projects, as well as strategic reflections on future organizational priorities. For example, one of the interview questions specifically asked which objectives were described in the organization's strategy concerning sustainable construction and sustainable investments. Another interview question addressed the largest barriers to demanding sustainability requirements as part of prequalification and in the final procurement material. The purpose was to gain insight into the clients' motivations, priorities, decision-making processes, and understanding of different perspectives in their efforts to procure and execute sustainable construction projects. In the narrative interview format, the interviewees were encouraged to direct their own responses instead of responding to leading cues from the interviewer (Czarniawska, 2014). Therefore, the emphasis was on the impression the interviewees aimed to give and the performance they gave to get closer to the performance they created in everyday practice (ibid, p.36). In selecting interview quotes, I endeavored to compile statements that demonstrate particular tendencies in the way clients construct their framing. However, the interview material cannot be seen as completely transparent when going from the transcriptions to identifying tendencies. Thus, I have not learned how organizations make strategic decisions about sustainability requirements, but rather I have learned how they account for their strategic decision-making (Czarniawska, 2014). Working with data representation to identify aligning elements is a complex task. I have particularly tried to pay attention to the most emphasized words in the statements to organize the different realities that emerge within the same tendencies. In this way, my analysis seeks to connect variations within the same phenomenon of 'sustainability

requirements in procurement' across actors, settings, and time (Schweber & Chow, 2023). This approach enables me to identify predominant tendencies within the clients' framing to understand the processes involved, such as how actors and entities are interconnected and interact. Thus, I am not interested in studying relationships of 'fixed states' between variables, but rather the variations of processes through which clients build their framing.

The analysis of interviews with E&P's eight top leaders had a slightly different purpose than the client interviews. As previously mentioned, these interviews were specifically used for the third sub-analysis, which examines how E&P's tendering processes are influenced by the new reality of competing on qualitative criteria. Interview questions were designed to capture characteristics that describe or have influenced E&P's organization. Furthermore, the interview questions focused particularly on the challenges of responding to increased demands, such as those related to clients' sustainability requirements. The perspectives varied according to the top leaders' positions within the organization. Thus, the answers ranged from a strategic perspective, such as priorities in terms of investments and strategic objectives (e.g., E&P's CEO), to a more operational perspective, such as addressing environmental sustainability initiatives at the construction sites (e.g., Directors of divisions for East and West, responsible for new buildings and renovation projects). The interviews with the top leaders provided insights into the leaders' narratives regarding E&P's development as a business over time and how E&P's top leaders strategically work towards meeting sustainability requirements. In selecting quotes for the third sub-analysis, I focused particularly on quotes that illustrate how the leaders linked market opportunities with the demand for sustainability requirements. Moreover, I sought quotes that could reveal changes in organizational capabilities to meet these new demands, including new internal competencies and organizational restructures. In my analysis of the selected quotes, I have particularly focused on studying valuation processes. Specifically, how E&P's top leaders establish, maintain, and assess the value of sustainability capabilities and strategies while balancing other organizational strategic objectives and striving to gain competitive advantages in response to new market demands. This approach provides insights into how the demand for sustainability gains qualities from the contractor's perspective. I was thus interested in different variations of the same empirical situations, for example, concerning a specific strategic decision in E&P's organization. This allowed for an examination of valuation processes, manifested through actions, which were differently expressed in the form of prioritizations and weightings, with 'sustainability decisions' participating in a specific context and thereby achieving value.

Text analyses

In my analysis of documents, I will particularly focus on three different types of documents, including the analysis of references, value packages, and E&P's Strategy 2025. Working with document analysis from an Actor-Network Theory (ANT) perspective also means considering the content of the documents while understanding that these documents are not neutral actors. They contribute to shaping and influencing actions and decisions in the situations they participate in. More specifically, this means that studying valuation processes from the lens of ANT requires attention to how the content is constructed in and around the documents. In my analysis of references and value packages, I will particularly build on the theoretical section *'Valuation practices through the lens of narratology'* (section 2.1.1). The second sub-analysis focuses on how E&P's tender teams use narratives in their tender documents for submissions. Organizational narratives can manifest in various forms and are often performative because they potentially shape and change the future (Sergeeva & Ninan, 2023). Additionally, they can be strategic by crafting future-oriented narratives that guide organizational direction and planned activities. Moreover, narratives can also be expressed as promotional in the construction of a desired future, persuading stakeholders, legitimizing actions, and highlighting past achievements (ibid, p. 2-4). Promotional narratives, in particular, play a decisive role in E&P's tender documents as the tender teams purposely utilize these to persuade their audience, the targeted client, to secure the awarding of the project. Also, these narratives provide insight into how the tender teams decide on what to make visible and what arguments constitute the value of the suggested sustainability solutions. Ultimately, references and value packages serve as sales material, which I argue is dependent on a 'narrative accomplishment' (Muniesa & Ossandon, 2023) to persuade the targeted clients of the value that they are seeking.

The selection of four examples on references and two examples on value packages serve as 'atypical or extreme cases' in which 'environmental sustainability descriptions' are represented to a much higher degree than usual, which means a larger amount of information can be studied. The examples activate more actors and basic mechanisms (Flyvbjerg, 2006 p.13), where the study of 'average' or 'typical' cases of tenders would not provide the richest information in proposals of sustainability solutions ('value packages') or past performances within the participation of sustainability activities ('references'). Furthermore, the examples are context-dependent because they were obtained from completed tenders at the host company. Flyvbjerg (2007) argues that context-dependent knowledge is as valuable as context-independent knowledge. He also argues that the "*power of the good example*" is often underestimated and that it is often possible to generalize based on a single case (ibid, p.77). Building upon this perspective, the analysis of the four reference examples is particularly focused on studying the tender team's efforts of bending and turning completed

and ongoing projects to fit into the client's selection criteria. Thus, the analysis is attentive toward the discourse of words from the client's criteria to how each of the individual references reproduces and frames different values of sustainability accomplishments. Within these framings, their value is also coupled with other entities and actors, for example, organizational practices, collaborating organizations, and applied voluntary standards. The analysis of the two value packages applies the same methodological approach; however, the focus is predominantly on solutions that have not yet been transformed into material value. I argue that this situation necessitates an even greater degree of 'narrative accomplishment', as tender teams must develop solution proposals that have not yet been realized and cannot be depicted through actual footage for the specific project. My analysis concentrates on how tender teams establish value from sustainability initiatives, including how this value is created for the building users and how E&P's employees actively participate in co-creating the value of these solution proposals. Furthermore, the analysis scrutinizes the client's evaluations of these two value packages, with an emphasis on how the value of these solution proposals is either maintained or modified during their circulation or 'displacement' into the client's context and situational practice of contract awarding.

The third sub-analysis focuses on the internal strategic document 'E&P's Strategy 2025'. The purpose of analyzing this document is to gain insight into how specific goals related to the sustainability agenda are prioritized. For example, the analysis focuses on the goal of 'green synergy', which involves both meeting the increased demand from E&P's clients and actively participating in shaping the 'framework conditions' relevant to their project activities and development work. Through four specific action objectives, I analyze how E&P's top management strives to maximize the value of sustainability solutions to gain competitive advantages while also influencing market solutions that have the greatest impact on internal practices. I specifically examine how E&P's actions contribute to shaping the value of sustainability market solutions to be prepared for delivering this value to selected market segments. Thus, the 'narratives' in the strategic document are mobilized to achieve a desired state in the future (Sergeeva & Ninan, 2023). The analysis also addresses how these future-oriented narratives are connected to previous work efforts to understand the ongoing work that they build upon and are shaped by.

Analyzing field material

My second sub-analysis draws on observations from selected internal meetings, which I was given permission to attend for the purpose of studying E&P's tender activities, specifically focusing on dealings with sustainability requirements. Most of these meeting attendances (Table 5), as previously noted under '3.2.4 Observations', have provided me with a contextual understanding of E&P's

tender practices. This has facilitated the selection of tender documents for analysis and the identification of key themes, such as the strategic issues that dominated CMB team meetings, which have informed the third sub-analysis. In many instances, my observation documentation did not comprise a sufficiently detailed data foundation for direct analysis. Nevertheless, observations from the tender meetings, 'The Reliance' and 'The Patchwork', have given me a unique insight into which parts of the tender work E&P's employees have particularly contributed to in the development of the value packages and how the organization of work tasks occurs in practice. Additionally, my participation has provided me with an understanding of E&P's strategic motivations for participating in tender projects with ambitious sustainability objectives. At the time of my attendance at the meetings concerning the two value packages, I was unaware that their 'final product' would play such an important role in my second sub-analysis. Had I been aware, I would have documented the interactions and interrelations between the participants and the 'non-human actors', such as visualizations on meeting boards/in PowerPoint presentations, to study the development of these two value packages more closely. However, the decision to conduct an in-depth examination of these two value packages was informed by my participation in these tender meetings. Consequently, I have retrospectively identified a gap in my data collection regarding the interactions that occurred during the meetings. The shortcomings and limitations of my empirical data are elaborated upon in the final section, and I will therefore revisit this topic later.

In my second sub-analysis, I draw on observations from four PQ meetings and two meetings focused on sustainability communication within value packages to examine E&P's tender practices. My participation in these meetings was documented through detailed field notes and photographs. In selecting excerpts from my notes, I specifically aimed to capture the essence of the conversations and the interactions with central 'non-human' actors. For instance, in the PQ meetings, discussions were centered around an Excel spreadsheet tool, which predetermined the agenda with topics and categories, and 'actions' during the meetings were documented by selecting/deselecting projects using color coding. At one of the sustainability communication meetings, interactions among the two participants revolved around a board where discussion topics were drawn and interconnected. In this way, I aimed for my analysis to treat the documented conversations as 'actions' (Czarniawska, 2014) of the concrete interactions. In analyzing the PQ meetings, I specifically concentrated on the critical moments where the selection process offered insights into the considerations and priorities that influenced the filtering and selection of PQ projects for participation. Additionally, I analyzed the role of references in this context to investigate how and when they were mentioned. The purpose hereof was to study the value of 'references' in E&P's daily tender practices during prequalification. For the

analysis of the sustainability communication meetings, my attention was directed toward studying the valuation processes of E&P's employees' efforts to standardize sustainability proposals for future value packages. The analysis focused on capturing the dilemmas encountered in this process, such as when E&P's tender team needs to target value packages to different market segments and consider what sustainability commitments E&P can feasibly promise. The purpose is to understand how the increased demand for sustainability requirements, as part of responding to qualitative criteria, presents challenges to E&P's communication efforts in future tender work.

Considerations regarding data limitations

At the outset of my PhD journey, my data collection was characterized by an intentionally broad focus on the topic of 'sustainability requirements' to study both client procurement and contractor's tender activities through informal conversations, interviews, and observations from meetings. This exploratory approach delayed the identification of specific cases, including the two value packages and four references, until the later stages of the project period. Consequently, interviews with clients were primarily oriented towards understanding the organizations' sustainability strategies and their considerations in setting requirements in procurements. Similarly, interviews with E&P's top leaders addressed more general questions about the impact of sustainability requirements on the organization's activities rather than being focused on specific case studies. Therefore, my interviews served different purposes than to supplement my analysis of tender documents, which led to the analysis of these documents primarily based on their content. To mitigate this limitation, I incorporated contextual observations made during my participation in meetings related to the development of the two value packages. Subsequently, I managed to acquire additional documents reflecting clients' assessments of the two value packages, including records from a negotiation meeting and from the official evaluation where the winning bidder was awarded. Furthermore, I have also attempted to obtain statements from the three clients to supplement the reference and value package examples. However, gaining access to these proved more challenging than anticipated. Hammersley and Atkinsen (2007, p.42) argue that: "*negotiating access also involves ethical considerations, for example to do with whose permission ought to be asked, as well as whose needs to be obtained if initial access is to be granted*". I was particularly rejected for secretiveness, with one client ('a municipality') arguing that it would not be legally appropriate to comment on one bid over another. In this context, my employment at the 'host company' further complicated my data collection, as it positioned me as a 'representative' of the host company rather than an independent 'researcher'.

Although my affiliation with E&P provided numerous advantages for my data collection, such as gaining access to internal meetings as an observer and internal

tender documents, it also introduced potential uncertainties. For example, my data collection of client interviews also appeared to be influenced by my affiliation with the host company, which is considered an important stakeholder in the industry and was pointed out by several of the clients. Consequently, I could sense that some of the clients had an interest in speaking positively about their collaboration with E&P and presenting themselves in a particular way to signify the maintenance of the relationship. As highlighted by Hammersley and Atkinson (2007), even when the researcher does not actively shape the informant's narrative by allowing time for responses on the informant's own terms, it is impossible to ensure that the researcher's presence has not been an important influence. Therefore, it would be naive to assume that the client interviews are free from bias in favor of presenting a strong commitment to the sustainability agenda. Similarly, it is unrealistic to believe that my interviews with E&P's top leaders were entirely free from bias in the recounting of stories about 'E&P' or in the discussion of sustainability activities. For example, E&P's top leaders were influenced by appearing highly committed to the sustainability agenda such as showcasing consensus in prioritized investments. Nevertheless, conducting my data collection at E&P offered the advantage of being an internal employee, which allowed me to scrutinize statements and develop a contextual understanding of the expressed views. Furthermore, studying sensitive and confidential material, such as tender processes, has its limitations. For example, it was not possible to observe negotiation meetings for tender projects, and therefore these could not supplement my analyses. At negotiation meetings, relatively few representatives from E&P's organization are present, and those in attendance are expected to play an active and participatory role. The sensitivity also lies in the potential impact on pending tender projects, and consequently, the selection of tender documents for 'direct' analysis had to be limited to 'determined' tender projects. This also required a cautious approach to observing meetings from ongoing tenders, such as the two value packages. Thus, my observations could not be used for direct analysis until the tender projects were definitively resolved as either 'won' or 'lost'. This unfortunately resulted in many of my observations not being documented in detailed form, such as through video recordings, as they were collected for more contextual purposes rather than for direct analysis.

Despite the aforementioned limitations in my collected data, I argue that these serve as sufficient for the purposes of my analysis. This study investigates how sustainability requirements in tenders are addressed across various data sources, including client interviews, interviews with E&P's top leaders, meeting observations, and specific tender projects. In this context, my data collection has used context-dependent knowledge rather than drawing on random and large samples. Aligned with Flyvbjerg's five misunderstandings about case studies, I argue that using 'extreme cases' as a source of rich information is particularly

beneficial for gaining in-depth insights into a given phenomenon (Flyvbjerg, 2006 & 2007). Moreover, I argue that generalizations can be made from the context-dependent knowledge of E&P's challenges in responding to new sustainability requirements, as well as from examples drawn from four references and two value packages. Although the objective of this study is not to make formal generalizations, this does not exclude its contribution to the collective knowledge accumulation in the field of contractors' tender practices. The presented examples of references and value packages serve as in-depth cases that facilitate valuable and unique insights into a contractor's tender practices by unfolding the diversity of narratives related to dealings with sustainability requirements.

CHAPTER 4. THE MARKET FOR SUSTAINABILITY

The first chapter of the analysis addresses the first research question: "*What characterizes the market for environmental sustainability in tendering and the different ways that building clients frame sustainability requirements during procurement?"*. To get to the core of what characterizes the market for sustainability in tendering, this chapter is based on interview statements with thirteen different clients from the Danish construction industry, including those from the public sector, private sector, and social housing organizations. The purpose is to understand the clients' framing of sustainability requirements and the qualities that clients highlight when evaluating and selecting sustainability requirements in procurements.

4.1. CLIENTS' FRAMING OF ENVIRONMENTAL SUSTAINABILITY REQUIREMENTS

This section draws upon the notion of framing (Callon, 1998a) to understand how clients which sustainability requirements they aim to pursue when procuring building projects. Whether the clients mention sustainability strategies, objectives, or more specific requirements, they reflect upon a framing of sustainability that draws a line between what will be taken into account and what not to be considered. This means which actors should participate and the limitations of what they perceive as necessary in the inputs of making sustainability requirements actionable. Framing is part of making sustainability services 'stable', however sources of overflowing can appear, as certain elements in the framing become fragile and may require re-framing (Callon, 1998a). This is a bit abstract, but throughout interview statements, I will give concrete examples of what constitutes clients' framing of sustainability requirements and the implications that accompany these framings.

Through examples from interview quotes, we get an understanding of the frameworks and solutions that are predominantly mentioned as necessary inputs in clients' framing of sustainability. Thus, this section is about how clients frame sustainability in relation to certain tendencies. Through key statements, insights are gained into the specific ways in which clients construct their framing. On this basis, the section is divided into the following three prevailing tendencies: 1) Economization, 2) Instrumentalization, and 3) Specialization. In each subsection, I will delve into what these tendencies entail, and which sub-tendencies occur as independent approaches in their framing throughout the next sections. Finally, I

will discuss the potential uncertainties and consequences of clients' efforts to frame sustainability.

4.1.1. ECONOMIZATION

The first tendency involves clients' attempts to economize sustainability into their framing. Thus, this section focuses on how sustainability becomes part of economic considerations and incentives when sustainability is to be understood and required through clients' procurements. Both economic costs and economic benefits thus become a prevalent aspect when clients assess the value of sustainability initiatives and solutions. In this context, I have further identified two sub-tendencies, namely the price of sustainability and sustainability as a competitive advantage. These two sub-tendencies are elaborated further in this section's analysis.

The cost of sustainability

The first sub-tendency highlights how clients attempt to economize sustainability from a cost-efficiency perspective, as sustainability initiatives become a balance between economic expenses and benefits. Furthermore, the economic aspects of sustainability constitute a theme highlighted in the industry among Danish building clients[4], which I will examine further through my client interviews. Thus, the following client statements unfold how the cost of sustainability becomes a prerequisite for the clients' priorities and considerations.

In the first example, the client (R10, social housing organization) approaches sustainability requirements based on economic conditions as follows:

> *"Grouping and mobilizing financial funds both for clarification and to ensure that we can integrate the right initiatives is a significant part. And we can also see in the recent tenders we have now that they somewhat concern material prices and other factors. And the environmentally sustainable initiatives we would like to implement, we may not be able to achieve to the extent we desire".*

From this client (R10) statement, the framing entails that sustainability must lie within the client's financial opportunities. The use of the wordings 'financial funds' and 'material prices' indicates how sustainability becomes largely about economics. Without economics, there is no room for conducting environmental sustainability initiatives. Thus, from this perspective, sustainability initiatives

[4] Based on an industry survey conducted in 2023 encompassing 366 construction companies in Denmark, 55% of the surveyed building and operation clients identified lower costs as one of the most critical prerequisites for reducing the climate impact in construction (ConTech Lab, 2024 p.14).

involve extra costs, as they are not cheap and certainly not free to engage in. At the same time, financial funding is not automatically secured, as we are introduced to how this involves both grouping and mobilizing. However, we do not gain insights into the potential struggles this may involve.

Another client (R5, social housing organization) also shares the approach of economics as a premise for implementing sustainability, more specifically circular economy initiatives:

> *"Well, it's about the economy somewhere along the line. Because if we have to send craftsmen out to dismantle it so it can be reused, it just costs extra. And we can't pass that bill on to our residents. And that bill might not be covered by the material that needs to be resold. And then something is missing, and it can't be done".*

In this client's framing, sustainability is translated into economic terms. This client specifically addresses considerations about the possibilities of achieving recycling efforts. In this context, the client mentions that there are costs associated with recycling (e.g. dismantling), but there are also potential revenues (e.g., if materials are resold). Unfortunately, it does not result in an economic balance on the bottom line. The client, as a social housing organization, is also tied to its residents. Thus, the client is bound by relationships with many stakeholders that constitute their situation involving legislation on how the social housing sector is structured, limits on rent increases, rules within each organization regarding expenditure, resident democracy, etc. The relationships with all these stakeholders are part of making the client feel constrained in the possibilities of getting sustainability initiatives financially covered.

In the third example, another client (R1, municipality) mentions the financial barriers of setting sustainability requirements:

> *"When we build a school or daycare institution, we know approximately what it will cost because we have a maximum price concept. So, when we need to add extra elements to our projects that incur additional costs, our project managers must be able to justify these expenses. And we need to assist in justifying them to our management. We are perhaps becoming increasingly aware that incorporating these sustainability initiatives incurs additional costs".*

This client (R1) explains that from the very beginning, even before a building project starts, it is already defined as something economic in the 'maximum price concept'. Building projects are thus already economically quantified before an architect has drawn the first line. Sustainability initiatives then become part of arguments, sales pitches, and valuations, which can influence the actions and decisions taken in terms of achieving 'extra elements' in the projects. In this way, project managers engage in valuation practices when expenses outside the project

scope are assessed and negotiated with the management. At the end of the quote, the client equates sustainability with increased economic costs, thereby aligning with the approaches of other clients (R10 and R5).

Another client (R6, pension fund) also addresses the cost of sustainability when it comes to the setting of requirements:

> *"Then, of course, there is the financial aspect. The economy is a crucial component in this. The whole question of what it actually costs to meet our sustainability goals and ambitions. And this needs to fit into a business plan that makes sense".*

This client's (R6) framing entails how economic considerations are the primary lens through which the realization of sustainability goals and ambitions is viewed. Quantifying the financial implications of the achievement of sustainability requirements becomes part of this client's decision-making process, where sustainability gets framed as a component in a business plan. In this way, sustainability is measured up against business objectives and profitability which entails how sustainability efforts are not compromised at the expense of ensuring financial stability. This quote is from a client that represents a pension fund and thus, manages citizens' pension schemes. Consequently, building projects are already connected to economization in the form of long-term investments, where sustainability investments are counted as an input in fund management and growth opportunities.

In the last example, a client (R7, developer) addresses sustainability as part of convincing investors:

> *"I find that the biggest challenge is the economy. Convincing investors that they need to pay for a construction that is more sustainable than a traditional one is where I see the greatest barrier".*

This client (R7) mentions the issue of convincing investors of the benefits of investing in sustainable construction which most likely involves higher upfront costs compared to investing in traditional construction projects. This client addresses how sustainability becomes part of speaking the language of economists, and thus, an economization of sustainability must occur for the investments to be allocated. In accordance with the quote from the other client (R6), sustainability investments are part of investors' business plans. Thus, sustainability initiatives are translated into monetary terms when they are evaluated as part of what constitutes a viable investment.

The next sub-tendency delves into how clients' framing of sustainability is tied to considerations of these investments becoming a competitive market advantage.

Sustainability as a competitive market advantage

The second sub-tendency highlights how clients attempt to economize sustainability from the perspective of gaining a competitive market advantage. The following client statements unfold how the choices of sustainability initiatives are tied to the prospects of achieving a stronger market positioning in the construction industry.

In the first example, the client (R6, pension fund) outlines their sustainability objectives and what needs to be done moving forward:

> *"We built everything according to DGNB gold certification. So, you could say that is the overarching framework for sustainability, which is our goal. It has become such that DGNB gold has almost become an industry standard, I would say. So, our new objectives, both internal and external, are formulated to be more and beyond that".*

The client describes how they have previously certified their buildings to DGNB Gold. However, they also express that now everyone is using this certification standard, criticizing this herd mentality of which they are a part. The extent of their participation in this industry standard is unclear. However, the client (R6) emphasizes a desire to lead and be at the forefront by pursuing new sustainability objectives that go beyond DGNB certification. This suggests a competitive battleground where the strongest prevail. Consequently, DGNB Gold is viewed almost as an outdated concept, and one must quickly adopt the next standard to demonstrate they are up-to-date. This development-oriented approach stems from an interest in appearing competent or superior in a competitive market. The client (R6) represents a pension fund, where the quest for development and growth is crucial because they operate in the economic world of managing investments.

In the second example, a developer (R12) equals their choices of sustainability initiatives with financial earnings:

> *"So, it might cost us one and a half million more to buy a DGNB-gold certified building with a low LCA reference. But if we can lose a three-digit million amount seven years later knowing that we cannot sell them or if we invested in these things would result in the extra earning. Then, it is pure risk minimization for us now to conduct these investments".*

This client (R12) argues the choice of investing in DGNB-gold certification as a direct return on investments and underlines the risk of not doing so. In this client perspective (R12), the DGNB scheme becomes part of a strategic and long-term evaluation where investments in buildings must meet certain sustainability standards (such as DGNB gold and a low LCA reference) to reduce the financial

risks associated with unsellable assets. In this way, this client (R12) anticipates that the future real estate market will favor DGNB-certified buildings and thereby, the DGNB scheme becomes a key determinant of asset value. Similar to the other client (R6), we gain insight into how economic growth and development become a driving force, with this client (R12) aiming to pursue construction investments and, thus, sustainability initiatives that advance their prospective competitive positioning in the real estate market.

Another client (R2, pension fund) also addresses the long-term economic benefits in their framing of sustainability:

> *"For us commercially, it is connected to sustainability, because if we build a sustainably certified office, and if we – just think about it – build a non-sustainably certified office next door. Then the sustainability-certified office will provide a higher rent and shorter idle times, and it will have a higher value when it has to be sold. And it is like that in the long term, it is not 'here and now'".*

This client (R2) highlights the economic benefits of investing in a sustainability certification scheme as improving the marketability and financial performance of the buildings. The client (R2) brings in an illustrative example, showing the differentiation of investing in certified buildings as more attractive in the market, thus, leading to higher rents, lower vacancy rates, and higher resale values. Similar to the other client (R12), the choice of sustainability certification aligns with commercial interests, where the financial benefits of certified buildings are realized over time. Once again, the client's (R2) framing of sustainable construction is centered on the future competitive landscape, where certain sustainability initiatives, such as attaining a certification label, are anticipated to have higher monetary value in the Danish real estate market. Consequently, sustainability certification schemes become a crucial component for gaining competitive advantages because, according to the client, certified buildings are more likely to be chosen and valued higher compared to uncertified buildings.

The same client (R2, pension fund) elaborates on their choice of sustainability certification system in the following quote:

> *"The systems are good at ensuring the reviewing of processes and making the right choices. And that makes buildings and projects comparable. […] We have a requirement that in the last 10 years, or 12 years ago, we demanded that we have to DGNB-certify all our buildings. […] But it was the one that we thought was the best and best suited to our part of the industry".*

The client (R2) explains how sustainability certification systems simplify complexity into boxes and categories, assigning points to each and weighing them against one another. This approach economizes real aspects, allowing two

unequal sizes to be compared similarly. The client explains that they have required DGNB certification for the past 10-12 years and evaluated this choice as the most suitable for their role in the industry as a 'pension fund'. Additionally, this client (R2) was among the first in the market to certify using the DGNB system. Thus, we see how this pension fund (R2) as a first mover in the market, recognized the DGNB scheme as aligning with their goal to manage and maximize long-term investments through the system's instrumentalization of sustainability. Also, the first mover mentality reflects the client's (R2) desire to set industry standards before other competitors arrive and realize the competitive advantages of investing in DGNB-certified construction.

In the last example, a client (R1, municipality) argues for their choice of sustainability solution in the market as follows:

> *"One of the reasons we switched to DGNB was that there was third-party verification of the requirements. Because I think it is a discussion in itself, how to make demands and how to enforce them afterward. But at least we experience that we to a greater extent get what we ask for".*

The client's (R1) situation involves a service arrangement where one organization contracts another for a service, where the choice of the DGNB scheme includes a third-party verification of this delivery. According to the client (R1), this use of the DGNB scheme ensures a more reliable and predictable realization of demanded requirements. Furthermore, choosing to work with the DGNB scheme provides a competitive advantage for this client (R1), as their economic investment in meeting their sustainability requirements is fulfilled through a service that enables verification of those requirements. This client perspective (R1) also entails that requirements outside the DGNB system present a more uncertain path, as they are often not part of a system where objective compliance assessments take place. Thus, if one does not follow an instrument, a tool, or a framework like the DGNB scheme, then clear categories and guidelines will not be obtained. However, on the other hand, sustainability can be achieved in other ways. The next tendency specifically examines how clients frame sustainability through instrumentation.

4.1.2. INSTRUMENTALIZATION

The second tendency entails how clients aim to find a tool, instrument, or framework to assess sustainability, which leads many to choose the DGNB scheme. This section is divided into two sub-tendencies, including clients' efforts to find tools for making sustainability tangible and comparable and clients' pursuit of tools that standardize sustainability efforts. Thus, examples of client statements related to these two sub-tendencies are examined.

Tools for making sustainability tangible and comparable

The first sub-tendency dives into the clients' framing of sustainability requirements as something that must be translated into specific and comparable measures by using a tool or a framework. The following client statements unfold the argumentations of the clients' needs to instrumentalize sustainability.

In the first example, the client (R10, social housing organization) links their sustainability efforts to using the DGNB system as a tool:

> *"[…] we have, in relation to when we start, especially with new construction and larger projects, that we always want to build sustainably, and we want to use the DGNB system to manage the process and ensure that we successfully navigate all aspects of a process. And it has also extended to include renovation projects if they are of a certain size".*

In this quote, the client (R10) points out that they always strive to build sustainably, which also invokes uncertainty in the way they express themselves. We learn that the client (R10) uses the DGNB system to manage their sustainability efforts. The client (R10) demonstrates a highly instrumental approach to sustainability, where the wording 'use' points to the utilization of tools or instruments to get something done, and 'to manage' indicates their attempt to control and regulate something. In this way, the client's (R10) perspective starts to become bureaucratic: if it can be measured and weighed, it can be counted, and if it can be counted, it can be managed by following up and controlling it. Furthermore, the client's (R10) renovation projects have shifted from being outside their frame to being within their frame (if they are above the client's size criteria) when the DGNB system is used as a tool.

In the second example, the client's (R5) sustainability strategy is also tied to the framework of the DGNB scheme as follows:

> *"Then it says that we want sustainability – economically, socially, and environmentally, when we manage, maintain, and future-proof our homes. Our new constructions must be sustainable based on DGNB guidelines, and renovation projects should be based on comprehensive plans rooted in the thinking of a circular economy".*

The quote begins by mentioning sustainability in the context of the three pillars: economically, socially, and environmentally, which are the same themes included in the DGNB scheme. Thus, the DGNB scheme most likely frames the client's strategy because, later in the quote, we learn that this scheme is being used. The client (R5) connects the DGNB scheme to their business processes. In this way, they focus on the three aspects (economic, social, and environmental) when managing, maintaining, and futureproofing. The DGNB scheme is introduced as

the tool that guides the client's sustainability efforts within the scope of new construction. This approach results in the instrumentalization of sustainability, where the client (R5) moves from more abstract concepts to something more concrete and measurable through the use of the DGNB scheme. Renovation projects do not fall under the same DGNB framing but shift to be based on comprehensive plans rooted in circular economy initiatives. The mentioning of comprehensive plans also involves a practice of framing. However, we do not gain the knowledge of what entails their plans nor what calculations, considerations, and priorities form the basis of their plans. But the client's (R5) mentioning of 'circular economy' entails a judgment that recycling gains may be achieved through renovation projects (over new construction projects), where existing materials/components might be dismantled and reused for other purposes.

Another client (R13, a social housing organization) also ties the DGNB scheme to their sustainability efforts in new construction projects:

> *"When we work with construction cases and new buildings, we have decided that we work with DGNB because it is fairly easy to work with because you can put things into an Excel sheet. Then you can measure back and forth. But what we are also aware of is that it is not useful to get all your points on the process".*

From this client's perspective (R13), the practicality of the DGNB scheme is highlighted, as the ease of evaluating the DGNB criteria in an Excel sheet makes the process systematic, measurable, and comparable. The iterative process of back-and-forth measurements indicates how the assessments of criteria are dynamic through continuous evaluations and adjustments. In this way, the client (R13) instrumentalizes sustainability, as criteria within the tool of the DGNB system are made into measurable components, that facilitate the comparison in quantitative weightings. Furthermore, the client recognizes the scheme's limitations if the chosen criteria are not balanced across different categories. However, the client (R13) is also tied to the defined boundaries of an instrument like the DGNB system with 'fixed' categories and criteria, as the decision-making of sustainability initiatives is only made within this system's solution frame of what is considered sustainable.

Similar to the other client perspective (R13), this client (R9, pension fund) draws attention to the practicality of using the DGNB scheme as a tool when addressing their sustainability efforts:

> *"It is also a tool, it is not just certification. We make a lot of choices continuously when we work with certification. So, I think that strengthens the process. It could*

> *be simplified a little - it is also a bit heavy to fill in those forms. But I think it strengthens it".*

This client (R9) instrumentalizes sustainability by addressing how their decision-making is coupled with the use of the DGNB scheme as a tool in their certification process. Thus, the DGNB scheme provides this client with a structured system of criteria to choose from that makes an otherwise ambiguous situation more tangible. Sustainability initiatives are, however, only discussed within the choices that is made visible within the framework of DGNB. The client highlights the strength in following the scheme towards the specific goal of attaining certification. However, the client (R9) does mention the bureaucratic demands of following the DGNB scheme. This illustrates the balance of the potential benefits of instrumentalization as providing a structured and measurable approach and its potential drawbacks of being an administrative burden in the documentation of sustainability efforts. At the end of the quote, the client (R9) resolves this balance by indicating that the strength of the DGNB scheme outweighs its potential drawbacks.

In the last example, a client (R8, university) connects their sustainability efforts in terms of how they can be managed in practice by using the DGNB scheme:

> *"It is something concrete. I think it helps a lot that we keep focus on what it is that we are trying to achieve. And there are tasks dedicated to the roles of the building client and contractor. And when it gets tangible then you must report to the sustainability manager and then something is initiated. If it was not for the fact that we had to DGNB-certify, I think it would be more of a 'nice to have'. It makes it more systematic".*

This client (R8) emphasizes how the use of the DGNB scheme facilitates the translation of abstract sustainability concepts into tangible and actionable tasks. This illustrates the practical application of instrumentalization, where the DGNB scheme is not only about setting a standard of defined criteria but also arranges these into specific actions when criteria are initiated, met, and thus, reported on. Furthermore, the client (R8) emphasizes how the use of the DGNB scheme also outlines specified roles of the building client and contractor. Thus, sustainability efforts within the DGNB scheme arrange and coordinate the work tasks divided into responsibilities that structure the client's sustainability objectives towards implementation and eventually, attain the certification. However, the client (R8) is not entirely convinced that including the certification in every project is necessary. This reveals the efforts of this client's (R8) organization to instrumentalize sustainability by using the DGNB scheme across all projects.

The next sub-tendency also examines how clients seek to find an instrument or tool to manage sustainability but with a greater focus on achieving standardized efforts across projects.

Tools for the standardization of sustainability

In the second sub-trend, clients frame sustainability requirements by seeking standardized solutions that ensure consistent outcomes, such as achieving specific baselines for their projects through ranking systems or certification standards. The client perspective of striving for social acceptance and legitimacy[5] from their surroundings will be further elaborated in this subsection by drawing from client interviews primarily focused on applying certification standards. Thus, the following client statements unfold the argumentations of the clients' needs to instrumentalize sustainability as a standardized practice, which concurrently serves to signal commitments to their stakeholders and the surrounding environment.

In the first example, a client (R2, pension fund) explains how their sustainability strategy consists of standardized approaches:

> *"[…] there is a very overarching strategy regarding sustainability – everything must be DGNB-certified at a minimum of gold. And then we have our sustainability program, which we build on top of that. It defines how we will achieve DGNB gold certification and then adds a whole lot more. We have many criteria regarding chemicals, wood, and social criteria that we want to implement in our own way".*

This client (R2) strives to use DGNB certification at a minimum of gold as a target for their sustainability efforts. This illustrates both an instrumental approach and a pursuit of standardizing sustainability practices so that all their buildings meet the same standard. This creates a baseline expectation, communicating and signaling to their surroundings that their buildings adhere to certain minimum standards. At the same time, the client (R2) believes that this baseline alone is not sufficient on its own, so they add more to their framing of sustainability. Thus, the client's own sustainability program is introduced, with criteria tailored to their projects. In this way, the client (R2) further develops a form of standardization that ensures a consistent effort, where sustainability efforts are largely predetermined in terms of chosen criteria. Sustainability efforts are standardized before the client (R2) begins a construction project, which could

[5] In a survey conducted by the Danish Association of Construction Clients in 2023, 73 members provided insights into the drivers behind their sustainability strategies. The findings indicate that considerations related to reputation and the 'license to operate' are frequently the primary motivators for driving the development among the range of Danish building clients (Danish Association of Construction Clients, 2024 p.49).

risk overlooking the unique conditions of different projects or limiting considerations beyond the established frameworks within which the client (R2) operates.

In the second example, a client (R1, municipality) also has an established baseline for sustainability efforts:

> *"The entire basis for all our construction projects above 20 million DKK is that they must be DGNB-certified. So, one can argue that there is a sustainable foundation for all our buildings".*

For the construction projects below the limit of 20 million DKK, the client (R1, municipality) also engages in a standardized approach:

> *"We use 14 DGNB criteria in our new environmental guidelines, which we also apply to projects that are not being certified. So, we use it as a reference system".*

To give a bit of context to the abovementioned quote, the limit of 20 million DKK was decided by the Municipal council, and thus, it is a political-driven decision that the Municipality's own buildings must fulfill the certification scheme of DGNB or the Nordic Swan eco-label. The client (R1) mentions how DGNB certification serves as a sustainable foundation for their sustainability projects, but only applies to buildings above a certain threshold. Thus, larger building projects must adhere to meet a minimum certification standard, while a different standardization process applies to buildings with a smaller contract value. However, the DGNB system's criteria reappear as a 'reference system', which indicates an instrumental approach to define and standardize what these projects must entail. The selection of these 14 DGNB criteria is also based on valuation practices in the prioritizing of certain measures over others, where we are not exposed to the specifics of this decision. This quote also exemplifies how certification schemes find their way into municipal construction that serves the political interests of their citizens in sustainable construction and become decisive in shaping the municipality's sustainability strategy. Achieving certified buildings also enables the client (R1) as a municipality to showcase and validate sustainability efforts when following recognizable certification schemes in the market.

In another example, a client (R8, university) also standardizes their sustainability efforts in terms of setting minimum criteria:

> *"We have decided that the entire campus will be certified for DGNB areas or the entire campus as an urban area. All our buildings, whether renovated or new, must also be DGNB gold certified. This has been adopted as a strategic decision, and it is the direction we want to take".*

This client (R8) mentions their decision to standardize all their sustainability efforts by following the DGNB organization's certification system. By committing to DGNB certification for all their buildings, the client (R8) also gains a method to rank their range of buildings or areas against each other. In this process of ranking individual buildings, their value is also assessed. Thus, valuation practices take place in deciding on which criteria should count and thus, achieve a quantitative weighting in the predefined system of the DGNB framework. Thus, certifications become a way to instrumentalize sustainability. It helps the client's (R8) organization to translate complex efforts, such as urban area development, into tangible measures by working towards specific goals of achieving a minimum DGNB gold baseline. During this evaluation process, sustainability initiatives serve as quantitative weightings to steer the client's (R8) efforts in the summation of achieving a definite percentage score. This also illustrates how the client's (R8) sustainability efforts are constrained in their conformity to this non-negotiable standard of achieving certification.

In the fourth example, a client (R12, developer) applies different standardized frameworks of sustainability efforts:

> *"First and foremost, there are requirements for LCC and LCA at the design stage. There are also requirements for DGNB gold, LEED gold, or BREEAM 'very good' certification. And in relation to our net zero goals, we have established a baseline, which is 12.5 kg CO_2 per square meter per year".*

This client (R12) establishes a specific CO_2 baseline in the commitment to carbon neutrality in quantitative terms. Furthermore, the client introduces many different and recognized certification standards including certifying in compliance with DGNB gold in the assessment and validation of their projects. This illustrates how the client's sustainability requirements are governed by meeting specified minimum standards that take on an instrumentalized approach by utilizing certification schemes and tools such as life cycle costing (LCC), life cycle assessment (LCA), and a CO_2 baseline. The framing of sustainability is thereby governed by tangible targets for monitoring and reporting on sustainability efforts. In this perspective, sustainability is not only framed as a guiding principle but efforts such as the CO_2 baseline are also accounted for in the projects as a practical and measurable management tool. The client argues that the use of these tools helps make their construction projects more sustainable, with LCC and LCA tools being given significant influence at the design stage. Thus, these tools are decisive for the solutions that are considered sustainable, however, they may also be subject to potential limitations, as the quantitative numbers based upon standardized assumptions might overlook qualitative considerations.

In the final example, the client (R7) does not necessarily aim to standardize projects across the portfolio, but the DGNB scheme is mentioned as the highlighted standard for their sustainability efforts:

> *"We are very project-oriented, so it is something we work on specifically from project to project. And we have some DGNB-certified buildings underway, and we also have some that need to be initiated. So it is a bit case by case, I would say".*

In this client's (R7) framing of sustainability, the client reveals that sustainability heavily depends on the projects they are working on. Consequently, sustainability is only considered in selected projects. The DGNB certification scheme is mentioned in cases where sustainability is factored in the projects, thus, serving as the client's standardized approach for achieving sustainable construction. This illustrates how the client prefers to instrumentalize sustainability efforts with the choice of the DGNB scheme in projects where these are prioritized. We do not gain insight into the evaluations behind the selection of projects that must meet DGNB certification, but we are informed that the client (R7) works on a project-by-project basis. From a sustainability perspective, the drawback of a project-oriented approach is that it may foster a 'build and forget' mentality. Once a project is completed, the client may quickly move on to the next one without reflecting on past efforts. However, the potential benefit of this approach, is that the client (R7) remains flexible and open to evaluating solutions with each project, and thus, avoids becoming entrenched in routine practices.

The next section focuses on a third tendency in clients' framing of sustainability that includes the specialization of competencies for example when specific tools, e.g., the DGNB scheme, are applied in their projects.

4.1.3. SPECIALIZATION

The third tendency builds on the other two tendencies of economization and particularly instrumentalization, as the choice of specific frameworks or tools is accompanied by a certain specialization in their use. Furthermore, there is widespread participation in courses among Danish construction actors as a means to improve sustainability competencies[6]. However, this section particularly focuses on clients' specialization in the DGNB scheme, which also appeared several times in the other two tendencies as an approach for

[6] Based on an industry survey conducted in 2023 among 366 construction companies, as previously referenced, 93% have actively sought to enhance their competencies in reducing climate impact over the past two years, particularly through participation in courses (ConTech Lab, 2024, p.16). However, the survey does not offer specific insights into the approaches taken by building clients toward competency development.

economizing and instrumentalizing sustainability efforts. I will briefly provide some context before presenting the client interviews.

The DGNB scheme includes educational programs to become a DGNB consultant for each of their manuals (e.g., new construction, buildings in use, or urban districts) (Green Building Council Denmark, 2024). Furthermore, the educational programs also include the opportunity to advance and become a 'DGNB auditor' that enables the competence to approve if a building qualifies for certification. The educational programs can be followed by any actors in the construction industry for a fee provided they have a few years of work experience, which makes the programs openly accessible to become part of. Throughout examples from client interview statements, I will examine further how the dissemination of knowledge from the DGNB scheme finds its way into the encounters with clients.

In the first example, a client (R4, social housing organization) mentions that they have worked on establishing their own standard documentation in relation to sustainability requirements for procurement. On this basis, I asked where the inspiration for these requirements was drawn from and received the following answer:

> *"By attending training for it. We've spent quite a bit of time on that. And we've also used an external advisor to help with the details. [...] And we've attended DGNB or GBC courses; they offer one for managers and building clients – we've attended that as well. That's how we approach it".*

In this case, the client (R4) explains that they are trying to create their own sustainability requirements, which are then forwarded to the procurements. The inspiration is drawn from the DGNB scheme; thus, this specialized knowledge is reproduced in some form where employees from the organization have attended several of the offered courses. Therefore, we see that the DGNB scheme's conceptualization of sustainability still finds its way, even though the organization (R4) in this case works towards finding their own path by developing customized standard documents. These standard documents have not been exclusively dictated by the external knowledge from the DGNB courses, but through the employees' encounter with this knowledge, new knowledge production has emerged and partly been influenced by the understanding of sustainability within the defined framework of DGNB.

In the second example, a client (R13, social housing organization) states the following about the organization's sourcing for inspiration in terms of acquiring new knowledge for demanding sustainability requirements:

> *"We are six employees who have taken a DGNB education, including myself [...] So, we try to gather as much knowledge as possible from various sources and involve ourselves as much as possible. Without it affecting the work we need to take care of alongside".*

This client (R13) explains that employees within the organization have received DGNB training in the process of gathering new knowledge and participating in sustainability activities. The DGNB scheme thus becomes the visible framework that contributes to the specialization of the knowledge that is sought after by the organization. In this way, employees from the client organization (R13) become representatives of the DGNB scheme, where the embedded knowledge is maintained through the client organization's sustainability requirements and implementation. Furthermore, as the employees from the client organization (R13) are educated within the specified area of the DGNB scheme, it also enables the opportunity for them to become its spokespersons. Thus, they might try to get others to follow the same guidelines that they have learned, and consequently, the spread of education also means the spread of spokespersons who promote the DGNB scheme.

In the third example, a client (R8, university) mentions that the organizational strategy of certifying both the campus and buildings according to the DGNB scheme has contributed to the following changes in-house:

> *"Over the past few years, our organization has developed to the point where we have a sustainability group that supports both the building client organization and operations. [...] Specifically, within our building client organization, all project managers have been sent to courses, and we have become DGNB consultants. A couple of people from operations have also become consultants for DGNB buildings in use. Additionally, we have consultants for urban districts. So, we have covered all existing DGNB consultant types in-house".*

The client (R8) introduces the organization's own sustainability group, which illustrates internal efforts to achieve a specialization of sustainability competencies. This specialization continues, as the client (R8) explains how employees have been educated as DGNB consultants to manage all sustainability activities in the organization, from buildings in operation to new construction and across the entire campus. This relatively significant investment in ensuring that all employees and internal consultants are trained as DGNB consultants demonstrates how DGNB's knowledge has been widely disseminated within the organization. Thus, similar to the other client perspective (R13), the employees as DGNB consultants become representatives of the scheme for also disseminating this specialized knowledge in the market. At the same time, the substantial presence of the DGNB scheme entails the risk of persisting the client (R8) to stay on this path through investments in training programs that structure

their work processes of sustainability activities based upon chosen DGNB manuals.

In the fourth example, a client (R10, social housing organization) underlines the choice of investing in the DGNB education internally:

> *"Within our own organization, we place great emphasis on ensuring that those involved in our projects have the DGNB education. This allows them to keep up with the process and related matters. These individuals, the project managers, usually join when the project has been established and has found its footing. So, we roughly know what to expect, and they follow along on the sidelines. It's more about being able to discuss the relevant topics without being specialists. Because we are the building client, we need to handle a wide range of different tasks".*

This client (R10) argues that internal project managers have been trained within the DGNB system to monitor the project's progress, meet expectations for the process, and possess the skills to engage in dialogues with the executing project team. Choosing the DGNB training programs for the organization's project managers provides assurance that they are capable of overseeing the realization of the requested requirements. This illustrates how this client organization's decision to be trained in the DGNB scheme is tied to the specialized knowledge and competencies that are evaluated as necessary by the client (R10) to ensure compliance in meeting the DGNB criteria. At the same time, the project managers' increased familiarity with the DGNB scheme can contribute to the persistence of prospectively prioritizing sustainability requirements within this framework. This is due to the dedicated investments in the training programs, along with the knowledge and experience that are being built as an outcome of interactions with the DGNB scheme during the project executions.

In the last example, another client (R5, social housing organization) similar to the client perspective of R10, also prioritizes their specialization in DGNB education to manage their projects:

> *"We have had some projects where the consultants say it costs an extra million. So, we have actually trained 5-6 of our own project managers as DGNB consultants to give them some pushback [...] But it shows that no matter what requirements we set, it costs some money. So, we constantly need to challenge them a bit on what we can actually do to sharpen the interest in this".*

This client (R5) argues that the decision to train their own project managers as DGNB consultants is connected to reducing financial costs that may arise as a consequence of not having in-depth knowledge of the requirements in the DGNB system. From this client perspective (R10), the specialization of project managers becoming DGNB consultants involves gaining the necessary

knowledge to balance costs with the services that hired consultants have determined should be included. In this way, the DGNB education is used to minimize the risk of unnecessary financial costs by having the necessary qualifications when being faced with consultancy fees. Thus, the DGNB education becomes part of a financial consideration, where potential savings outweigh the upfront costs of investing in the training programs. In this way, investing in DGNB training also serves as a means to economize sustainability efforts from a cost-efficiency perspective.

The next section also examines the DGNB scheme further but from the perspective of how its use introduces uncertainty in the clients' framing of sustainability.

4.1.4. UNCERTAINTIES IN CLIENTS' FRAMING

This section continues to explore clients' use of the DGNB scheme as part of their framing of sustainability. The three tendencies of economization, instrumentalization, and specialization showed how clients significantly rely on the DGNB scheme when an otherwise ambiguous situation of addressing sustainability requirements needs to be made tangible and manageable. We observe how clients utilize the DGNB scheme to frame sustainability by translating it into increased market value for investments and employing it as a practical tool to evaluate the worth of sustainability initiatives. Furthermore, the DGNB scheme facilitates the development of specialized expertise that enables construction actors to become practicing DGNB consultants. In this way, clients frame sustainability in a particular approach, where the DGNB scheme with its defined set of criteria gets reproduced in the clients' sustainability actions. However, this can have consequences down the line, as other sustainability initiatives may be overlooked when the DGNB scheme is adopted. This section delves deeper into the potential implications of the DGNB scheme as the choice of attaining sustainable construction through examples from client interviews.

This first example is based on statements from two different clients (R12 and R6). A client (R12, developer) underscores the potential consequence of the attractiveness among clients to pursue the DGNB certification label:

> *"You can say, on the other hand, I also think, as stated earlier, that it can become a 'cover'. Now we have decided that achieving DGNB Gold is fine. I think that any self-respecting building client should say that, for example, the DGNB framework includes a really good understanding of the fact that there are 40 quantitative and qualitative indicators of how we see sustainability from a social, economic, and environmental perspective".*

Another client (R6, pension fund) shares a similar perspective of how some clients approach the DGNB scheme to achieve certification:

> *"I think many building clients and stakeholders are reaping points by pointing their finger in the sky. And then you discard points and collect points to achieve this certification".*

These two statements both address the potential situation entailing that even though the DGNB framework sets specific criteria to achieve certification, it might lead to unintended consequences where the certification becomes part of a symbolic achievement aimed at making clients' sustainability efforts visible and gaining market recognition. Thus, the scheme's initial intention of relating to both the quantitative and qualitative sustainability indicators gets overshadowed in the pursuit of certification as the most important objective to fulfill. The statement by the client (R6) also entails how the collecting of points almost becomes a process of strategizing and gaming the system to achieve certification. This might also lead to a situation where points are collected with the intention of not making substantial sustainability improvements, as the choices are based on meeting the minimum requirements of the certification scheme. Consequently, to deal with the complexities of DGNB's criteria, there is a potential risk of prioritizing the outcome (acquiring the label) over the process (assessment of criteria) and, thus, the scheme may be treated like a black box. This lack of transparency can result in misconceptions regarding what is truly meant by sustainability initiatives when DGNB certifications are chosen among clients as the strategic objective that needs to be fulfilled.

In contrast to the perspectives shared by the aforementioned statements from clients (R12 and R6), the clients (R5 and R3) share a different perspective regarding the achievement of DGNB certification. A client (R5, social housing organization) explains that obtaining sustainability certification does not create value for the residents they serve:

> *"But we have not certified a single building, and we have also said that we would rather spend money on quality in the construction than we would spend the money on a certificate. Because we do not need the certificate. It does not provide any added value for us".*

Another client from a social housing organization (R3) shares a similar perspective by stating:

> *"For our residents, it is not necessarily important to get the small sign with DGNB or the Nordic Swan ecolabel. And that is an issue that we are running into - can we, like, sell that it is included?".*

Both clients (R5 and R3) argue that attaining sustainable certification labels such as DGNB or Nordic Swan ecolabel is not adding value for their residents. Based on the client's perspective of R5, pursuing the DGNB certification can be seen as an uncertain situation in terms of diverting resources away from what is perceived as more meaningful investments such as attaining quality for their buildings. What 'quality' encompasses in the client's (R5) understanding is not clarified, but certification represents an economic expense in itself, which the client (R5) does not believe can be justified. The client (R3) also encounters an uncertain situation in justifying the additional costs to the residents where the validation provided by a certification label does not align with the needs or priorities of residents. Both clients (R5 and R3) represent social housing organizations, which creates specific circumstances due to the regulatory framework governing the social housing sector. Social housing organizations must comply with regulations such as limits on rent increases and resident democracy. This provides insight into the challenges sustainability certifications encounter, as residents are covering the expenses and therefore must recognize the value in doing so. Despite the DGNB's certification label's commercial attractiveness among many construction actors, some of the clients representing social housing organizations question the certification's branding value and meaning in what it is there to serve.

In another example, a client (R4, social housing organization) also questions the value of attaining DGNB-certification construction based on the argument as follows:

> *"We have been working with objectives for a long time, and right now it is very easy to say that we will DGNB-certify everything. And the thing about DGNB-certifying everything is also the new statements from the consumer ombudsman. So, we really have to defend what we do besides DGNB-certify. And is it even worth conducting DGNB certification?".*

From this client's perspective (R4), the decision to pursue DGNB certification for buildings is being reconsidered because what was once defined and referred to as sustainable construction is now subject to new requirements. To provide a bit of context for this statement, the consumer ombudsman has stipulated that efforts to achieve a sustainable building must be documented according to a Life Cycle Assessment (LCA) analysis and DGNB-certified construction cannot as an individual accomplishment be branded as 'sustainable' or 'environmentally correct' (Dagens Byggeri, 2023). The external pressure from the ombudsman creates an uncertain situation for the client organization (R4) where the DGNB certification could potentially undervalue their sustainability efforts, as these are not considered justifiable in terms of documenting and marketing what sustainable construction must entail. This challenges the worth of such

certifications, as the client (R4) reevaluates whether DGNB-certified construction actually is a beneficial and tenable way to carry out their sustainability efforts.

In the last example, a client (R13, social housing organization) addresses the uncertainties of using the current DGNB manuals to certify renovation projects:

> *"It is difficult to certify when it is a renovation because there is actually no proper certification scheme for renovations. What you set as a goal is to be able to certify to DGNB silver. It cannot be done. It is largely impossible to do when it is a renovation. So, what we are trying to discuss with the Green Building Council is whether or not you should just look at what can actually be done when we talk about renovations, i.e. comprehensive renovations in old buildings. You also must think about the architecture. You cannot just plaster everything like they do in some places in Germany".*

From this client's perspective (R13), the DGNB certification system is framed around criteria that are primarily designed for new construction projects. This creates an uncertain situation in the current DGNB manuals that are considered inadequate for certifying renovation projects. The defined activities in the criteria are argued by the client (R13) to not accommodate the practical reality of the challenges and constraints of renovating older buildings and thereby, leading to struggles in meeting criteria, and thus, achieving certification. The client (R13) also stresses the attention to preserving architectural considerations where the current version might lead to unintended consequences in the renovation practices such as 'plaster everything'. Furthermore, the client (R13) is involved in a proactive engagement with the Green Building Council to discuss what can be done in this situation. This is an attempt to manage and mitigate the fragility in the framing of the DGNB manuals and potentially reframe the defined criteria to fit into the context-specific situation of dealing with older buildings that may include cultural heritage considerations.

The next section summarizes the main conclusions drawn from the presentation of the three tendencies and uncertainties in clients' framing of sustainability.

4.1.5. SUMMARIZING CLIENTS' FRAMING

Based upon interviews with 13 building clients, the focus was on the ways in which clients determine and construct sustainability requirements that are reflected in both overall strategic objectives and more project-oriented considerations for individual activities. In the frame of sustainability requirements, clients decide on its inputs and activities that unfold, and thus, organize what should be considered and, thus, which considerations to exclude.

In the analysis, I have highlighted three tendencies that repeatedly appeared in the clients' framing of sustainability requirements. Thus, the analysis underscores how clients tend to both economize and instrumentalize sustainability. The third tendency, specialization, particularly builds on the second tendency of instrumentalization, as the use of specific frameworks or tools is accompanied by clients recognizing the need to further specialize as a necessary input in their framing of sustainability.

In the first tendency of economization, sustainability is approached in two distinct ways. Sustainability initiatives are translated into economic terms either as a prerequisite for their implementation, 'cost of sustainability', or as a means for the clients to position themselves as the strongest competitors in the market, 'sustainability as a competitive market advantage'. In the first sub-tendency, clients perceive sustainability requirements as not being accounted for in the 'regular' construction budgets. From this client perspective, setting sustainability requirements represents additional costs that require extra effort or resources from the clients, which is dependent on their specific circumstances. Thus, the higher costs of sustainability initiatives are tied to maximum price concepts, allocation of financial funding, alignment with business plans, and convincing investors or residents about the benefits of investing in sustainable construction. This perspective offers insight into how the financing of sustainability initiatives does not serve as an integrated activity accounted for in economic budgets. Instead, the value of these initiatives must be clearly demonstrated e.g., to the internal management, residents, or investors, to extend beyond the predefined project scope. In the second sub-tendency of economization, 'sustainability as a competitive market advantage,' clients frame sustainability initiatives to establish themselves as leading competitors in the market. This is exemplified by the necessity for buildings to be certified under recognizable sustainability labels such as DGNB-gold, which becomes decisive for achieving economic growth and development. Moreover, clients perceive a need to surpass market standards in their selection of sustainable attributes that buildings must entail. These choices are evaluated as minimizing economic risks as the market prospectively is expected to favor buildings that are both certified and meet other competitive criteria such as low CO_2 emissions frameworks. From this client perspective that is dominated by private clients that operate in the economic world (e.g., pension funds and developers), sustainability requirements are translated into an economized approach to secure future market shares as part of long-term investments.

In the second tendency, instrumentalization, sustainability is approached from two different perspectives. Thus, clients' attempts to find frameworks or tools that make sustainability tangible and comparable, and the use of frameworks or tools to standardize clients' sustainability efforts. In the first sub-tendency, clients

demonstrated a need to instrumentalize sustainability to enable evaluations and decisions of sustainability solutions, and this is done by using specific tools, thus, in particular the DGNB scheme. Within the defined framework of DGNB, clients are provided with a structured system of criteria organized into specific categories which makes an otherwise ambiguous situation more manageable. In this way, the DGNB system is highlighted as the tool that most of the interviewed clients use when solutions are continuously evaluated and made visible through quantifiable weightings. These weightings help organizations work towards a specific goal, as the summation of quantitative criteria needs to result in a definite minimum percentage, for example, in the realization of a gold certification. However, despite some clients not having the goal to certify their construction projects for sustainability, they still approached sustainability solutions based on the guiding criteria that appeared in the DGNB scheme. In the second sub-tendency, clients aim to frame sustainability through an instrumentalized approach to achieve standardized outcomes. Many clients have an overarching strategy where all their projects, or specific ones (e.g., those exceeding a certain contract value), are to be DGNB-certified. This creates a baseline expectation and signals to their stakeholders that their buildings meet certain minimum sustainability criteria. Furthermore, the objective of certifying building projects across clients' portfolios provides a methodology to compare and rank their buildings against each other and the facilitation of deciding on what should count as valuable in the prioritization of points to achieve certification. Furthermore, the clients' use of sustainability certifications, such as the DGNB scheme, and other tools that entail life cycle costings (LCC) and life cycle assessments (LCA), are considered inherent for making their building projects more sustainable. However, the use of a framework or tool is also subject to certain limitations based on predefined categories and standardized assumptions by its creators, various interpretations of what to include by its users (e.g., clients), and the fact that these frameworks or tools cannot accommodate all sustainability considerations within their scope.

In the third tendency, specialization, clients' choice of working with the specific framework of the 'DGNB scheme', is accompanied by a need for clients to specialize and acquire certain competencies to operate with the DGNB system. Clients engage in specialization and training as DGNB consultants to establish sustainability requirements in procurements, enhance their knowledge of sustainability, manage the compliance of organizational sustainability efforts, and mitigate economic costs. Thus, the specialized knowledge of the DNGB scheme becomes disseminated through clients' market activities, knowledge production, and sustainability practices. Furthermore, clients' financial investments in the DGNB training incentivize the maintenance of these qualifications in upcoming building projects. Internal DGNB consultants within the client organizations become representatives and spokespersons of the scheme, as this knowledge is

reproduced through the various activities at client organizations, from market dialogues to project implementations. Furthermore, clients as influential decision-makers make their role as spokespersons especially impactful, as they determine which requirements should be forwarded to their suppliers, and thereby, have a ripple effect on their practices.

The last section addressed how clients' framing of sustainability creates elements of uncertainty when sustainability initiatives are only considered within the framework of the DGNB scheme. Clients highlight the challenges posed when the DGNB scheme's influential market positioning is broadly adopted by construction actors for different purposes. The first example addressed the issue of DGNB-certified construction reaching a market status where clients do not critically consider its content to achieve the recognizable DGNB-certification label. Conversely, other clients from social housing organizations pointed out how achieving the DGNB-certification label does not add value for their residents as a potential investment. While DNGB-certified construction has become highly desirable as a label to pursue among certain construction actors seeking market recognition, other actors, such as social housing organizations, do not perceive the DGNB label to carry the same commercial value. In another example, a client questions whether the DGNB scheme is worth pursuing if it is no longer considered to serve 'sustainable construction' by the ombudsman. Thus, while the DGNB label aims to promote exemplars for sustainable construction, this validation and consolidation is challenged by recent statements from the ombudsman. In the final example, a client addressed the issue of using the current DGNB manuals for renovation projects. The client mentions the application of using DGNB criteria on older buildings, where a wide range of restrictions on what can and should be done in terms of architectural considerations are not accounted for, which may lead to unintended consequences in chosen solutions.

The analysis shows how the clients dealing with sustainability requirements involve a compromise of multiple considerations. For instance, public clients have a social responsibility to serve public interests, and social housing organizations are required to offer affordable housing for socially marginalized citizens. For private clients, pension funds, and developers, the sustainability market needs to align with commercial interests and meet the investment potentials of business plans to generate satisfactory profit. However, the DGNB scheme ultimately became the market solution for attaining sustainable construction most frequently adopted across the diverse range of interviewed clients.

CHAPTER 5. VALUATION PRACTICES IN TENDERING

The second chapter of the analysis addresses the second research question of "*How are environmental sustainability requirements co-created in the tender documents (also referred to as 'devices') of a building contractor?".* To get to the core of how environmental sustainability requirements are co-created in tender documents, this chapter is based on interview statements from employees in E&P and clients, observations from tender meetings, and documents from completed tenders at E&P.

From the first sub-analysis, we have gained insights into how clients frame sustainability requirements in tenders. The analysis revealed clients' need to particularly economize and instrumentalize sustainability into their framing. It also showed how this instrumentalization of using specific tools or frameworks, particularly 'the DGNB scheme', was accompanied by a specialization of competencies among the clients. The three tendencies of economization, instrumentalization, and specialization also extend into this chapter of the analysis. Thus, the DGNB scheme became the market solution for attaining sustainable construction that most of the interviewed clients adopted. The second sub-analysis builds on the first sub-analysis by examining how solutions from the DGNB scheme are reproduced when we delve into the micro-level in this second sub-analysis in selected examples from the host company's tender documents. Furthermore, the analysis explores how the DGNB scheme finds its way into the conceptualization of the sustainability phenomenon in the proposals that unfold in tender documents.

This chapter includes two main parts examining two different types of tender documents respectively section '5.1' focusing on 'references', and section '5.2' focusing on 'value packages'. From the introduction, it was established how qualculative practices are becoming the norm at E&P's tender business. In this context, 'references' and 'value packages' form the basis of the tender documents used for responding to non-price criteria such as environmental sustainability requirements. Qualitative judgments are embedded in the creation of both references and value packages, as bidders make use of words, images, and visualizations in response to qualitative selection and award criteria. Precisely for this reason, it was chosen to examine these two tender documents more closely, as they represent the crux of understanding the qualculative tender practices carried out at the host company.

I argue that both references and value packages serve as influential devices in valuation work because they each contribute to making valuation possible and accountable (Kjellberg & Mallard, 2013) between the client and the bidders during the tendering process of selecting bidders in prequalification ('references') and awarding the contract to the winning tender team in the final bid ('value packages'). Thus, these two devices exchange interests between the client and the bidder, where evaluations take place on several occurrences. First, the devices of references and value packages serve the purpose of making the bidders comparable in the judgment of fulfilling the client's criteria. Ultimately, this capability of comparison based on measurable criteria enables the client's decision-making to narrow down bidders and proceed with the most qualified ones. Second, the tender teams must interpret the client's criteria and thereby, evaluate a range of proposals that reflect the qualities and performance of the requests specified for the building project in question. Third, the client evaluation must include transparency in terms of how the tenders fulfill each criterion based on the client's scoring system, which helps bidders understand how their proposals have been assessed. Client evaluations can also initiate an internal evaluation process for the bidder, where their proposals are reassessed and potentially, progressed in case of meeting similar criteria in future tenders.

The first section dives deeper into examining the device of references and how it facilitates the evaluation of environmental sustainability requirements.

5.1. REFERENCES

A typical reference compromises one to two pages with the introduction of a large photo/visualization of the project together with the project title and subtitle targeted at achieving prequalification (Figure 3).

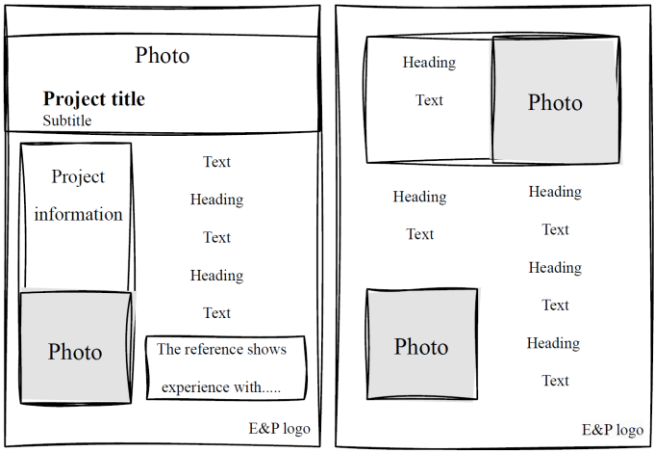

Figure 3: Example structure of a reference

References typically include around four photos/visualizations highlighted together with project information and a section that outlines the experience resulting from the references, which is often listed in point form. Both pages include short descriptions of the project that introduces basic information (e.g., project location and names of company participants) to more customized information within specific areas (e.g., chosen building materials or details concerning the project team collaboration). References balance both quantitative and qualitative information. Thus, quantities are in particular shown through the project details such as contract sum and time frame for completing the project. Qualitative descriptions are developed based on judgments of e.g., design qualities or other qualities to bring out. Furthermore, they are highly dependent on the requested criteria that arrange which themes and thus, beneficial features of the project to present to the client. Examples of two prior references applied in E&P can be found in Appendix B.

The contractor must submit 'references' when bidding in a restricted tender in which the contracting authority limits the number of bidders based on selection criteria, which determine whether the bidders are suitable to bid on the task (Byggeriets Regler, n.d.). The provision of 3-5 references is, therefore, part of verifying the contractors' ability and competencies to handle the task. References may include 'newly won' projects, ongoing projects, and projects that have been completed within the past five years. Therefore, the descriptions in references represent different narratives that communicate the expected reality in terms of '*what are we about to do*' to the more tangible reality of '*we are doing these initiatives*' and '*what have we done in this project'*, but independently of time, they are applied for the same purpose of achieving prequalification. As mentioned in the theory section, the term 'reference' originates from the Latin 'referre', which means 'to bring back' (Latour, 1999b), and this meaning unfolds in E&P's project portfolio, where projects are chosen as targeted 'references' to circulate back in a new form in another surrounding adapted to meet the selection criteria of the project in prequalification. The PQ coordinator at E&P is responsible for keeping track of the myriad of both completed and ongoing projects that could serve as convincing references for forthcoming prequalification projects. In this way, references serve as organized persuasions where the PQ coordinator evaluates and categorizes projects based on project size, contract form, and project type (e.g., health buildings and residential buildings) to more client-specific criteria such as wooden construction or sustainable building certifications.

In what follows, I will first present the valuation work that goes into the creation of references. The second subsection presents four examples of references for a specific building project with the selection criteria of including references with special green and/or sustainable initiatives. The last subsection addresses how

E&P's employees evaluate references in terms of whether they serve the intended value of getting prequalified.

5.1.1. VALUATION WORK IN REFERENCES

This section examines references from the perspective of valuation work at the host company of E&P. First, I examine how references are discussed in the practical context of everyday routines, based on observations from four PQ meetings at E&P's head office in Ringsted, where employees evaluate whether PQ projects qualify for application. Thus, an evaluation of a wide range of criteria takes place in the selection of PQ projects, which happens before the making of references. Second, I address the making of references, drawing from a dialogue meeting with E&P's PQ coordinator, a document that specifies the PQ process [from the document 'PQ process'], and interview statements from employees at E&P.

The emergence of references in everyday practices

References are established in connection with evaluating and selecting which projects to apply for during the prequalification phase. This subsection will thus draw on observations from four prequalification meetings at the host company E&P to understand how the valuation work related to references already occurs prior to their preparation. In prequalification, E&P's employees filter various potential PQ cases based on specific criteria. The analysis draws on actor-network theory (ANT) as the method used to make the world tangible. Consequently, E&P encounters a multitude of projects that must undergo extensive filtering to determine which ones to advance further. This filtering involves criteria and strategies in the shape of valuations where references emerge as a device to evaluate PQ projects. References are thus part of context-specific situations where selected prequalification projects must be linked with potential reference opportunities. In this way, references as a device are not only material in the form of a document consisting of 1-2 pages of text and images but also partake in situational social practices. References are thus mobilized in the context of a specific PQ project, each of which is part of a different client network that forms E&P's evaluations on whether to apply. I observe how these considerations unfold at the PQ meetings to secure prequalification, which is further elaborated throughout this subsection.

The four meetings took place at E&P's headquarters at Ringsted in a meeting room during the timespan from January 2022 to March 2022. The meetings are held weekly and facilitated by E&P's PQ coordinator, and the other attendees are department leaders from the tender calculation teams (West and East market), head of markets (both West and East), one employee from tender communication, and legal support staff. The observations are not presented at a

detailed level because the focus is on highlighting situations that characterize how PQ projects are selected and how references, in this context, are part of these considerations.

Each meeting takes its starting point in the PQ coordinator's presentation of an Excel sheet on a shared screen that is updated weekly in terms of the potential PQ projects to apply for. Thus, PQ projects are already organized in pre-defined categories, which is part of determining the basis on which these projects are evaluated. Table 6 shows an example of three projects with the associated categories that are discussed at the meetings. The evaluation of projects results in the decision being marked with a color. This example shows that project1 has been rejected and thus marked in red, project2 has been selected, and project3 requires further clarifications and is therefore marked in yellow as 'maybe'. Other categories that are not shown in Table 6 but are also part of the discussions are the tender date and the planned execution date of the project (start/end) as well as 'considerations of whether the execution is realistic'. In case of not applying, the PQ coordinator details the 'reasons for not applying' in the Excel sheet.

Table 6. Potential PQ cases for evaluation at E&P

Project name	**Place**	**Project size**	**Contract form**	**Building client / advisor**	**PQ dead-line**	**Award criteria**
Project1						
Project2						
Project3						

PQ projects are compared according to the same rules within a standardized framework, and the process is heavily instrumentalized with the use of a tool ('the Excel sheet') that serves as the basis for the evaluations. Based on observations from the four meetings, the discussions particularly focused on practicalities that determined why projects were rejected or selected. For example, project location was often compared with the financial project size, including whether the project was too far from E&P's other locations and whether the project size was appropriate for the market, such as evaluating the presence of adequate resources. Unrealistic pricing also played a role if the estimated profit was estimated unachievable. In this regard, a project was highlighted where the execution was required at three different locations that made the client's threshold for pricing per square meter unrealistic. These two examples illustrate the importance of realistic pricing and manageable logistics as essential components in determining a project's worth. The selection also emphasized whether the project type aligned with E&P's competencies or was

deemed too risky to undertake. For example, the construction of a large new kitchen was rejected because it was considered 'too specialized'. Thus, projects that do not manage to integrate with existing competencies are considered less valuable. Other considerations included market timing, thus, whether the tender employees have the time to calculate and write up the tender at the tender deadline, or whether the production can carry out the project at the planned execution date in comparison to other ongoing projects. Too many projects for the production to handle at the same time can create chaotic situations where the shortage of personnel (project leaders, site managers, craftsmen) will impact the efficiency, and thus, the potential profits. This illustrates how the ability to meet deadlines is seen as a critical measure of a project's worth.

In the selection of projects, there was also a great amount of tacit knowledge, where projects were marked green without the participants going into elaborate discussions. This shows how the selection process is shaped by the implicit use of the participants' professional expertise and judgment. For example, some projects were selected because they matched E&P's renovation competencies without further questioning or because the project would serve as a useful reference moving forward. I would like to dwell a bit more on the latter. The latter example was a health facility constructed from wood, and it was precisely these two project characteristics that were evaluated as strategically important for pursuing the project and securing a reference that could qualify for similar projects in the future. The health facility project was given a higher value because E&P's references in this market segment are about to expire. References have a usage limitation, as they expire within five years. Therefore, health facilities constitute a market where references need to be maintained to secure E&P's future prequalification opportunities. Another characteristic of this PQ project was that it had to be built of wood. The participants evaluated that wooden construction would become even more prevalent in the market moving forward. Therefore, the reference would open doors for E&P to prequalify and achieve a stronger strategic positioning in a market that is not currently a significant part of the portfolio. In this context, it was also emphasized that E&P's production capabilities align well with wooden construction with E&P's own craftsmen in carpentry.

Another example of how references were actively playing a part in the evaluation was the opportunity for internal sharing of references. For example, it was decided to submit a PQ application for a project with a modular system building. However, to demonstrate prior experience with modular buildings, it was discussed that references could be sourced from another contractor in the holding company that specializes in 'modular systems'. Thus, the contractors within the same holding company can support and increase the chances of achieving prequalification by circulating references when lacking references

within a specific market segment. Other examples of sharing references were E&P's contribution to support their subsidiary companies. At one of the meetings, it was discussed that one of E&P's subsidiary companies, a contractor firm in Jutland, needed references from E&P's projects to apply for social housing renovations. The argument was that E&P should include in the references that they could loan 1-2 site managers from E&P as consultants or as an advisory board. This illustrates how E&P's references can circulate to other contractors within the holding company to exert influence that goes beyond their own project portfolio. Additionally, this approach to sharing knowledge and resources internally between companies highlights the extensive application of references in prequalification Thus, the same references can take on different implications depending on how and where they are used.

The making of references at E&P

This subsection focuses on the host company's valuation practices when references are created. To understand the work behind the preparation of references, I have held a dialogue meeting with E&P's PQ coordinator, who is responsible for submitting applications for prequalification projects, in which references are a fixed element of what needs to be delivered. In addition, the subsection draws on empirical data from internal documents [from the document 'PQ process'] and selected quotes from interviews with employees from E&P, where references are being discussed. The previous subsection showed how PQ projects were selected and, in this context, how references emerged as part of these discussions. This subsection will examine what happens in the creation of references when PQ projects have been selected for application.

When a PQ project has been selected, a list of reference options is generated in Notes. In this way, references become potential carriers of value that need further evaluation. The PQ project is analyzed based on PQ conditions and tender documents. The analysis examines what the project is about, the specific wishes of the clients, minimum requirements, selection criteria, and online research of the project. A balanced overall assessment of the requirements is made that forms the basis for considerations about which references should be included. Thus, the selection of references is guided by a structured approach where worth is given to references based upon the PQ-coordinator's qualitative judgments of how this bundle of information should count. Selected references are then revised by making adjustments in relation to the PQ project and adding details that are significant for the PQ project. The making of adjustments and adding of details to references is part of enhancing their value in the situational context of the PQ project, and thus, reflects the dynamic nature of this valuation work. In the case of turnkey contracts, dialogues must be held with the tender team (e.g., architect and engineer) regarding the selection of references. Hence, what is considered valuable in the references is based on the judgments from the

collective expertise within the tender team that draws on various sources of specialized knowledge.

According to the PQ coordinator, the requirements for references are typically related to technical and professional capabilities. This means previous projects that are similar in terms of contract sum, and type of work/building type, such as heritage buildings, high-rise construction, or DGNB-certified buildings. Thus, during the selection, certain types of projects are given higher importance because of their attributes, which are often related to the specific skill set required or experience with a particular building type. In the selection process, the PQ coordinator emphasizes that sometimes the process is straightforward and plenty of references for prior projects are available to choose from. Other times, the PQ coordinator must be a bit more creative in finding comparable projects and may need to justify their relevance. This illustrates that the PQ coordinator's identification of references is also about making judgments on less obvious ones. From here, the value of the reference is constructed through the PQ coordinator's expert evaluation, which entails convincingly angling comparative attributes with the PQ project. References are also chosen with the requirement that they cannot be older than five years. I will explore the meaning of this expiration date of references in more detail.

The expiration date of references was highlighted in an interview with E&P's former head of tendering and current CEO as follows:

> *"And then there are the references, which can also be differentiating, what the building clients assess and place emphasis on, so that you get through the eye of the needle. From that perspective, we as a company must always make sure that we have references that are not too old. It is usually said that they must not be older than 5 years after delivery, otherwise they are out of date. So, as a company, we must always ensure that we have references in relation to the foresight of the project types that we know are coming - and that we would like to be a part of. It is important as a company that we constantly ensure that we have references that are of recent date on the task segment that we are looking into for the next year and subsequent years".*

From this quote, references older than five years lose their value, which highlights the temporal nature of the value that references can serve. In order to maintain the value of E&P's references, upcoming projects in terms of their type are aligned with existing references as part of strategizing E&P's future market needs. Having convincing and up-to-date references affects E&P's competitive positioning by setting E&P apart if they can present both relevant and recent references that meet clients' selection criteria. In this way, value becomes both relative and competitive. The quote also entails a constant necessity for updating

the references. Organizational practices involve making sure that past projects are presented in a way that maintains their value. Furthermore, forthcoming projects must also be evaluated based on which value they can provide as references.

The next section examines the efforts of E&P's employees to bend and turn references to align with specific client criteria, with a focus on sustainability requirements, illustrated through four examples of submitted references from E&P.

5.1.2. HOW SUSTAINABILITY UNFOLDS IN FOUR EXAMPLES

The four examples on references were selected to analyze how the host company E&P captures the sustainability phenomenon in response to selection criteria on sustainability initiatives. This analysis will thus explore in greater detail how E&P's tender team establishes different values through the words they use and thus, examine what is made visible for the purpose of making the references appear convincing. For a project called 'Wooden building', E&P was asked to attach four references connected to projects in which they had conducted green and/or sustainability initiatives. Examples of these references were chosen specifically for 'Wooden building' because the project stands out in that there was an explicit request for experience with sustainable building projects. Additionally, the selected references also demonstrate the efforts made to fulfill the criteria of a specific PQ project. Thus, 'environmental sustainability initiatives' emerge as a competitive parameter for eligibility to proceed to the final tendering process. The project 'Wooden building' was procured by a pension fund in a turnkey contract form with the contract size of 115 million DKK. The project ('*Wooden building*') includes 75 terraced family houses planned to have a wood and concrete construction, while also fulfilling the certification requirements of the Nordic Swan ecolabel. The evaluation criteria include: Economy (50%), references (20%), staffing (20%), and sustainability initiatives (10%) [From the document: 'Orientation of PQ- and tendering project']. The client stated the following in connection with the required references [from the document: 'Wooden building – tendering conditions']:

> "*The bidder must attach up to four references from constructions of a similar nature to the bid. The references must include, at a minimum, visual material, a description of the construction, the time of construction, the construction cost, and a contact person at the client's end. References can be from ongoing constructions as long as the construction stage is clearly indicated. However, the construction must be in progress. It is particularly favorable if the references demonstrate experience with timber construction as well as constructions where special green and/or*

> *sustainable initiatives have been undertaken. The client must have the opportunity to inspect at least one of the constructions, including its interior, if necessary*".

The client did not provide detailed specifications as to what constituted '*special green and/or sustainable initiatives*', which meant that E&P's tender employees had to interpret the requirement and come up with a variety of options. References and sustainable initiatives were given a total score of 30%, which meant that the references were not only decisive for achieving prequalification but also for winning the project. The references consisted of the following projects, which included green and/or sustainable initiatives:

1. The Waterside buildings (DGNB-certified new building project)
2. The Townhouse (Nordic Swan ecolabel certified new building project)
3. The Lakeside residences (prefabricated wooden elements and use of reused materials)
4. Youth accommodation (prefabricated wooden elements)

The four references were meant to demonstrate how the company could satisfy different aspects of the client's demands. The references were submitted as a joint document and the four references were part of the same narrative and thereby included visual elements and 'written' information which tied them together. Each reference consisted of a two-page document that included project information (location, client, contract form, contract size, gross floor area, architect, engineer, and stage of the project), a short project description, four pictures/visualizations, a grey box highlighting the experience gained from the project described in the reference and lastly a grey box that emphasized some of the text together with a picture. Except for 'short project description', the headings differed in all four references although they were all in the form of short descriptions with their own bold headline in terms of what had been decided to showcase in each reference.

The analysis especially focuses on the parts in which the references include descriptions of completed and ongoing sustainability initiatives. Each reference is firstly analyzed individually to uncover 'what is narrated' for the project in question. Furthermore, the analysis examines how E&P's tender team attempts to frame different values to align with the client's request for special sustainable initiatives. Finally, the section summarizes how different values of sustainable initiatives were incorporated into the four references and highlights general reflections on the framing of the references.

The Waterside Buildings

This reference starts with a large horizontal photo of the finished buildings together with a heading, the project information, and project description. Below the heading '*The Waterside buildings'*, is the following subheading:

> "*The construction of a DGNB-certified development with residential, co-housing community, and commercial and focus on sustainable collaborations and social employment".*

The scene is set with the introduction of a large-scale development, which is said to accomplish many agendas such as mixed use, an emphasis on the certification scheme DGNB and efforts to participate in and facilitate sustainable collaborations and signify social responsibility through 'social employment'. It is probably no coincidence that 'The Waterside buildings' is introduced as the first reference because the detailing in 'words' on the subject of 'sustainability' takes up more space compared to the other references (Table 8-10). In addition, E&P's tender team has constructed that this reference (Table 7) meets the requirements for more relevant experience (four points) in comparison with the other references, which only include between two and three points (Table 8-10). Thus, there is an implicit ordering of the references, and the Waterside buildings are presented first to make the most effective and convincing first impression. This also illustrates how E&P's tender team contributes to co-creating what is made visible for each of the references, and in this way assesses which references are given higher priority.

Table 7. Descriptions of green or/and sustainable initiatives for the Waterside buildings

Reference	Descriptions of green or/and sustainable initiatives
The Waterside buildings (Contract sum for the construction site of '1': 145 million DKK and for the construction site of '2': 1.2 billion DKK)	***Short project description:*** *The Waterside buildings is an exciting new urban development area, created with a connection to the city, the water, and the beach meadow. The goal of the entire project is to establish a sustainable city in the broadest sense - environmentally and in relation to building energy, socially, and health-wise, and economically. At the Waterside buildings, Enemærke & Petersen participated in the project development and subsequently constructed the residential complexes.* ***Prefabricated wooden elements:*** *At location South '2', we use prefabricated wooden elements on the facades in the courtyards wherever it is feasible structurally. Furthermore, we are currently investigating whether we can use recycled bricks at location North '2'. These recycled bricks will be supplied by Enemærke & Petersen's renovation project, 'X', on Funen.*

	DGNB Certification and Sustainability: *The central theme of the development is sustainability. We have used the appropriate materials, and the construction of 'the deck' and 'the link' is certified DGNB Gold. Additionally, 'the deck' was among the three finalists for the Developer Award at the Building Awards 2020. The construction meets the energy class BR15. The entire construction site of '2' is also to be certified DGNB Gold.* ***Sustainable Collaboration with Private Foundation:*** *In the construction of the senior co-housing community 'the link', we have collaborated with 'Private Foundation' as part of the initiative 'Spaces and Communities for the Elderly', which focuses on the development of co-housing communities for seniors across the country. The goal is to create stronger neighborly relationships among the residents to reduce loneliness. The effort aims to kickstart the construction of more housing units with a focus on community for seniors. The link is one of the first projects to be completed.* ***Delivery of Recycled Materials:*** *At the Waterside buildings, we are part of the Rewood project, which means that all temporary wood on the construction site, after use, was sorted and subsequently collected by the lumber supplier, x, for further recycling. We are involved in the Rewood project because we want to contribute to shaping the construction industry in a more sustainable direction.*
	The reference demonstrates experience with: *A) Performance of DGNB-certified buildings* *B) Implementation of specific green and sustainable initiatives* *C) The project has been carried out with Enemærke & Petersen as the turnkey contractor* *D) Use of prefabricated wooden elements*

The narrative on 'sustainability' is already initiated in the short project description of the case (Table 7) with the emphasis on the fact that '*the goal*' of the project is to establish *"a sustainable city in the broadest sense"* in recognition of the three pillars of sustainability (environmental, social, and economic) known from the Brundtland report's definition (Brundtland, 1987). Thus, this reveals that E&P's understanding of sustainability is equivalent to that contained in the Brundtland report, which is aligned with the DGNB scheme's adaption and interpretation (Boxenbaum & Georg, 2020). From its beginning, the narrative stresses what

E&P can offer as a selling point and from 'their' understanding argues that the project has fulfilled every 'cornerstone' of 'broad' sustainability 'requests'. Thus, this illustrates how E&P's tender team initially assesses that the value of sustainability initiatives is particularly evident if they manage to address multiple agendas that encompass social, economic, and environmental considerations. Therefore, the focus on 'sustainability' is established to catch the reader's attention and build up the tension for additional and more detailed information to support the initial storyline. This reference's staging demonstrates how the DGNB scheme's framework for sustainable construction is once again reproduced and structures how E&P as an active participant in the network is part of conceptualizing and disseminating the framework's classifications of what 'sustainability' entails.

The subheading *"prefabricated wooden elements"* entails the first section on 'green and/or sustainable initiatives', where the use of 'prefabricated wooden elements' is justified in the courtyard facades, where it was '*feasible structurally'*. The framing of prefabricated wooden elements generates a potential overflow situation, as it is uncertain whether the proposed sustainability initiative can be implemented in practice. Given this uncertainty, it appears that E&P's tender teams strategically include these two terms to allow for greater flexibility in the space for action that entails the construction of the prefabricated wooden elements. The formulation of '*feasible structurally'* is, therefore, a claim for speculation because the reader is unaware of its contextual setting and the transparency of the experienced reality. The focus of the section shifts to 'recycled bricks', which is described as currently under investigation as to whether it is possible to realize in practice and depends on the reliance of acquiring the bricks from another construction site located in Funen. As a result, E&P aims to not only include prior realizations of measures but also intended 'efforts' even though there is a chance that they will not be implemented. By doing so, E&P's organization is striving to portray themselves as a project partner dedicated to initiating the 'sustainable agenda' by actively seeking opportunities for setting up their own 'circularly system' if needed with the utilization of materials from other ongoing sites.

The section *"Sustainable collaboration with Private Foundation"* introduces a new set of participants namely the 'Private Foundation', built on citizens' mortgage credit, and the users of 'seniors'. An initiative to create spaces and communities for the elderly is presented and the narrative continues by underlining the fact that the project 'bridge' is part of the first completion with the efforts to create 'stronger' communities. The storyline of the section aims to visualize the way in which E&P engages in 'development initiatives' with a well-known and recognized 'partner' in the market such as the 'Private Foundation'. E&P creates value for social sustainability by making sense in the social context of interacting with partners. By interacting with the 'Private Foundation', the two actors take

part in shaping and reshaping the social context to support their respective strategic interests. In this way, E&P is striving to differentiate themselves from other contractors who may not succeed in being part of social initiatives. The intent of the section is to visualize E&P's competitive advantage of social responsibility by relating not only to the 'developer' but also to the social context of future residents. The reference is targeted at the project 'Wooden building', which consists of terraced family houses. Therefore, the 'community' experience is valued by E&P as part of the offering based on interpreting the client's motives. Thereby, E&P implicitly frames its capabilities of producing spaces for social interaction and neighborhood community for families.

The emphasized narrative of DGNB

The section on *"DGNB certification and sustainability"* is presented in its own grey box together with a picture of one of the courtyards and resident's buildings. We can tell that the building is for residential use because each building is equipped with a balcony and a playground is part of the courtyard scenery. The grey box makes the section 'stand out' compared to the other sections, thereby signaling the importance of the section to the reader. The narrative starts off with the statement that "*the central theme of the development is sustainability",* thereby indicating that the goal of the project is to prioritize 'sustainability' above other themes that are not presented. Another aspect is what is meant by sustainability in this context, where the plausibility of this evaluation lies in the use of 'appropriate materials', and the certification of DGNB Gold. The client has requested that the project in PQ ('wooden building') should be sustainability certified according to the Nordic Swan ecolabel. Thus, the significant emphasis on the DGNB scheme is an attempt to frame the tender team's experience with sustainability certification, even though it is a different scheme than the one requested.

Furthermore, E&P's tender team draws a parallel between 'sustainability', 'appropriate materials', and 'DGNB Gold', and states that the building performance is in compliance with sustainability performance measures due to the third-party DGNB certification and E&P's opinion in using 'appropriate' materials. Making these parallels can be effective if the client is aligned with E&P's understanding and considers DGNB to be a suitable framework for achieving sustainable construction. Thus, E&P's evaluation of the DGNB scheme's validation of attaining sustainable construction is clearly revealed in this section, where the gold-certification label gets the status of inherently including the breadth of sustainability considerations. In this way, E&P's tender team is part of promoting the value of attaining the DGNB-certification label as an attractive market solution for sustainability. Another argument emerges in that emphasis is placed on the fact that 'the deck' (part of the construction) was among the finalists for the Developer Award at the Building Awards 2020, although the narrative ends abruptly without explaining the connection to

'sustainability' or the reasons behind the nomination. This illustrates how E&P's tender team attempts to gather more and more allies in their description. If the client chooses E&P to carry out the project, E&P's project team can draw upon experience from a building project that not only has been DGNB Gold certified but has also been a contender for a recognized award. In this way, E&P's tender team not only includes themselves in the reference but also leverages the entire DGNB network with all the entities that constitute it, as well as the Building Awards network of judges, selection criteria, competitors, etc.

The visual elements of the Waterside Buildings

The photo on the left (Figure 20) shows the large scale of the development and how the courtyard is designed with playground activities, thus, signaling to the client that E&P's tender team can create family-friendly environments. Furthermore, in the final section of "*Delivery of Recycled Materials",* E&P's tender team presents the narrative of being part of the 'Rewood' project in which temporary wood is sorted after use and collected by a lumber supplier for reuse. The section does not present quantitative data in terms of how many kilos of wood were collected or the resulting savings in terms of a reduction in CO_2 emissions. However, the section includes a photo on the right (Figure 4), which means that proof of 'the wood sorting performance' is included in the reference. The picture illustrates two men at the construction site who are sorting wood from material packaging and enjoying themselves. Thus, the picture is applied as a validating 'mediator' by being linked to the sales arguments that E&P's employees are actively involved in reusing temporary wood at their construction sites. The section concludes by explaining that E&P has become involved in the Rewood initiative because they want to contribute to shaping the industry in a sustainable direction. In this way, E&P justifies their plausible motives to go beyond the minimal requirements of the sustainability agenda using a narrative to persuade clients that they *too* can engage in these 'industry-changing' initiatives.

Figure 4: Pictures of the building (left) and wood sorting at the 'Waterside Buildings' project (right)

The Townhouse

The reference includes the heading of the project together with the subheading *"Performance of Nordic Swan eco-labeled multi-story building with solar panels in five stories"*. Initially, the emphasis is on the ability to fulfill the need to comply with the Nordic Swan ecolabel while simultaneously delivering a five-story building equipped with solar panels. In this reference, the tender team attempts to frame the value of having experience with Nordic Swan eco-labeled construction, which is directly aligned with the client's goal of achieving this certification label. The opening sentence draws the attention of the reader to attain more information on 'how this performance is realized'. The project description (Table 8) sets the scene with a significantly 'smaller scale' project of a single 'building' compared to the development project of the Waterside buildings (Table 7), which indicates the tender team's emphasis on parameters other than 'project size' in their selection of this reference. We thus see that even though this reference does not match the size of the PQ project (approx. 115 million DKK), the value of being able to showcase a Nordic Swan eco-labeled project is given greater weight to convince the client that E&P's project teams have the competencies to manage the same certification scheme once again.

Table 8. Descriptions of green or/and sustainable initiatives for 'The Townhouse'

Reference	Descriptions of green or/and sustainable initiatives
The Townhouse (Contract sum: 17.5 million DKK)	***Short project description:*** *Enemærke & Petersen is constructing a five-story apartment building at the address in the charming city district. The apartment building comprises 11 residences located on the 1st to the 4th floors, commercial space on the ground floor, and associated storage units in the backyard. Residents of the new apartments will have their own balcony and a communal rooftop terrace.* ***A Nordic Swan ecolabel building:*** *The Townhouse is being built as a Nordic Swan eco-labeled construction that meets stringent requirements throughout its lifecycle, characterized by low energy consumption and a healthy indoor climate. Simultaneously, building materials and chemical products meet strict criteria for environmentally and health-harmful substances. Several other initiatives also support the sustainable profile, including the property's self-production of electricity through solar panels. Balconies and solar glass ensure sun shading for the windows and enhance the indoor climate.* ***The materials are approved for the Nordic Swan ecolabel:*** *The focus on material selection has been crucial in the Nordic Swan eco-labeled construction project, as the materials used must be approved for the Nordic Swan ecolabel. For the project in The Townhouse, the client has*

	specifically chosen three areas of materials where points for the Nordic Swan ecolabel are to be earned; flooring, putty, and paint. ***Material focus is crucial during execution:*** *For the Townhouse, extra efforts have been made to communicate the importance of using the right materials by everyone on the site. To consistently maintain a focus on material discipline, signs have been put up and ongoing checks have been conducted, where the construction management has been in dialogue with all personnel working on the construction site.*
	The reference demonstrates experience with: *A) Performance of Nordic Swan eco-labelled residential building* *B) Execution of a local project in x*

The section on 'A Nordic Swan ecolabel building' explains that the building is currently under construction (indicated as 50% finished in the project information) and that it has met strict requirements throughout its lifecycle, which indicates that the building will have a low energy consumption and a healthy indoor climate. The narrative continues by emphasizing the achievement of avoiding harmful substances and including environmentally friendly materials and products. This illustrates how E&P's tender team evaluates that following the scheme is part of acting environmentally 'responsible' when complied with. It also shows how E&P's tender team associates different values with Nordic Swan eco-labeled construction in the shape of 'low energy consumption', 'healthy indoor climate', and 'environmentally friendly materials/products'. Furthermore, the narrative creates tension in terms of the difficulties and struggles in meeting the certification requirements. The technical artifact of 'solar panels' is introduced and its ability to facilitate the self-production of electricity is emphasized. The 'solar panels' are only mentioned briefly, and their features are not elaborated further. Therefore, it is unclear whether the solar panels are detached or linked to the narrative of the 'certification scheme'. In the next two sections, there is a return to the scheme as the central figure of the narrative.

The emphasized narrative of eco-labeled materials

The two remaining sections focus on the 'materials' used when conducting an eco-labeled certification both in terms of obtaining the approval and in the collaboration process at the construction site. The narrative thereby sets the scene at the site and determines whether the construction management (E&P) can steer the process correctly by playing an almost 'educating' role for the other project participants through dialogues, signs, and ongoing checks. Moreover, the scheme is made equivalent to a 'material discipline', which means that these choices are most likely far from 'business-as-usual' practices for E&P. Particular emphasis is placed on the three materials 'flooring, putty, and paint' due to the

client's requests in this specific project, which signals to the reader how E&P's employees are capable of meeting customized needs in achieving the certification. The value of Nordic Swan eco-labeled construction is translated into a materials discipline that E&P's tender team strives to convince the client they can deliver. This illustrates how E&P's tender team draws on the client's context of requesting the Nordic Swan eco-label in their framing to demonstrate the specialized competencies derived from experience in this type of sustainability certification. Framing the choice of eco-labeled materials as the most 'crucial' action also introduces inherent uncertainties of whether these materials in another setting and during 'normal' conditions would get 'deselected'.

The visual elements of the Townhouse

There are no photos of the finished building because the project was ongoing when the reference was submitted and, thus, the images presented are from different time periods (Figure 5). One photo shows the site before construction of the building itself had started, while the second photo is of the building covered by banners and fixed scaffolding and, lastly, a 3D visualization of the building illustrates how it will look when completed and, thus, the promised or expected reality. Despite the differences in time, the images are there to serve the same purpose, i.e., to display what E&P can offer. The past, present, and future activities illustrated in the images vary from managing a site on limited space in the city center to the 'visualization' of how the new building will be translated into reality in its togetherness with the old existing neighboring buildings.

Figure 5: The past, present and future of the Townhouse (from the reference year 2021)

The Lakeside Residences

The third reference 'the lakeside residences' is introduced with the subheading: *"execution of terraced houses with prefabricated wood elements and reused materials"*. Thus, in this reference, E&P's tender team specifically aims to underscore the values of prefabricated wooden elements and the use of reused materials. The emphasis on prefabricated wooden elements, in particular, aligns with the client's expressed interest in demonstrating experience with timber construction. The short project

description opens with E&P having "*constructed the lake houses which consist of 104 sustainable public terraced houses"* (Table 9). The terraced houses are evaluated as 'sustainable' in the introduction and it is, therefore, expected that the narrative will continue to unfold the reasons behind the wording. Prefabricated wood elements are the first section to unfold these reasons and E&P's construction factory enters the narrative. The narrative sets the scene of E&P's craftsmen locally producing the prefabricated wood elements at the construction factory after which there is a shift in time and space and the narrative continues with the elements being assembled on site. By mentioning the construction factory, E&P presents the narrative of not only fulfilling the role of steering contractor but also the role of supplier with its own production team of craftsmen. The aim is to convince the client that E&P is the most suitable and reliable partner because they maintain control of the whole process without being dependent on third parties and how the solution was performed successfully in demonstrating productiveness by underscoring how they ensured a shorter construction period.

Table 9: Descriptions of green or/and sustainable initiatives for the Lakeside residences

Reference	**Descriptions of green or/and sustainable initiatives**
The lakeside residences (Contract sum: 227.5 million DKK)	***Short project description:*** *Enemærke & Petersen has constructed the lakeside residences, consisting of 104 sustainable public rowhouses in staggered layouts and a single level. This was done after demolishing 13 residential blocks with 222 units, making way for basement coverage. Furthermore, we modernized 41terraced houses with new doors, windows, bathrooms, ventilation, and a new roof.* ***Prefabricated Wooden Elements:*** *We prefabricated wooden facade elements and roof cassettes at Enemærke & Petersen's construction factory in Glostrup. They were then assembled on-site. It was a productive solution that ensured a shorter construction time.* ***Use of Reused Materials:*** *At the lake houses, the construction materials from the demolished residential blocks (project x) were recycled on-site and used for basement filling. Furthermore, the renovation took place with a strong focus on energy optimization and environmental sustainability.* ***Sustainability:*** *The construction and renovation of the terraced houses were carried out with a strong focus on energy optimization and environmental sustainability. The terraced houses are built to comply with the energy class 2015 standards, and in addition, two apartment blocks have been energy-renovated with new, highly-insulated windows and a new slate roof with integrated solar panels for shared electricity*

	generation. Furthermore, we have implemented sustainable urban drainage systems (SUDS) that direct excess rainwater into the stream, and we optimized energy usage in the existing terraced houses, resulting in significant savings in rent. ***SUDS solutions in outdoor areas:*** *The outdoor areas have been transformed and renovated to now appear as an attractive and diverse garden city, where ditches and rain beds create a comprehensive SUDS solution, allowing all roof water from the terraced houses to infiltrate the ground.*
	The reference demonstrates experience with: *A) Use of prefabricated wooden elements* *B) Implementation of specific green and sustainable initiatives* *C) The project has been carried out with Enemærke & Petersen as the turnkey contractor*

The next section sheds light on the 'reuse of materials' and the narrative takes the reader back to the construction site, allowing the reader to almost 'envision' how the demolished blocks were managed on-site. This process is described by using the phrase 'recycling on-site' where the demolished blocks are applied as basement filling referring to the process of material utilization. What entails the reuse of materials is thus open to misinterpretation as the actual scenario leans more towards the downcycling of the demolished materials rather than 'direct reuse', which could be inferred from the heading. However, the value of reused materials is also to demonstrate that E&P's project team is capable of exploring opportunities for methods to optimize existing and available on-site resources. We observe that the value of reused materials serves to exhibit how E&P's employees are committed to undertaking special sustainable initiatives that the client is interested in seeing experience with. The section concludes by emphasizing that the renovation had 'a strong focus' on energy optimization and environmental sustainability but it refrains from further elaborating on the rationale or justification behind this assessment. This approach holds the reader's attention and makes them want to continue to seek answers.

The emphasized narrative of energy-optimizing measures

The next section's heading is 'sustainability', which is highlighted in a grey box. This is the core of the case, and we find an explanation behind its introduction of "*sustainable terraced houses*". The initial sentence features the phrases 'strong focus', 'energy optimization', and 'environmental sustainability' to accentuate the selling points of the terraced houses. The buildings' performance is validated by mentioning how they fulfill the energy class 2015 standards and that two apartment blocks have been renovated with the addition of the special features

of solar panels and extremely well-insulated windows. Thus, E&P's tender team links the achievement of sustainable construction with highlighted values such as 'energy class 2015', 'solar panels', and 'well-insulated windows'. Contrary to the other references, which supported 'sustainability claims' by fulfilling a 'voluntary' certification scheme, the reference supports the claim by stating that the applicable energy class in the Danish Building Regulations at that time had been met. The energy class was only mandatory for newly constructed building projects and, thus, the reference claims that the terraced houses, as a comprehensive renovation project, are 'energy-efficient' due to their compliance with the legislation. With this type of argumentation, E&P aligns, fully or partially, with the understanding that the Danish Building Regulations include a set of rules for realizing 'energy-optimizing' performance. The narrative continues by highlighting the implementation of an urban drainage system for rainwater management and introducing the monetary value of optimizing energy usage with the purpose of generating 'significant' savings in rent. This final sentence shifts the focus by incorporating economic considerations in the narrative and thereby E&P's tender team evaluates how these potential savings will resonate with the client's interests. The narrative returns to the urban drainage solutions in the outdoor areas in a section dedicated to the topic. In this section, sets of entities are introduced such as the garden city, which consists of ditches and rain beds together with the roof water, which work as a coherent ensemble in the functioning of the drainage system. The narrative underlines that the outdoor area 'now' appears 'diverse' and 'attractive', thereby implying that this was not the case before construction started. Through this narrative, E&P's tender team aims to visualize and advocate the ideal of offering appealing green outdoor spaces characterized by the interaction of natural elements, which allows clients to imagine themselves being present in such spaces.

The visual elements of the Lakeside Residences

The photos presented in the reference are not selected to support the stories of 'how the prefabricated wood elements' are constructed or assembled nor do the photos illustrate how the construction materials from the demolishment were recycled on-site. Instead, the photos (Figure 6) are rather similar and illustrate the finished terraced houses from the outside at different angles and times with a change in the season. The photo on the right (Figure 6) provides evidence to support the narrative of 'a garden city' by illustrating residents walking next to the terraced houses with the green area consisting of grass and blossoming in vibrant colors. As a result, both the garden and buildings are made present to the reader and contribute to convincing the clients of successful past performance. E&P's tender team places particular emphasis on demonstrating how they are also capable of creating outdoor environments, which aims to convince the client that the family housing in the PQ project can likewise be enriched with these features.

Figure 6: The lakeside residences presented in the reference

Youth Accommodation

The fourth and final reference is 'Youth accommodation'. The first written sentence (the subheading) states: "*Performance of social youth accommodation with prefabricated wooden elements"*. This initial statement tells us that E&P's tender team aims to underline the fact that this is a 'social housing' project and that the implementation of 'prefabricated wooden elements' is part of the solution. However, the main narrative is expected to focus on the 'solution of prefabricated wood' since we already know that 'Wooden building' is not a social housing project but was procured by the client of a pension fund. Thus, the value of prefabricated wooden elements is made visible in the tender team's effort to demonstrate prior experience with timber construction, which the client emphasized as being positively evaluated. The short project description (Table 10) does not mention the wooden elements but instead describes the building's complicated master plan and the different architectural shapes, curved and stepwise blocks, which create an 'inviting' feeling that opens up the development and the outdoor space but also has the feature that the buildings are not exposed to the busy roads. The level of detail in 'visually describing' the building reveals how design qualities are given importance by signaling that E&P can offer 'unique architecture' objectified as 'specific' features in its form and expression.

Table 10. Descriptions of green or/and sustainable initiatives for the Youth accommodation

Reference	Descriptions of green or/and sustainable initiatives
Youth accommodation (Contract sum: 150 million DKK)	***Short project description:*** *As part of the master plan for Youth Accommodation, Enemærke & Petersen has constructed 86 public youth residences, arranged in an arc on the site, opening towards the development. The construction is designed as a stepped block of up to four stories, with a partial basement containing technical facilities and a laundry room. The building's curved shape creates an inviting outdoor space shielded from the busy roads. The*

	rooftop terraces shaped as stairs offer views of the existing surrounding structures. ***Prefabricated facade elements:*** *We installed prefabricated facade elements as soon as each floor's structural framework was ready. The facade elements were manufactured at Enemærke & Petersen's construction factory in x. With the ready-made elements, we were able to install facade components simultaneously with concrete elements, which significantly enhanced efficiency.* ***Improved quality and work environment:*** *Because we prefabricated the facade elements at the construction factory, craftsmen worked under dry weather conditions at a table with a comfortable height and could move the element around using a portal crane. Craftsmen could work with great precision, which ensured uniformity across all elements, and simultaneously conduct thorough quality control. This process improved both the work environment for the craftsmen and raised the overall quality.*
	The reference demonstrates experience with: *A) Use of prefabricated wooden elements* *B) Execution of a local project in x*

The next section links back to the subheading by elaborating on 'prefabricated facade elements'. The heading of the section omits the word 'wood', and we, therefore, must assume that these prefabricated elements are also made of other materials. The narrative stresses that the prefabricated elements were 'installed' in a timely manner emphasizing 'as soon' as the structural framework was 'ready'. A description of E&P's construction factory is provided in the narrative, which allows the reader to follow the journey of the elements from the production locally to the 'ready-made elements' for installation on-site. The entities of both the 'facade components' and 'concrete elements' are part of parallel and concurrent activities that enable the opportunity to 'significantly' enhance the efficiency. The narrative serves the purpose of disclosing that E&P as a partner effectively operates 'the events on site' in order to stabilize the sequence of activities and reduce any concerns and uncertainties connected to the performance of constructing a large-scale building. Thus, the narrative of 'optimized work procedures' is part of the E&P's tender team's interpretation and understanding of what they believe would be appreciated by the client.

The emphasized narrative of prefabricated facade elements

The next section continues the main narrative of the prefabricated facade elements with an emphasis on 'improved quality and work environment', which

is outlined in a grey box. The section starts by introducing the craftsmen who are at the construction factory, and the narrative emphasizes that the surroundings are ideal for the manufacturing process of the elements. This justification involves entities such as a table and a portal crane both of which are said to assist the craftsmen in their work. Thus, the narrative concludes that these work surroundings are the reason behind a series of advantages, namely, the ability to work with 'great precision', ensure the uniformity of elements, and increase the overall quality. The targeted client has requested the use of prefabricated wood elements and, thus, E&P's tender team strives to demonstrate that 'their way of meeting the request' is of value to them. Throughout the section, E&P's tender team highlights the competitive advantage of participating with its own 'construction factory', which is able to solve potential problems such as bad weather conditions or a lack of the proper equipment. This illustrates how E&P's tender team attempts to sell prefabricated facade elements to the client by emphasizing that this solution not only adds value through the quality of the final product but also enhances the working environment throughout the process. Additionally, E&P's tender team emphasizes their specialized competencies at E&P's organization that the client can benefit from, which are substantiated by having their own construction factory and craftsmen.

The visual elements of the Youth Accommodation

All the photos presented in the reference (Figure 7) are of the outside of the building after its completion from the angles of the 'entrance' by the road (left) to the courtyard area (middle and right), where the reader is presented with the focus of attention, which is the wooden elements. From the client's document 'Orientation of PQ- and tendering project', the client specifies that the construction must be designed in clusters, where smaller offsets are introduced to create a varied and dynamic facade, which appears changeable throughout the development. In the presented photos (Figure 7), the building varies in terms of its color tone and expression, as the wooden elements are 'hidden' to some extent in its elongated and curved shape. The photos especially support the initial 'detailed' project description about the architectural expression, which proves E&P's past performance in constructing in unusual shapes. In this way, E&P's tender team seeks to illustrate their capability to deliver the requested value of a wooden facade that distinguishes itself architecturally and presents varying perspectives based on the viewer's angle. However, the process of manufacturing the prefabricated elements from the construction factory to their installation at the site is not portrayed in the photos, which means that the reader must imagine 'this process' through the written descriptions.

Figure 7: Photos of 'Youth accommodation' presented in the reference

How sustainability initiatives partake in the four references

Although all four references included sections of completed sustainability initiatives, they differed significantly in how these were presented in their framing. The criteria for the references to the 'Wooden building' included experience with timber construction and constructions where special green and/or sustainable initiatives have taken place. Furthermore, the client states that the 'Wooden building' must be certified according to the Nordic Swan Ecolabel. In this way, the client reveals how this certification scheme is part of their conception of what comprises sustainable construction. The client's description of what is expected to showcase regarding sustainable initiatives in the references thus allows for a broad interpretation of what this entails. E&P's tender team, steered by the PQ coordinator, was therefore able to determine, to a certain degree, what should be emphasized and made visible from the four selected projects. This involves the tender team's efforts in bending and turning the reference projects to meet the client's criteria, and thus, emphasizing the values that are likely to cause a positive response from the client. For example, two of the references focused on showcasing the certification schemes of the DGNB label and the Nordic Swan ecolabel, whereas the other two references more extensively described the use of prefabricated wooden elements and energy-optimizing measures. This exemplifies how E&P's tender team attempts to frame different values related to sustainability that translate into sustainability certification schemes, the use of wooden elements, and special sustainability initiatives that manifest in energy optimization measures.

A characteristic that the four projects have in common is that they all highlight 'sustainability initiatives' that are presumed to go beyond what is required by legislation. The way in which 'sustainability' is described in the references implies a pragmatic approach to what sustainability encompasses. For example, in the first reference, the Waterside buildings, 'sustainability' is referred to in the breadth of the project as a 'new city', which meets the three pillars of sustainability, i.e., environmental, social, and economic, which reveals its grounding in the Brundtland Report from 1987. The 'Brundtland' interpretation

of 'sustainability' involves the following definition of sustainable development as (Brundtland, 1987 p.292):

> "*Meeting the needs and aspirations of the present generation without compromising the ability of future generations to meet their need*".

Although the definition is well established, especially among policymakers, its characteristics are rather vaguely defined (Boxenbaum & Georg, 2020) and, thus, the definition leaves room for many interpretations. The DGNB system is based on the same three-pillar model of sustainability originating from the Brundtland Report (ibid, p.134). The way sustainability, as a concept unfolds in the first reference, is built on E&P having a shared alignment with this conceptualization from the DGNB scheme. The described solutions are therefore written with a reference to the DGNB system, for example, when the three pillars of sustainability are emphasized. Thus, the reference reflects how central the DGNB scheme stands in the Danish construction industry as a synonym or self-evident concept for sustainable construction, and how this understanding is assumed to be in alignment with this client by drawing upon their broader context of other client demands. The validation of achieving the DGNB-certification label is considered sufficient in showcasing sustainable building performance, however, the visibility is blurred in terms of which DGNB criteria the building project fulfills. The 'value' of attaining the DGNB certification label thus stands on its own, and we do not gain insight into whether there is an alignment with the client's request for the Nordic Swan ecolabel.

The reference, 'The Townhouse', includes another voluntary sustainability standard, the Nordic Swan ecolabel', to signal that the project involves initiatives that go beyond minimal compliance. Obtaining the certification is used to validate the performance of sustainable construction that is linked to the associated values of low energy consumption and a healthy indoor climate. The selection of products and materials is especially emphasized as the main focus area, as we are introduced to 'the difficulty' of meeting 'strict' material requirements when aiming to qualify for the Nordic Swan ecolabel. E&P thus accepts the premise that 'third-party' controls and an assignment of a 'label' fulfill the criteria for sustainable construction. Compared to the reference 'The Waterside buildings', the reference of "The Townhouse' exhibits slightly greater visibility as the reader becomes acquainted with the materials that have been in specific focus for earning points. For example, the reference elaborates that the client of the project has chosen the three material categories which include flooring, putty, and paint. The Nordic Swan ecolabel is thus evaluated by E&P to invoke a need for further clarification of its criteria which can be explained by the fact that this certification scheme is more unaccustomed to clients and E&P. In this reference, E&P's tender team creates value by highlighting their

experiences with Nordic Swan eco-labeled construction. Thus, the tender team establishes the work efforts tied to the certification scheme as a material discipline in which they have now developed specialized competencies, such as managing ongoing inspections and possessing material knowledge.

The references also mirror the way in which sustainability initiatives are communicated has changed slightly. One example is the 'lakeside residences', which is approx. five years older than the other projects. In this reference, the tender team translates the client's request for special sustainable initiatives into the wordings of 'energy optimization', 'sustainable urban drainage systems', and 'highly insulated windows'. These wordings do not feature in the other references, which are newer completed projects, but the emphasis is primarily on the meeting of sustainability certification schemes and the implementation of prefabricated wooden elements. Thus, the attributes of what is defined as 'sustainable construction' have changed with the initial origins in buildings' outputs such as resource efficiency and 'healthy' construction that revolved around energy use as a core attribute (Boxenbaum & Georg, 2020). In the reference 'lakeside residences', E&P's tender team placed a strong emphasis on energy optimization and environmental sustainability by adhering to the energy class of 2015. Boxenbaum and Georg (2020) state that when Building Class 2015 and Building Class 2020 were introduced, they qualified as 'Danish labels' for sustainable construction. However, once they had been made 'mandatory', they lost their status as labels that signaled something out of the ordinary. As a result, the reference of the 'lakeside residences' stands out as almost outdated in terms of describing the present meaning of what is considered 'sustainable construction'. This illustrates the dynamic nature of what is considered valuable in the sustainability agenda, where the transition from voluntary labels to mandatory standards has led to a reevaluation of what these classifications signify.

The last reference 'Youth accommodation' included the narrative of prefabricated facade elements. Green or sustainable initiatives are therefore not part of the core narratives in the reference, which instead focuses on architectural qualities and improved work processes through the use of prefabricated wood elements. The narrative particularly emphasized how the prefabricated facade elements enhanced working conditions by using a portal crane that raised the overall quality and how ready-made elements increased efficiency. Additionally, E&P's construction factory was integrated into the narrative as a competitive advantage due to the fact that it solved challenges related to adverse weather conditions and ensured that the proper equipment was available. In this way, the reference differs from the others, because it does not prioritize sustainability initiatives as the main element. Instead, its purpose is to demonstrate how E&P has contributed to the execution of a timber construction project with the

conditions and arrangements required to achieve successful completion. Thus, E&P's tender team adds value to the prefabricated facade elements by coupling them to the prospects of achieving increased quality assurance and enhancing the working environment. This ultimately translates into a gain for the client due to improvements in work efficiency.

The references are also part of a certain framing as written descriptions and visuals must be provided within the limitation of two A4 pages. The relatively short written representations and the selection of four photos or digital drawings are based on a tough prioritization for the bidder. The format is thereby at great risk of generating multiple sources of invisibilities due to its fuzzy character when condensing the complexities of a large-scale building project. However, rich, and detailed descriptions do not fit the purpose of the references, which is to provide the client with an explanation as to how the bidder's prior projects fit into their interpretation of required qualifications. The references also serve the apparent purpose of selling E&P's services to clients. In the 'lens' of a sales argument, the narratives do emphasize E&P's successes either by highlighting the benefits of the initiatives during the implementation (e.g., prefabricated wooden elements) or by going straight to the completion of the initiatives (e.g., DGNB certification). We do not get to the 'actual' struggles or project 'failures', but the client does not ask for such information to be included in the references. This might lead to a tendency to showcase the 'results' instead of the faced challenges or achievements along the way. The descriptions are thus framed under a premise and bias to position the project in the best possible way to market E&P's services with the emphasis that the client has requested. Therefore, what the references reflect is far from a complete representation of reality, but a modified reality, which E&P's tender employees evaluate will bring out the visibilities of completed activities that make them appear as convincing as possible.

Another purpose that references serve is to provide the client with a basis for comparison regarding how the references align with the requested criteria. In the references, E&P's tender team guides the client by providing a checklist adapted to the client's criteria which shows what experience each reference demonstrates. The checklist reveals which reference fulfills the most 'client requests' from the following six categories of 'DGNB certification', 'Nordic Swan eco-labeled', 'specific green and sustainable initiatives', 'E&P as the turnkey contractor', 'use of prefabricated wooden elements', and 'execution of a local project in x'. Thus, the PQ coordinator in E&P makes a qualitative judgment of determining which project characteristics should be highlighted and categorized in an arranged checklist. These categories underscore the prioritized ranking of sustainable certification schemes with the presence of both DGNB certification and the Nordic Swan eco-label. However, other considerations also come to show such as E&P as the turnkey contractor and execution of a local project in the same

area as the project in prequalification (*'Wooden building'*). These checklists ultimately become a source of quantitative evaluations, as they determine what counts and enable the client to crosscheck what each reference measures up to. This demonstrates the valuation work that goes into the creation of the references, where these do not take on passive roles, however, they actively contribute to organizing and co-creating how the reader, and most importantly the client, should understand the descriptions during their evaluation of them. Furthermore, these descriptions, including the checklists, were tested when put into action, where the references played a part in prequalifying E&P to proceed in the tender process.

In the final section, the focus shifts back to E&P's valuation work, but this time the analysis examines how the intended impact of references is evaluated in the context of monitoring prequalified projects.

5.1.3. EVALUATION OF REFERENCES

Another part of E&P's valuation work, when it comes to references, is to evaluate whether the references had the desired effect in prequalifying E&P. Typically, there are between 10-15 applicants in a prequalification round, from which 3-5 are selected to bid on the project. Both the rejection and selection in the prequalification process provide insights into the clients' prioritization in evaluating E&P's PQ applications. The PQ coordinator monitors the determined PQ cases in an Excel sheet (Table 11) which involves specific performance targets for the percentage of cases that must achieve prequalification.

Table 11. Evaluation of determined PQ cases at E&P

Determined PQ cases	**From 2016 to today's date**	**2022**	**2023**	**2024**
Number of cases	x	x	x	x
Number of won cases	x	x	x	x
Target for all cases	x%	x%	x%	x%
Lifeblood cases	x	x	x	x
Lifeblood cases won	x	x	x	x
Target for lifeblood cases	x%	x%	x%	x%

Table 11 shows how the categories for this evaluation are organized [from the document 'Decided PQ cases']. The figures are anonymized because it is the approach that is interesting to examine more closely. Cases are divided into 'all cases' and 'lifeblood cases' over the past three years and compared against the performance from 2016 to the present. This means that the success rate of references is assessed based on two different baselines. Lifeblood cases represent projects where E&P is market-leading, such as social housing renovations. These cases are considered more important (by ten percentage points) to win or prequalify for compared to all projects because E&P has built strong and convincing references within this market segment. This illustrates how the larger number of references within the same market segment of social housing renovations raises the expectations of their value creation in practice. Consequently, there are more references to choose from, which provides greater flexibility to meet clients' criteria, such as tenant management, completed projects near the location, or social initiatives with the local community. In this way, the PQ process at E&P is once again, highly instrumentalized, where an Excel sheet serves as a quantitative device that helps in tracking and attaining strategic business goals. This quantitative ranking of E&P's performance 'outcome' serves as the basis for discussing whether efforts for conducting changes in current references are necessary. For example, whether E&P is running out of references within a specific market segment that is evaluated as critical to maintain in the business, or whether modifications of specific references did not align adequately with the client's selection criteria. This illustrates that both quantitative data and qualitative judgments are used simultaneously to evaluate how the value of references can be maintained.

5.1.4. SUMMARY

The analysis of references illustrates how they play a decisive role in the work that precedes E&P's prequalification (PQ). In this connection, I would also like to highlight the benefits of drawing on insights from actor-network theory that make non-human actors visible in terms of how they create effects. I argue that prequalification processes could not be carried out without the presence of non-human actors that range from clients' procurement documents to the contractor's tools (e.g., Excel sheets, process diagrams) and tender documents (e.g., references) that the tender employees make use of. Furthermore, I argue that references are not just innocent representations of contractors' past performance, but they are actively part of doing things in the prequalification as devices. For example, references are performative in the selection of projects in PQ, as these are contingent upon whether E&P possesses the requisite references to persuade the client to choose them, or if references from within the same holding companies can be utilized in this context. Similarly, E&P's tender employees share references from E&P with their subsidiaries to help them gain

market share in areas where they lack experience. In PQ, references also create strategic effects, as projects are chosen with the intent of developing a future convincing reference, which is particularly valuable if similar references are nearing the end of their five-year validity period.

Furthermore, the creation of references is subject to many 'turns and bends' because they can be used repeatedly and therefore need to be adapted, as they are put into work in new situational pre-qualifications. This is particularly evident in four reference examples where performance in 'special green or sustainable initiatives' served as a criterion in the selection process. Consequently, the references actively contribute to both organizing and co-creating the descriptions to have the performative effect of drawing the clients' attention and accommodating their interests during evaluation. In the four reference examples, E&P's tender team strives to frame different values of what constitutes special sustainable initiatives. By doing so, they draw on the context they experience, including the client's criteria for Nordic Swan eco-labeled construction and requirements for timber construction. Moreover, they draw on their broader context of what is considered sustainable in the market, such as the DGNB scheme and energy optimization measures.

Evaluating the impact of references reveals their consequences for actions. This is illustrated by the PQ coordinator's monitoring whether the references achieved the intended effect of securing prequalification and determining if adjustments are necessary. Such evaluations may prompt modifications in the adaptation of references or initiate discussions on intensifying efforts to acquire new references within specific market segments considered decisive to maintain in the future project portfolio.

5.2. VALUE PACKAGES

A typical value package (Figure 8) consists of a cover page featuring a large picture or illustration, such as one depicting E&P's employees, an image of the actual building, or a visualization in the case of a new construction project. The table of contents is often organized according to the award criteria specified by the client. For instance, if the procurement criteria include pricing, construction site logistics, scheduling, management of sustainability measures, and organization (including CVs), the value package will have a similar structure with these criteria serving as the main headings. Consequently, it should be evident to the client where the responses to each specific criterion are located, thereby facilitating the awarding of points accordingly. The length of value packages may range from just a few pages of content (e.g., for only two or three criteria) to

approximately 100 pages when detailed responses with visualizations (e.g., construction site layout) are required across multiple award criteria.

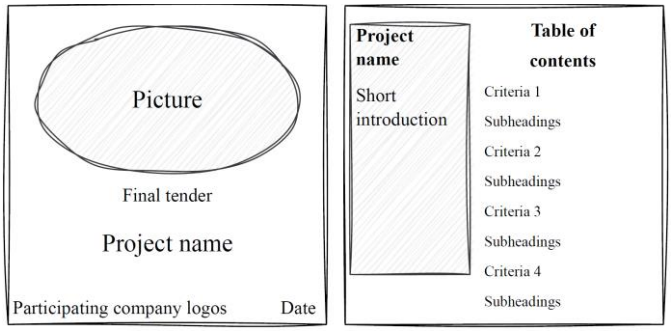

Figure 8: Structure of a typical value package

The aim of value packages is to incorporate the bidder's proposal as to how they intend to manage and execute the specific construction project within the framework of written arguments and visual elements (such as construction site overviews or timeline diagrams) intended to support the client's decision-making when awarding the contract. 'Value packages' are part of the tender submission when clients have chosen to tender the project based on the 'best ratio between price and quality'. 'Quality' needs to be translated into written descriptions based on the client's weighting of the award criteria other than 'pricing'. Sustainability solutions are thus unfolded in the value package when demanded by the client, either as an independent award criterion or as part of another criterion (such as architectural quality or organization). I argue that value packages can be considered mediators (Latour, 2005), as they not only transport information, but they 'do things' by being actively involved in influencing the tender project they represent. For example, value packages are used in discussions at the negotiation meetings, where their written content can be renegotiated and transformed as part of the client's evaluation. Consequently, the bidder relies on the content of the value package as the basis for negotiations, which also aids the client in understanding and questioning how criteria are addressed before the final selection. Therefore, the tender documents, including the content of the value package and the tender list, serve as the starting point for the negotiation between the parties and simultaneously constitute the foundation for future activities.

The content of value packages comprises a combination of storytelling, visual elements, and calculated estimations regarding, e.g., the schedule or economic savings. The written descriptions in the value package help the contractor to tell a coherent story about the building project including the incorporation of predominant themes of action ('plot'), a set of actors ('project participants'), and their motivation for being part of the project (Magretta, 2002). The value package may also include calculated estimations, such as CO_2 emissions or cost savings

related to specific initiatives. Thus, how a good or service is made calculable can be studied within the concepts of objectivization and singularization (Callon & Muniesa, 2005), where quantifying methods are applied to appear convincing by objectifying the attributes of the object (such as building design or project location) and singularizing the benefits (such as cost savings for the client) by inserting the object into the buyer's world. Qualitative descriptions, quantitative estimations, and visual elements all come together simultaneously in the value package and supplement each other. In addition, these connections may enhance the persuasiveness of the highlighted narratives, such as featuring pictures of past achievements and the realization of similar initiatives. This illustrates the qualculative practices that unfold in the work of preparing the value packages, which this chapter will address further in detail.

Two sections examine 'value packages' through observations regarding how E&P's tender team works with value packages and how responses to sustainability criteria are evaluated by analyzing two value package cases. The first section addresses the contractor's role when sustainability requirements are integrated into the value packages, including the considerations that come into play, such as weighing their own strategic interests and the elements of uncertainties in suggested solutions. Furthermore, the subsection investigates how E&P's assessment of sustainability qualities contributes to shaping a prospective framework for the creation of value packages. In this context, the analysis focuses on how E&P's employees interpret their clients' interests including discussions on prioritizations and types of sustainability requirements. The second section analyzes the written content based on two value packages where E&P's tender teams were requested to elaborate on sustainability initiatives beyond compliance with legislation. The section explores how E&P's tender teams tell stories and narratives about sustainable construction, including how individual initiatives are presented and evaluated. Moreover, the analysis focuses on the clients' side of the story regarding how they perceive the proposal teams' suggestions in the value packages.

5.2.1. VALUATION WORK IN VALUE PACKAGES

A value package is like writing and crafting a storyline that is adapted to the project in question, where the narratives comprise a collection of modified old stories from other value packages and prior experiences from projects and inscribed approaches that rethink existing work practices. The value packages entail the narrative of how E&P intends to perform measures to successfully complete the building project. These narratives include the transactional aspect of E&P's ability to sell their services by drawing the attention of the client to become part of their shared reference world. E&P's written descriptions must also do this better than their rivals because the value package will be evaluated

against other bidders' value packages. Competitiveness is inherent in the value packages because their creation originates from the client's need to evaluate bidders when awarding the contract. Each tender team must, therefore, consider how they aim to differentiate themselves from competitors in the value packages. This also takes place in other aspects of the tender submission, such as pricing and other services they can offer. Thus, the making of a value package is also about interpreting what their competitors intend to describe to find ways of showcasing E&P's competitive advantages. Furthermore, value packages facilitate the alignment of interests. Consequently, employees at E&P engage in exploring potential 'solutions' to client requests through the alignment of interests, which inherently involves a form of negotiation. Thus, what E&P can offer in the value packages emerges from a process where employees from different departments and divisions collaboratively create solutions to client requests, while simultaneously seeking to promote their own strategic agendas e.g., in the suggested concepts and solutions. Moreover, from the collection of different knowledge sources (e.g., project material, award criteria, and client insights), the tender employees must figure out how the value package can deliver on these terms. Sustainability requirements are argued to be co-created when E&P's employees evaluate potential proposals that are being compared to client criteria, past experiences, and sustainability concepts that E&P is currently developing. This will be elaborated further in the following sections.

This next subsection unfolds the valuation work that entails E&P's efforts to communicate sustainability in future value packages. Through two meetings in the spring and summer of 2022 with E&P's head of sustainability, a representative of E&P's tender communication, and myself, I have observed how sustainability initiatives are discussed and evaluated with the aim of achieving a more unified framework for this work going forward.

Towards efforts of standardizing sustainability

The two meetings held in 2022 were initiated and arranged by an employee from tender communication due to experiences of clients increasingly seeking E&P's stance on sustainability considerations in the value packages. This resulted in reflections about whether E&P needed to rethink how they were currently addressing sustainability initiatives and whether more standardized approaches to the communication of sustainability could represent a competitive advantage. Thus, the purpose of the meetings was to identify what E&P can offer within 'sustainability initiatives' and how these initiatives can become part of a recognizable and standardized framing. This was argued by the tender communication employee as follows: "*So we do not have to start from scratch every time sustainability is part of the value package".*

At the first meeting, the head of sustainability mentioned that selected sustainability concepts from E&P could be developed into standardized written descriptions. Thus, building on the old text sections from other value packages but developing them into a more generic character. The concepts include initiatives such as 'green construction site', 'prefabricated wooden elements', and 'reuse of interim wood', which have already been realized and practiced at E&P's construction sites. In this context, the tender communication employee underscored that clients' award criteria often demand a detailed approach adapted to the specific building project and, therefore, what can be directly reused is often limited. However, in the case of the client's award criteria being slightly vague and ambiguous, it allows for the possibility that approaches may overlap and sections of text can be repeated to a certain extent. This led to the discussion of organizing sustainability initiatives into categories that entail both 'project-specific' and 'generic options' of the proposals. 'Project-specific' refers to initiatives adapted for different types of projects, such as social housing renovations, new residential construction, or school renovations. Thus, value packages should include the storytelling of what E&P will do in the specific project but also include what other initiatives E&P can offer. The focus of storytelling was reflected upon, where the head of sustainability emphasized that the solutions in the value package must include flexibility to the clients' terms to make the argumentation more convincing. Furthermore, the presented solutions should reflect where E&P stands concerning strategic considerations, values, culture, and history. This is to make the client understand how E&P thinks and operates within the sustainability agenda, while also signaling that client ambitions can be achieved because sustainability initiatives are deeply embedded within the organization.

The discussion about demonstrating flexibility in the presented sustainability solutions also came to revolve around economics. The head of sustainability underscored that clients often ask which sustainability initiatives E&P can offer for free or at a limited cost by identifying the project's 'low-hanging fruits'. This introduces another category for dividing the text segments that describe generic sustainability initiatives: 1) type of construction project (project-specific), 2) generic (general), and 3) 'low-hanging fruits' (cost-effective solutions). These inquiries do not apply to all of E&P's clients, but within certain market segments, clients are expressing concerns about how the financial framework for the project will be affected by the inclusion of extra services, which sustainability initiatives beyond legal compliance are considered to belong to. This puts sustainability initiatives to the test in terms of viability because they must not burden either the client or E&P financially. The head of sustainability expressed that this situation has been encountered on several occasions, and therefore, sustainability solutions need to be considered within a framework that can also accommodate clients with limited financial resources. From here, it was discussed that one way of

dealing with this dilemma would be to indicate flexibility in the value package by showcasing how the client can achieve the highest value of sustainability within their financial budget. This requires the client to specify their financial budget and the economic priorities in the procurement, which form the basis for determining what is 'within their financial budget'. Moreover, a standardized catalog of sustainability options tailored to the project in question was suggested. This illustrates the efforts of the head of sustainability and the tender communication employee to frame sustainability initiatives within the qualifying terms of cost-efficiency, where initiatives can lose their value if they do not meet these terms. In this connection, another concern was brought up, as the head of sustainability highlighted an example from another large contractor firm that is often in tender competition with E&P. This competitor has developed its own sustainability requirements, which they offer 'as standard' with all their tenders. The fact that the tender communication does not currently have the same persuasive strategy was discussed. The concerns included confusion about which initiatives can be promised as standard while also meeting clients' requests and ensuring that all types of projects, regardless of financial budgeting, remain profitable. This invoked evaluations on which initiatives would provide the most value to their diverse range of clients that they serve without compromising operating costs. Thus, to effectively compete with this competitor, both the head of sustainability and the tender communication employee questioned whether E&P should adopt a similar approach and if this strategy could lead to a competitive advantage. This illustrates how the value of sustainability solutions is also shaped by E&P's ability to differentiate themselves from their competitors.

At the second meeting, it was discussed how an overall frame for sustainability services can be coupled with E&P's strategy. The head of sustainability mentioned that E&P's sustainability strategy for 2025 (Figure 9) could be showcased in the value packages, thereby illustrating how E&P aims to set the direction. The strategy is threefold and divided into 'Green construction site', 'Green company', and 'Green building'. The head of sustainability mentioned that the emphasis should especially be placed on the execution and disciplines within 'green building', which is visualized in the grey box on the right (Figure 9). It was also discussed how the E&P's strategy could be applied in a generic form in the value packages to establish an overall approach or methodology such as involvement and organization related to the tackling of sustainability efforts. In this way, when the strategy is presented by the illustration partakes in new actions linked to the convincing argumentations of an overall approach that intends to reduce any uncertainties or reservations that the client might have. In this connection, the head of sustainability emphasized that providing clients with a sense of assurance is crucial, as sustainability is new to many and currently approached tentatively.

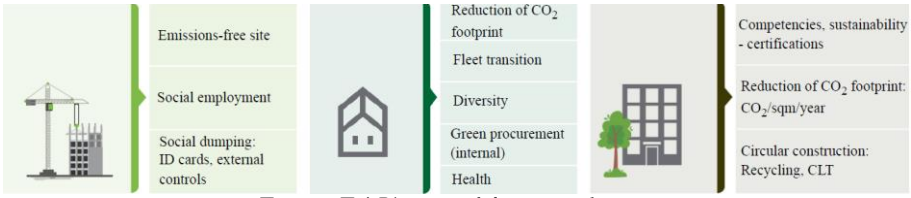

Figure 9: E&P's sustainability strategy for 2025

By taking E&P's sustainability strategy as a starting point namely disciplines within 'green building', sustainability themes were discussed and written on a shared board at the meeting (Figure 10). Overall themes were identified and noted on the board and organized alongside concepts or tools that were part of making these requirements actionable. This illustrates how the head of sustainability and the tender communication employee work towards a solution-oriented approach to simplify the relatively complex task of making sustainability requirements tangible.

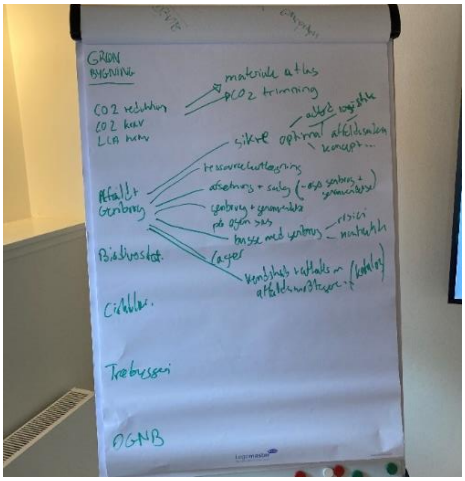

Figure 10. Evaluation of themes and concepts within sustainability requirements (In Danish, the photo is taken by me)

The idea behind the mind map (Figure 10) was to create an overview of individual themes to sort and create a structure based on various inputs and elements that E&P needs to accommodate to win future projects. The prioritization of themes was based upon an assessment of value, thus, identifying which sustainability concepts already count in the sense that E&P has already encountered and responded to these requirements. However, concepts are also identified based on market trends that are anticipated to count in forthcoming requirements. Furthermore, a production of value takes place, as concepts and solutions must be adapted and improved to generate value. This means that the head of sustainability and the tender communication employee must ensure that existing

concepts remain up-to-date and tailored to client needs to maintain their value. The evaluation process of chosen sustainability concepts exemplifies how E&P contributes to and co-creates the solution frame they enter during tenders by making sustainability requirements understandable on their own terms. Thus, the board also becomes a conscription device (Henderson, 1991) characterized by enlisting group participation and are holders for knowledge creation that takes place through group interaction toward a common goal (ibid, p.456). Through the interactions between the head of sustainability and the tender communication employee, sustainability concepts are written on the board as these get evaluated as carrying the most weight in the solution frame of sustainability requirements in tenders. Hence broad topics such as 'waste management' and 'reuse of materials' were discussed in the context of the requirements previously encountered by E&P (Figure 10). This discussion facilitated the outlining of more specific initiatives and services that could be offered, such as additional containers for waste management or resource mapping as well as resale/disposal services for the topic of reuse of materials. In this way, the written representation on the board also becomes a means to organize E&P's service offerings in actual tendering processes during the creation of value packages.

The DGNB scheme was also brought up during the second meeting. The head of sustainability highlighted how sustainability concepts can be linked with the DGNB system and the framework it creates. He argued on the basis that it allows clients to only deal with the DGNB framework instead of presenting both the DGNB system and proposals based on E&P's tested sustainability concepts. The DGNB scheme is mentioned because it is recognizable to clients. Consequently, recognizability becomes an important factor in prioritizing potential standard sustainability initiatives that E&P can offer to clients. The discussions unfolded that the clients that demand 'sustainability solutions' are often already applying the DGNB scheme either as a guiding principle or with the intention of certifying their projects. In this context, the concept of 'green construction site' was mentioned as frequently being featured in value packages, and how the initiatives within this concept could be coupled with the DGNB scheme to show the client the points to be earned within this system. From there, the possibility of creating an approach based on the DGNB system was discussed focusing on how certain elements could potentially be downplayed or excluded to ensure a consistent approach and process. This implies that the services included in, for instance, green construction sites need to be selectively emphasized or de-emphasized to align with specific DGNB criteria. Another argument by the head of sustainability for adopting the DGNB system as the approach was its systematic incorporation of standardized methods for delivering documentation. Thus, the collection of documentation is highlighted as an advantage for E&P's own work processes since employees (e.g., project leaders and site managers) have already gained the experience of documenting according to the DGNB system. In this

way, the DGNB scheme structures the actions at E&P, as the head of sustainability becomes a spokesperson for disseminating the DGNB system's ways of operating. Additionally, the head of sustainability and the tender communication employee assess that the DGNB scheme has gained such widespread acceptance among their clients that E&P's own approach to sustainability must conform with this framework. This involves that sustainability concepts developed at E&P are reproduced and centered around the DGNB scheme, which illustrates once again its influential positioning in mobilizing this conceptualization of sustainable construction in the Danish construction industry.

The two meetings demonstrate the efforts of the head of sustainability and the tender communication employee to standardize processes related to their dealings with sustainability requirements for future value packages. This entails several layers. It involves finding a narrative framework that clients can buy into, such as showing flexibility in sustainability options and how economics becomes a qualifying condition for discussing sustainability in the first place for some of E&P's clients. At the same time, it also concerns how sustainability can be placed within a framework, where clients become familiar with E&P's own approaches to sustainability e.g., by the involvement of E&P's sustainability strategy. Furthermore, the DGNB scheme becomes an overall framework to conform with, as it creates recognizability among their clients, and thus, E&P's sustainability concepts are organized and modified to fit within this specific set of rules for earning points.

5.2.2. HOW SUSTAINABILITY UNFOLDS IN TWO CASES

This section examines two value packages for which E&P's tender teams were requested to elaborate on the fulfillment of sustainability requirements that go beyond legal compliance. To study how E&P's tender teams respond to these sustainability requirements, the analysis draws on the concepts of 'framing' and 'valuation'. This section presents the two value packages individually, but they follow the same structure of main themes. These main themes are selected to address the second research question, which concerns how environmental sustainability requirements are co-created in the tender documents. To explore the phenomenon of 'co-creation' further, the analysis focuses on how the tender teams establish the values of the suggested sustainability solutions in the context of the client and the users for whom the construction is intended. Additionally, the analysis examines how employees at E&P are involved as participants in the solution proposals, and thus, actively are part of shaping the value that is created.

Table 12 provides project details for the two examined value packages along with the award criteria and the specific requests for sustainability initiatives.

Table 12: Information on the two value packages

Project info	**New Build School ('The Patchwork')**	**Strategic Partnership ('The Reliance')**
Project type	New school and leisure center construction	New construction of daycare centers and special schools, as well as renovation and new construction of residential facilities
Time period	2022-2025	2022-2025
Client	Municipality	Municipality
Contract form	Turnkey contract	Four-year framework agreement (type of turnkey contract) including approx. 40 projects
Contract size	229.3 million DKK	2.5 billion DKK
Award criteria	- Price (25%) - Architecture and function (30%) - Materials, technical quality, and sustainability (30%) - Organization and method description (15%)	- Price (40%) - Organization and staffing (30%) - Process, optimization, and sustainability (30%)
Sustainability requests	Architecture and function: *- To what extent the theme of sustainability (physical, social, and mental) is clearly and prominently integrated throughout the entire project, including how it both inspires and challenges various user groups, for example, through visibility and demonstrative effects in waste management.* *- To what extent the proposal's architecture enhances the*	Organization and staffing: *- The bidder's organization must ensure that sustainability is addressed throughout all phases of the project, with clear and logical responsibilities and command channels that ensure the timely and correct collection of documentation, with comprehensive involvement of the client guaranteed.*

	solution's profile as an immersive, sustainable construction project, featuring both sensory "wow effects" and "aha moments". Materials, technical quality, and sustainability: *- The sustainability measures must be aligned with the client's vision for integrating each of the 12 topics in the sustainability strategy[7] into the project.* *- A plan must be presented and appear robust and innovative in ensuring that the project's phases will continue to work on the qualification and implementation of the sustainability strategy's topics.* *- The proposed project must meet the specified requirements for maximum climate impact over a 50-year calculation period* (5.8 kg CO_2 eq per m^2)*, as well as the requirement for climate impact up to and including the construction phase* (220 kg CO_2 eq. per m^2). *- The proposal must document measures and solutions that, in addition to the selected criteria in DGNB, can achieve a gold certification.*	Process, optimization, and sustainability: *Description of the bidder's approach to sustainability, outlining:* *- The process for handling sustainability at the project and portfolio levels to promote sustainable construction as an integral part of the construction project.* *- The internal collaboration within the tender team concerning sustainability.* Other requests (not indicated in the award criteria): *New construction projects exceeding 20 million DKK must achieve DGNB Gold certification (or equivalent), while comprehensive renovation projects exceeding 20 million DKK must be certified to the DGNB Silver level (or equivalent).*
Awarded or not	Not awarded (lost)	Awarded (won)

[7] The 12 topics in the sustainability strategy include 'Waste as a resource', 'The building's climate impact', 'Sustainable furniture', 'Health and indoor climate', 'Safety-promoting surroundings', 'Connection to the local community', 'Climate competition', 'Room indicators', 'Water', 'Sustainable construction site', 'Operation and Energy', and 'Nature and outdoor areas'

There are some similarities between the two cases (see Table 12) in that both cases concern schools, a large-scale municipality client, and the early involvement of the contractor in a variant of a turnkey contract. Another similarity is the inclusion of sustainability as part of the award criteria accounting for 30% of the evaluation. Both clients demand sustainability certification, and thus, the new build school aims for DGNB Gold and DGNB Heart (aimed at promoting building users' health through improved indoor climate). Whereas the strategic partnership is guided by a municipal strategy that mandates DGNB certification or certification according to the Nordic Swan eco-label for all the Municipality's building projects with a contract value exceeding 20 million DKK. One notable difference is the awarding of the contract in that the tender team failed to win the contract for the new build school but succeeded in winning the strategic partnership tender. The analysis aims to treat the two 'value packages' equally despite the differences in their outcome by drawing on the ANT principle of generalized symmetry (Callon, 1984). At the conclusion of each value package, the analysis includes how the clients have evaluated E&P's sustainability proposals as part of their overall assessment to understand whether these proposals contributed to creating the value that the clients requested.

New Build School – 'The Patchwork'

I participated in six tender meetings held during the development of this value package in the spring and summer of 2021 (Table 5). These meetings included representatives from E&P (head of markets in West and tender calculation employees), representatives from the participating architectural firm, representatives from the engineering consultancy, as well as participants from an industry organization for circular economy and a social architectural firm. The meetings encompassed a broad discussion of many different topics related to the content of the value package, ranging from technical solutions (e.g., construction, fire safety, and material selection) to contributions concerning the client's sustainability strategy. My participation in the meetings provided insight into why 'The Patchwork' was a strategically important project for E&P's employees to win. For the market segment in the West, winning a building project with ambitious sustainability goals would offer a competitive advantage to pave the way for similar projects in this geographic area. Moreover, my observations from the meetings on sustainability discussions revealed that the conversations specifically focused on facade solutions, the acquisition of circular materials, and the design and shape of the buildings to optimize volumes and thus, reduce material usage. Through my observations of these meetings, I identified which sections were primarily developed by the project team's architectural firm (e.g., architectural concept), the engineering consultants (e.g., technical description of the buildings' life cycle assessments (LCA)), and E&P's employees (e.g., vision and strategy, as well as organizational roles).

The value package of the new build school consists of the following three documents: the main document 'The Patchwork' (the tender team's name for the project), which answers the criteria 'Architecture and function' and 'Materials, technical quality, and sustainability', and the documents 'The Patchwork, method description' and 'The Patchwork, organization & CVs'. The main document is 114 pages in length and is divided into sections that address the architectural concepts and vision, strategies (safety, city life, sustainability), materials, life cycle assessment, technical solutions (installations, structural design, fire conditions, indoor climate) and architectural design and plans for the distribution of rooms. The analysis focuses on the vision and strategy regarding sustainability and the way in which E&P as a contractor describes its organizational role in the performance of sustainability initiatives. These parts of the value package have been chosen because they represent areas in which E&P, as the contractor, has actively contributed to the proposals on sustainability initiatives.

How the tender team establishes the value of sustainability

The Patchwork consists of two buildings, which are referred to as the large Patchwork and the little Patchwork. The large Patchwork is for the intermediate and senior grades, while the little Patchwork is for the youngest children. The narrative sets the scene by stressing that the design and shape of the buildings will be part of "*the development of experienced sustainability in the project*", which is solved by the architecture through "*the choice of materials and structural principles […] with a low CO_2 footprint and visibly integrated upcycled building materials"*. Thus, the introduction starts by describing 'what sustainability will look like' by making the reader envision the buildings with the upcycled materials. It explains how being close to the scene of these buildings will make 'sustainability' an integrated part of the experience. The use of the wording 'experienced sustainability' implies that sustainability initiatives are conducted with the primary intention of stakeholders having their own experience of how sustainability should be perceived in their interactions with the buildings.

The narrative continues with the introduction of the participant 'the client'. The tender team proposes a 'next level' strategy and encourages the client's involvement as follows:

> *"We want to involve you as clients in the work and in the process of creating the most sustainable building and facade yet built in the city, one that raises the high ambitions and perhaps even sets the bar higher together".*

The tender team creates value by emphasizing how the building will be 'the most' sustainable compared to existing surroundings, and thus, we get the narrative that this building will stand out positively as an exemplar for signifying the highest achievement of sustainable construction. In addition, the tension is built on a

collective effort to set the bar higher *if* the client is willing to 'join in' to achieve the ambitions. The tender team aims to elaborate on the client's involvement by assessing what they believe would be valuable for them. What this collaboration will entail is presented in the next sentence that places the client's role as an 'equal' participant in 'co-creating' the 'sustainable' facade design:

> *"In connection with the design of the facade, we invite you to participate as active material and advisory partners in minimizing the overall CO_2 footprint".*

By actively involving the client, the tender team has concluded that the client wants to have their input valued and wishes to find ways of meeting their own specified requirements for the maximum climate impact of the CO_2 footprint. Thus, the tender team suggests that the client could assume the role of an 'advisory partner' if they agree to the proposal. This designation allows the client to subscribe to this role, thereby gaining increased influence and thus, authority over the implementation of specific sustainability initiatives.

The architectural concept 'the Patchwork' includes the section 'Sustainable Architecture', where the tender team connects the concept to sustainability and offers explanations for their interconnectedness. The concept is presented as follows:

> *"The project's architectural main concept is 'sustainable architecture,' which is further manifested in the section on sustainability, in the LCC and LCA calculations, the DGNB certification, but also in the physical expression and volume design of the building".*

The narrative draws on the buildings meeting the 'DGNB certification' and refers to 'LCC and LCA calculations' to support the credibility of the valuation that the main concept is in fact 'sustainable architecture'. Thus, the tender team rationalizes the buildings' sustainability performance by quantifying it. Moreover, the introduction of the DGNB scheme becomes a central actor that helps conceptualize what sustainable architecture means. The calculative and narrative techniques appear concurrently in the following:

> *"The Patchwork offers compact buildings that ensure both efficient energy consumption, short distances, and thus interaction between users. The architectural design emphasizes visible sustainability, passive measures, and social sustainability. Particularly, CO_2 savings through upcycling have been a motivating design driver for the project".*

The narrative delimits the world by drawing a boundary around the entities of the buildings together with the users targeted by the tender team, thereby emphasizing that the architectural concept will enhance interaction through its

characteristics of compatibility and nearness in space. The buildings are made calculable by demonstrating that their properties provide CO_2 savings due to upcycling materials and are thus 'objectified'. In addition, the buildings are part of delivering visible sustainability in the architectural design. In this way, the buildings are inserted into the user's world or 'singularized', which allows users to notice and interact with the buildings' visual elements, which showcase the sustainability efforts of the project team.

'Sustainability' is also mentioned in the section that introduced the architecture and function of 'the little Patchwork and the large Patchwork', where the attention is immediately on the facade solutions in the following:

> *"Sustainability radiates from both the little Patchwork's and the large Patchwork's exciting and artistically upcycled facade solutions, creatively illustrating that we can create value in many ways, that (life) design is a dynamic and always relevant process, and that ingenuity finds a home here".*

The narrative sets the scene of the buildings being endowed with the properties of 'value' and 'ingenuity', which almost put 'design' and 'life' on equal footing symbolically placing 'life' in a parenthesis. By equating 'life' with 'design', the narrative emphasizes that the two elements cannot and should not be separated but are *in fact* intertwined. This illustrates the tender team's efforts to create value around the architectural facades by emphasizing how the solutions' inherent creativity and ingenuity will serve as a source of inspiration for the users and passers-by of the buildings.

How does the tender team respond to users' needs

The sustainability narrative continues, but now with a new focus as the participant of 'the user', i.e., children, is included. The tender team invokes that the value of sustainability cannot only be interpreted as a 'resource matter' as follows:

> *"Sustainability extends far beyond the idea of a responsible approach to our resources".*

'The children' contribute to elevating the sustainability agenda to a more important purpose by underscoring:

> *"It reaches right into each child's life by creating educational and social surroundings both indoors and outdoors, where there are many ways to succeed, many ways to learn, and many ways to explore life's paths as a child in strong communities with the opportunities to co-shape their own learning and leisure time. The environments push education towards becoming a useful tool for each child, rather than the child becoming a pawn in a system".*

In this excerpt, it is made clear who the tender team is creating value for, namely the future users of the buildings – the children. The tender team attempts to highlight the value of creating surroundings that specifically support the school's pursuit of fostering strong communities and learning facilities. By doing so, the narrative claims that the interaction between the children, the building, and its surroundings represents a coherent whole that both fosters and co-shapes learning and development. In this way, the tender team consciously draws a line concerning the inputs they incorporate into their framing of users. Thus, other potential users of the buildings such as parents, staff, and teachers are only mentioned briefly in the descriptions.

A common aspect of the descriptions in the sustainability strategy is the tender team's efforts to incorporate and actively engage its users in the proposed ideas. The section on strategy for sustainability is created on the basis of the client's vision of sustainability covering the following 12 topics; '***Waste as a resource***', '***The building's climate impact***', '***Sustainable furniture***', '***Health and indoor climate***', '***Safety-promoting surroundings***', '***Connection to the local community***', '***Climate competition***', '***Room indicators***', '***Water***', '***Sustainable construction site***', '***Operation and Energy***', and '***Nature and outdoor areas***'. The 12 topics are further elaborated in a matrix format that demonstrates how they individually contribute to 'day-to-day activities', 'life' (with an emphasis on pedagogy), and 'the physical surroundings'. Additionally, each aspect includes specific DGNB criteria and sustainable development goals (SDGs) that they align with. Table 13 shows how the matrix is structured with three examples of strategic aspects and the selected color tones.

Table 13: The structure of the matrix in the value package

	Waste as a resource	**Climate competition**	**Room indicators**
Day-to-day activities			
Life (pedagogy)			
The physical surroundings			
DGNB criteria			
Sustainable development goals			

Conformity with the DGNB system once again appears as a guiding principle by demonstrating which criteria and thus points can be achieved in relation to strategic objectives. In this way, sustainability objectives are made actionable by translating them into the DGNB criteria, which likewise enable the attaining of the DGNB-gold certification (see Table 12). Furthermore, the matrix (Table 13) can be considered as an inscription device that translates the client's sustainability strategy into a diagram that serves as a guideline in making the strategy both tangible and actionable. This analysis focuses on the written descriptions that demonstrate how the project supports the 12 topics.

In the introduction, the narrative goes straight to the human senses through the formulation in the first heading: "*Visible and perceptible sustainability*" and the opening:

> *"Several sustainability initiatives are both visible and perceptible – both aspects are essential as they impact our well-being and behavior".*

Therefore, the narrative claims that the sustainability initiatives can have a positive effect on users' well-being and behavior. In doing so, the narrative captures the reader's interest and sets the 'sustainability' strategy in motion. The narrative then continues with the first and second topic of the strategy as follows:

> *"The visibility of sustainable recycled materials will influence both users - as well as passersby - towards more sustainable behavior, as we experience '**Waste as a resource**' on a 1:1 scale and our responsibility for **the Building's climate impact**".*

This suggests that the sight of recycled materials will foster more sustainable behavior among users and passers-by. The tender team believes that the users will realize that they are 'participants' in a 'sustainable' building and will, thereby, correlate their actions to take responsibility for sustainability. Thus, the tender team uses visual tools to create value, where the social dynamics of participation and co-ownership are expected to manifest, as users will be part of a community that shares responsibility for sustainability.

The narrative continues with the inclusion of 'the sense of touch':

> *"**Health and indoor climate** are ensured through optimal materials and learning environments are designed in a way that provides a positive psychological and educational impact. Having influence over one's indoor climate through natural ventilation and comfort curtains has a positive effect on our comfort".*

The narrative takes us into the building's interior, which provides value for its users through the materials and design elements used, aiming to have a positive

psychological impact and improve the learning environment. The tender team places particular emphasis on how the material value of the chosen solutions will enhance the learning environment, with an implicit reference to the users ('the children') for whom the buildings are intended.

The next section on '*Safety, well-being, and connection to the local community'* connects safety to what is assessed as valuable to the client, specifically a place to learn:

> *"Safety is a keyword for the design and surroundings of 'The Patchwork' since the school should be a pleasant place to stay - where one has the capacity to concentrate and learn new things".*

The learning element is accentuated as follows:

> *"The Patchwork's outdoor green academic towers signal the school's private outdoor spaces and allow visitors to have an extra experience by visiting the place - and the opportunity to acquire new knowledge. This creates a good* ***connection to the local area****".*

The narrative also introduces the participation of external visitors, thereby introducing the strategic aspect of a connection to the local area. Thus, the 'green academic towers' act as an 'intermediary' by interacting with their surroundings (both the school's users and visitors) for the dissemination of knowledge. Consequently, the tender team assumes not only the responsibility for designing the physical outdoor spaces, but also contributes with ideas as to how the schools' facilities can function as independent learning spaces. This illustrates how the tender team attempts to enable the client to create value that is inclusive of the local community, which can also serve to promote the client's own sustainability efforts.

The heading *'Nature, water, and outdoor areas'* takes us outdoors and paints a picture through the following description:

> *"Natural outdoor areas are guided by a rich flora and fauna and with high-quality water. With ponds and ditches, rainwater will be naturally purified and serve as an educational example that native plants can thrive without artificial irrigation. Perhaps the children can have plants and water them with rainwater collected in the pond as an educational example of sustainable living".*

The narrative techniques encourage the reader to picture an image of a rich 'nature' that is in harmony with its surroundings, from which the users can benefit by learning. The word 'perhaps' reveals an element of uncertainty invoking its users to realize the idea of the entities ('plants', 'water', and 'the pound'), which act as intermediaries for learning. Thus, this illustrates how the

tender team creates value for outdoor areas by connecting them to intermediaries that can generate learning opportunities for the children.

The last section has the heading 'Climate competition and room indicators'. Here, the tender team encourages users ('children' and 'teachers') to interact with the buildings' features such as the **room indicators** for energy consumption:

> *"In the construction, both electricity, heating, and water consumption are measured at the cluster level. This allows clusters and year groups to engage in a fun* ***Climate competition*** *for the lowest consumption, while also providing room guidance for users regarding their own climate impact".*

The artifact of room indicators allows the action of measuring and displaying 'energy usage' information enabling users to monitor their performance as part of a competition or to increase awareness of their energy consumption habits. The building will provide energy usage measurements at the cluster level and thus, the building's attributes are objectified through calculations. Furthermore, narratives about the way in which users can learn about their usage, and how the clusters can 'alert' each other in competitive scenarios illustrate the building's insertion into the user's world (or 'singularization'). Once again, sustainability efforts are linked with learning opportunities, and we see how the tender team decodes that this agenda is particularly valuable to fulfill for the client.

The tender team extends the narrative of what would be valued by the users in an upcoming 'climate competition' by introducing another suggestion:

> *"****The climate competition*** *can also focus on the circular economy – including how materials can be part of a closed loop where resources are reused, recycled, and repurposed. In the Patchwork, there are many examples of the circular economy. The building can get elaborated in an educational way and illustrate examples of circular flows, conveyed at different child-friendly heights".*

The building and its design in terms of material composition become the subject and intermediary in the children's education about responsible resource consumption. However, the narrative also emphasizes that examples of circular material flows can only be effectively conveyed through an educational approach that is customized to the children's academic level. Thus, this illustrates another example of the tender team not only addressing the communication of outlining 'physical spaces' but also assessing how the direct integration of these spaces can generate value-creating interactions with its users as part of the teaching. The tender team creates the narrative that these sustainability initiatives are intentionally designed on the basis of promoting learning.

E&P's role as active participants

E&P's employees also play the active role of participants and, thus, act as both the 'narrator' and a 'participant' in the value package. Within the dedicated value package addressing organizational structure ('The Patchwork – Organization & CVs'), each of the involved participants are examined individually, providing insights into their respective contributions of specific knowledge and resources. The participant of 'the head of sustainability' at E&P becomes part of the narrative focused on achieving sustainability initiatives alongside other participants. Thus, an engineer from the project team is made responsible for managing the DGNB process, conducting life cycle assessments, and performing CO_2 emissions calculations. The role of the head of sustainability is examined further to understand how E&P as the narrator portrays their involvement and responsibility in terms of sustainability and how their interests unfold in the descriptions. The narrative starts with the plausible motives of the head of sustainability:

> *"To support the work on the project's ambitious sustainability agenda, E&P's head of sustainability, […], contributes input to the development by participating in the upcycling task force for recycled materials for facades and other relevant building components".*

The contractor's role is to contribute with the participation of sourcing materials referred to as 'the upcycling task force'. In this way, the tender team evaluates that certain tasks/services necessitate dedicated 'task forces' and 'advisory partners', whereas others do not. Thus, the services related to upcycling are given particular importance, as these are evaluated to require additional efforts due to the ambitions of having facades constructed from upcycled materials. The description underscores that the contractor's efforts are closely tied to the head of sustainability who represents E&P as the chosen participant in the task force. The narrative emphasizes the head of sustainability's skills as follows:

"[…] is involved in various development networks in the construction industry and the industrial sector, and collaborates with industry organizations, educational institutions, and certifying bodies to publish relevant knowledge".

The narrative then continues with the following:

> *"[…] will continuously help establish the right alliances and assess potential collaborations with strong partners who can contribute to the requested solutions".*

This suggests that the head of sustainability's position in the value chain will solve 'the initial issue' of engaging partners in the upcycling task force. No information is given about which partners are chosen and would constitute 'the right alliances' or where they are located in the value chain. However, the task of the head of

sustainability is to establish the right environment for the contractor's services to 'materialize' and address buildability by delivering facades made from upcycled materials. E&P's head of sustainability produces value by identifying the knowledge and experts that are required to deliver these services.

The exchange of value is accentuated in E&P's participation in development projects:

> *"In this regard - subject to further agreement with the client - he also explores the possibility of seeking funding for specific and defined sub-projects".*

The acquirement of resources for integrating development projects also serves E&P's interests in building expertise and expanding their services to differentiate themselves from the competition in upcoming value packages. The narrative endeavors to maintain a balance between interests by emphasizing that any decisions about the project are made in consultation with the client. This illustrates the tender team's efforts to ensure that development projects are only initiated if the client finds them valuable.

The 'upcycling task force' is further elaborated in the value package's 'method description', which sets a boundary of three participants:

> *"The task force is established immediately in connection with the start-up and is led by ('name of a circular network organization'), with contributions from ('name of the sustainability engineer') from ('one of the participating companies') and the head of sustainability from Enemærke & Petersen".*

The themes to be handled by the task force are:

> *"Sustainability, upcycling, energy, DGNB, and the climate agenda in general, therefore, become the overarching themes for a special task force".*

Thus, the task force is involved in providing and addressing all the requested sustainability themes as part of their work. We thereby get to understand the argumentation of why a task force is needed due to the range of responding to multiple sustainability requests including the emphasis on the DGNB scheme.

The narrative gets to the core of what the motive behind the task force is:

> *"The task force is to gather knowledge and qualify the best solutions for the project through dialogue".*

To do so, the task force members must extensively reach out to various actors that unfold in a structured list of roles, each with associated actions. The

intention is to get the client to understand which type of value is created with the contribution of each link in the chain. For example:

> *"The industry and trade organizations, manufacturers, and suppliers of building materials and components"* provides value in connection to:
>
> *"the latest knowledge and data on products, as well as engaging in development collaborations/partnerships to identify improvements".*

Educational institutions are mentioned to initiate "*potential challenges and idea generation*" and lastly, the contributions from local developers, the demolition industry, and recycling centers for acquiring potential resources for recycling. The task force can thereby accomplish sustainability initiatives through its association with other companies with potential value exchanges. Thus, suppliers of building materials gain the tangible value of getting paid as well as having the opportunity to differentiate and improve their products and knowledge, whereas educational institutions can gain the more intangible value of conducting research on the project's experimental sustainability solutions. The narrative concludes by underscoring that the tender team will reduce uncertainties by involving:

> *"[…] as many relevant value-creating and solution-oriented parties as possible are engaged to provide broadly qualified and viable solutions".*

Thereby stressing the need for contributions from partners that are both 'solution-oriented' and 'value-creating' in delivering this value to the client. Thereby, the tender team acknowledges the uncertainties tied to the collective work of providing these solutions, which are highly dependent on bringing in different knowledge sources from a wide range of actors. This illustrates the tender team's efforts in identifying which actors are part of serving the value of a task force. Furthermore, these initiatives are also expected to generate value for the participating actors by facilitating sustainable development in the construction industry. This demonstrates an attempt to showcase that these sustainability efforts extend beyond this project.

Do the sustainability proposals create value from the client's perspective?

The client's perspective for this value package is based on a written report from the first negotiation meeting held in August 2021 [from the document 'Report from the 1st Negotiation Meeting']. Present were representatives from the client organization ('Municipality'), including project managers, office managers, and client representatives. Additionally, participants included two expert judges, four building client advisors, and four representatives from E&P's tender team, including E&P's tender manager and head of markets in West. The analysis is based on client excerpts from the section on 'Initial feedback' in the report, as it

is during this part of the meeting that E&P's proposals are discussed and evaluated. The section focuses on the client's evaluation of the two award criteria *'architecture and function'* and *'materials, technical quality, and sustainability'*, each accounting for 30%, as it is within these criteria that the sustainability proposals are discussed.

Architecture and function (30%)

In the client's assessment of the tender team's architectural solutions, the client addressed the choice of project name along with the solutions incorporated into the buildings' visual design as follows:

> *"The buildings reflect the project name, 'The Patchwork', with a system of assembled and adaptable facade modules featuring a high degree of recycled materials and a robust continuous concrete base".*

However, the client's evaluation of the architectural solutions takes on a more negative direction. The critique of the tender team's facade solution unfolds in the following statement:

> *"[…] the numerous suggestions for recycled materials in the composite facade modules are more difficult to assess in terms of quality – both regarding operation/maintenance and durability".*

In this client excerpt, we gain further insight into the client's opinions on the facade solution, where the material value of the selected recycled materials is challenged. In the wording 'difficult to access', the client does not understand the tender team's suggestion on what the building designs offer, and therefore it comes across as a negative statement. This introduces several uncertainties associated with the use of recycled materials because the client expresses that they cannot assess what they are receiving. This creates a risky situation with potentially low-quality materials that may not have the expected lifespan or might incur additional costs for operation and maintenance. Thus, the building design creates uncertainty regarding its ease of maintenance, operation, and durability, which are three important areas for a client. Consequently, the tender team failed to persuade the client that the facade elements made from recycled materials support the client's sustainability objectives of achieving a low carbon footprint.

In the end, the client makes the following overall conclusion of the architectural solutions:

> *"The overall appearance of the building clearly signals its high sustainable ambitions, which, however, in terms of expression and scale, somewhat overshoot the mark in relation to cost, architectural expression, and the desire for a rational and operationally reliable school building".*

In the client's concluding remarks on the architectural solutions, we gain insight that the tender team has been overly ambitious with their proposals. Thus, in this excerpt, the client's priorities are emphasized, highlighting cost considerations, a more 'modest/subdued/calm' architectural expression, and ease of maintenance. Additionally, it becomes apparent that the proposed solutions entail an economic cost that is higher than expected for the client. In this way, the architectural solution translates into financial terms that contribute to the client's overall impression. Thus, economic cost becomes a critical consideration despite being weighted separately in another criterion. Furthermore, the client emphasizes the importance of a reliable operational building, thus, indicating that the proposed solutions appear to undermine this priority.

Materials, technical quality, and sustainability (30%)

In the client's assessment of sustainability, their evaluation consists of only a few written points. This gives us the impression of what is mainly prioritized by the client, as the evaluation of architectural solutions carries significantly more weight in the discussions, based on the amount of written documentation from the first negotiation meeting.

The client introduces their overall considerations regarding the tender team's sustainability solutions as follows:

> "*The proposal demonstrates an excellent understanding of the climate challenge and is clearly well-integrated. It includes innovative strategies and good material initiatives to meet the project's climate requirements*".

From this client excerpt, we get the impression that the tender team placed value on the same areas that align with the client's sustainability requests, with strategies highlighted as innovative and material choices meeting the climate objectives. The client's procurement conditions (Table 12) also outlined how sustainability would be evaluated based on presenting a plan that "*appears robust and innovative in ensuring that the project's phases will continue to work on the qualification and implementation of the sustainability strategy's topics"*. In the value package, E&P's tender team established the value of sustainability proposals from the client's 12 sustainability topics by placing them into various settings of daily activities, through pedagogy, and the physical environment, and by linking them in an action-oriented context of achieving points in the DGNB system and fulfilling Sustainable Development Goals (SDGs). Furthermore, in the value package, the tender team specifically endeavored to integrate the sustainability strategies with the physical surroundings and activities that interact with buildings' users, particularly 'the children'. This aspect of the tender team's storytelling is not addressed in the evaluation of sustainability. Consequently, we do not know whether the tender team's efforts to link sustainability initiatives with children's learning activities

have had the intended value of convincing the client in this positively loaded evaluation.

The evaluation ultimately focuses on the tender team's descriptions regarding the proposals of the DGNB scheme:

> "*DGNB is clearly integrated into the proposal. A DGNB screening with a robust score has been presented, which aligns well with the project's very clear focus*".

The tender team's descriptions of the DGNB scheme appear to have successfully convinced the client. The excerpt highlights the client's particular interest in the measurable 'score' provided by the quantitative weightings in the DGNB screening. The client places great emphasis on the quantitative certainty of achieving a 'robust' score that steers the project's objective towards fulfilling the threshold for the DGNB Gold certification. This also illustrates the client's instrumental approach to sustainability efforts, where these serve as quantitative inputs to be managed and monitored.

Final remarks on the client's perspective

While the value package for 'The Patchwork' was positively assessed regarding the tender team's sustainability solutions, other factors such as economic costs and concerns about the viability of recycled materials in terms of quality and operational reliability significantly influenced the evaluation. However, the inclusion of the DGNB scheme was evaluated as convincingly addressed, and the instrumental approach to visually demonstrating a 'robust' score for quantitative weightings supports the client's objective of achieving DGNB gold certification. Although the client's rating of the individual award criteria is unknown, a conversation with E&P's head of markets in West during a CMB team meeting revealed that E&P's tender team lost the tender. The tender team focused particularly on aligning with the client's ambitious CO_2 requirement of 5.8 kg CO_2 eq per m^2 (see Table 12), but the client's evaluation incorporated many other considerations. From E&P's perspective, it was impossible to offer the client's budget price (around DKK 230 million) while also meeting the CO_2 requirement. Consequently, the tender team's bid price was 35% higher due to the methods and materials required for the LCA calculation. Thus, E&P's tender team submitted the highest bid but was the only one to meet the CO_2 requirement. A lower-priced bid won, though it remains unclear if other factors influenced its victory over E&P's bid. Hence, it cannot be definitively concluded that the client chose the final bid based solely on price. However, submitting a bid that was more closely aligned with the client's budget might have been a more persuasive strategy for E&P's tender team rather than focusing on meeting the client's CO_2 requirement.

The Strategic Partnership – 'The Reliance'

I participated in five meetings during the development of this value package in the spring of 2021 (Table 5), and three of which were specifically dedicated to the development of the sustainability response. Attendees at these meetings included E&P's head of sustainability, E&P's former head of markets, two representatives from the engineering consultancy, a representative from the participating architectural firm, and a communications consultant hired by E&P to coordinate and co-write the value package. My participation as an observer at the tender meetings provided me with insights into the strategic significance of this partnership for E&P's organization. The importance of winning the contract was particularly due to E&P's ongoing collaboration with the same client in a strategic partnership initiated in 2016. Securing the new partnership contract would mitigate challenges related to potential project overlaps and the existing infrastructure developed around the initial partnership. This infrastructure included physical assets such as office facilities and established coordination mechanisms, such as internally developed standards and guidelines. Maintaining the partnership would enable E&P (and the other participating companies) to build on their accumulated experiences and continue collaborating with a strategically important client. The strategic importance of winning the contract is particularly coupled with the client's extensive project portfolio as a large municipality. Finally, winning the contract would also guarantee a stable revenue stream for E&P's organization over an extended period, with a substantial contract sum of 2.5 billion DKK.

During the tender meetings, the structure and content of individual sections were discussed, with specific tasks assigned accordingly. E&P's employees were primarily responsible for drafting sections related to the sustainability process, while the engineering consultants were tasked with detailing the content of the sustainability services. I have specifically focused on the sections where E&P's employees have actively contributed to the proposals regarding sustainability initiatives. The value package 'the Reliance' consists of one main document '(Client name) & The Reliance – The strategic partnership', which deals with the two award criteria other than pricing (40%). The document consists of 85 pages and is divided into two main sections. The first section describes the award criterion 'Organization and staffing' (30%), which introduces the partnership (*"We are the Reliance"* and *"Ready for a new gear shift"*), and the organizational structure (*"The organization's composition and practical operations"*, "*A robust partner*", "*Clear implementation plan*" and "*CVs*"). The second section addresses the award criterion 'Process, Optimization and Sustainability' (30%) with the following divisions "*Processes*", "*Optimization*" and "*Sustainability*".

The analysis includes parts mostly related to the second section, where sustainability is described. However, formulations on how sustainability is part

of the collective narrative, which appear in the introduction and are integrated into the organizational structure are also addressed in this analysis. In alignment with the value package of the new build school, particular emphasis is placed on how the tender team establishes the value of sustainability and its relation to the client and users. Finally, the analysis addresses how the tender team themselves become part of the narratives as both 'narrators' and 'participants' in the solution space of sustainability.

How the tender team establishes the value of sustainability

The introduction of sustainability is unfolded right from the beginning of the value package. A tension is created in the 'prologue of the value package by stressing that a collected effort is needed to deliver building projects in a better and improved way:

> *"Let's create success in the Danish construction industry. A success that demonstrates to the rest of the industry that it is possible to do things differently in terms of organizing project teams in construction and, as a result, take measures to ensure construction is delivered on time and at the agreed price and quality".*

The scene is set by stating that the current practices and organization within the construction industry are unsatisfactory. However, the tender team tries to overcome these issues by undertaking specific actions aimed at ensuring timely delivery while also promising price and quality compliance. The reader's attention is established, and the narrative is put in motion as to how the tender team will successfully address the client's requests and craft a 'success story' in the Danish construction industry.

The motives of both the client and the tender team are underscored and aligned in the following excerpt on ambitions:

> *"Nevertheless, all eyes are on us once again, for the next ambition has been set: Can a new strategic partnership create cheaper and more sustainable construction? We are confident in our cause, as we share the same ambition ourselves, and we see it as a natural next step in the evolutionary journey of strategic partnerships".*

With the arrival of the tender team, they set the scene for enabling a 'solution' that is both cheaper and serves 'more sustainable' construction. At this time, we do not know how they plan to achieve this solution. However, the tender team suggests that it can be accomplished by crafting a narrative that logically embeds this ambition within the development of strategic partnership projects. The narrative ends by referring to how this can be realized through a systematic approach:

> *"There is so much to build on top of, but also much that needs to be systematized".*

From this quote, the tender team also mentions that the solution lies in building upon previous experiences. Furthermore, we gain insight into the need for systematization, but specific methods and frameworks for doing so remain unclear. Nevertheless, the outcome is 'something new' in which both the client and the tender team participate in a coherent ensemble as follows:

> *"A new partnership where we are not just* ***with*** *each other. But a new partnership where we are together in it all:* ***('client name') & the Reliance****".*

The tender team describes the client as an equal participant to emphasize the importance of collective efforts in driving and maintaining the partnership. Consequently, the client is recognized as an essential participant in the partnership. The client's significance is further accentuated by featuring their name prominently at the headline level, thus elevating their status and highlighting their pivotal role in the proposed solution.

The mentioning of sustainability emerges in the narrative of *"concrete methods and tools in the Reliance project model"* in the first section dedicated to 'processes'. Sustainability appears in the heading as follows: *"Sustainability is integrated into all processes"*. The tender team highlights that sustainability will be an integral part of all aspects and thus develops a narrative, which we assume will include details on its implementation and maintenance throughout the entire process. The tender team initiates the argument of how sustainability will be incorporated into the planned activities and devices:

> *"Sustainability is an integrated part of all project processes in 'the Reliance' and is anchored in all levels, methods, and tools".*

From this quote, the tender team aims to underscore how sustainability efforts will generate value across all activities, from the used methods to the selection of tools. The tender team increases the tension by asserting that this approach should be considered valuable:

> *"Hence, sustainability is not something that takes place separately in its own meetings/workshops, but something that is integrated into our processes and into the workshops we already conduct, with the sustainability leader sharpening the focus on sustainability".*

The value is created by claiming that sustainability initiatives will most optimally serve their purpose if they are continually maintained through already planned meetings and workshops. Uncertainty unfolds in the description because various other activities are required within the building projects' processes. Thus, the subject of sustainability activities cannot be left out due to the focus on numerous other information sources related to planned project activities. This leads to the

introduction of the participant 'the sustainability leader' (appointed for each individual project), who can reduce this complex issue. The stabilization of this complexity is sought by making the sustainability leaders responsible for arranging sustainability as a point of attention. Thus, sustainability leaders play a crucial role in steering sustainability initiatives. However, if these individuals were to suddenly depart, these initiatives for the project in question could be at risk. The argumentation is strengthened by visually indicating 'the project model' for sustainability, which is presented in the dedicated section of "*Sustainability*" covering four pages. This project model is divided into '*agreement phases*', '*deliveries*', '*sustainability',* and '*DGNB-certification*' with the planning of workshops in which 'special effort with sustainability focus' is highlighted, e.g., in connection with 'milestone planning', 'risk management', 'optimization', and 'commissioning'. Table 14 illustrates the structure of the project model for sustainability with the applied color tones. In this project model, the DGNB certification scheme is given significant emphasis and priority in the planning of sustainability efforts, from screening to pre-certification, by being distinctly outlined in a separate section. Thus, the DGNB scheme assumes a critical role, which I will explore in greater detail.

Table 14: The structure of the 'project model' matrix for sustainability in the value package

Agreement phases	**0**	**1**	**2**	**3**
Deliveries				
Sustainability	Framework	Mapping & objectives	Proposals & solutions	Choices, documentation, execution, tests
A) Milestone Planning **C) Risk Management** **D) Optimization** **H) Commissioning**		•	•	•
DGNB-certification		**DGNB screening**	**DGNB pre-certification**	**DGNB pre-certification (final)**

• Workshop/special effort with sustainability focus (NB: not shown individually)

In the section covering "*Sustainability*", the tender team sets the tone for the narrative with the first subheading "*Sustainability is the new normal*". We thereby get to the understanding that the state of the world ('the construction industry') does not address sustainability as a normal procedure but that the tender team aims to

do so. At the beginning of this section, the tender team presents how their companies can meet the client's sustainability requirements as follows:

> *"Through our parent companies, we already have shared experience from 16 constructions that are certified to at least DGNB Gold, as well as 29 constructions currently in the planning or execution stage for DGNB Gold certification. We can draw on more than 10 DGNB auditors and 68 DGNB consultants from our network, as well as a larger number currently undergoing training. This solid common foundation means that we are fully prepared to implement the new requirements".*

This narrative particularly emphasizes the experiences with completed DGNB-certified buildings and the internal competencies among employees as DGNB auditors and consultants. Thus, several participants enter the stage, which draws on the participating parent companies to support their argument and involves 16 completed DGNB-certified buildings to the benefit of the tender team. This is a particular advantage that E&P can leverage, but that other contractors may find difficult to match, as they might not have the same project portfolio to showcase. The argument is strengthened by mentioning a total of 78 DGNB-certified employees as potential participants. In this way, the DGNB scheme sets the stage for conceptualizing sustainability as 'the new normal' and becomes the leading and guiding framework in realizing sustainability requirements. This illustrates how the value of sustainability depends on complying with the criteria within the DGNB framework. It also shows how the tender team organizes the actions of participating companies (including E&P) in accordance with the DGNB scheme, which outlines what sustainability efforts entail and how they are measured.

How does the tender team respond to users' needs

The section on "*Processes*" introduces the narrative of how the sustainability agenda has progressed both for the client and society in recent years:

> *"Sustainability will play an even more significant role in the new partnership because it has become a more important agenda in recent years - not only in the Municipality ('client name') but in society as a whole".*

From this quote, we are also introduced to how this new strategic partnership will prioritize sustainability even more than previously by referring to the previous strategic partnership that the tender team was involved in with the very same client. The performative intent in the narrative is reinforced by emphasizing that the sustainability agenda is a collective effort:

> *"Therefore, there are new objectives in this area that we, collectively, need to ensure we meet. This poses increased demands on processes and interdisciplinary*

> *collaboration, so we have also heightened and systematized our approach based on our practical experiences".*

The tender team aims to convince the client in the narrative to reach a consensus on how to tackle the increased sustainability demands. Hence, an improved approach that is both heightened and systematized becomes part of the narrative for managing the tension arising from the increased demands. Furthermore, the tender team seeks to reassure the client that these demands can be fulfilled by stressing the value of the practical experiences gained from their involvement in the previous partnership.

The subsection on "*Needs and client understanding*" explores how the tender team relates to the client and the affiliated organizations encompassing a wide range of 'clients' and 'users' in the partnership's extensive portfolio of projects. The tender team strives to become part of the client's shared reference world by underscoring an understanding of their ways of operating as follows:

> *"As your partner in this process, we possess a deep understanding of ('client name') processes and requirements, the political cycle, and the principles of funding allocation".*

The tender team implicitly presents themselves as a suitable partner, which they legitimize by stating that they possess in-depth knowledge of the client in terms of how they operate. Once again, value is created by emphasizing how the tender team and the client are already familiar with each other and therefore can build upon this knowledge rather than starting to learn about the clients from scratch.

The focus of the narrative shifts to how this knowledge can be put to work:

> *"This means that in dialogue with you, we can quickly achieve a common view of the task's opportunities and challenges, ensuring a value-creating alignment of expectations on how the process should be organized".*

The tender team also demonstrates in the narrative a pragmatic and solution-oriented approach, which is primarily aimed at delivering value to the client. The narrative technique exudes confidence and effortlessness in establishing shared perspectives, thus seeking to reduce uncertainties about potential conflicts of interest.

The tender team argues that the variety in the portfolio will impact the way they engage with different clients and end-users:

> *"A large portion of the projects will have a high level of complexity, while others can be more standardized. We are very aware of the differences that exist within the various contracting authorities and their end-users".*

The narrative shows the tender team's efforts to align their actions with the presence of each contracting authority. Consequently, when introducing the participants of 'clients' and 'users' into the narrative, the decision-making process is linked with a consideration of how the division of project types ('new construction', 'renovation', 'temporary capacity') will gain the approval of the client ('representatives from the municipality') and the acceptance of the myriad stakeholders involved in each project. To address this issue, a new participant 'the operational management' (OM), with the responsibility of forming suitable teams, enters the narrative:

> *"[…] in the operational management (OM), at the project level, and when assembling staffing teams, we will consciously work to ensure the same thorough understanding for all clients/departmental units".*

From this quote, the forming of project teams is not a 'one size fits all' solution, but rather requires an understanding of the specific needs of individual clients or departmental units. 'What counts' in this context should be decided by the 'operational management', which consists of two representatives from the client and four representatives from the project team including the 'head of partnership', 'head of production', 'head of portfolio' and 'head of advisory services'. The assembling of staffing teams involves the evaluation of what should be considered 'significant' in both the selection of individual competencies and interdisciplinary skills for each project team. The operational management's ability to form suitable teams is thus decisive for the value that the individual departmental units can benefit from. The narrative does not address the in-depth management of end-users but indicates a standardized process to ensure the same thorough understanding. Thus, the process description takes on a more 'strategic' nature portraying future-oriented narratives to achieve long-term objectives rather than providing specific and rich details about the individual projects.

E&P's role as active participants

E&P's role as active participants unfolds in several sections. E&P's head of sustainability appears in the narrative "*Partnership Support - the organization in the engine room"*, by being appointed as responsible for 'Sustainability and Innovation Management'. The head of sustainability from E&P is the only 'partnership support role' mentioned in the context of 'sustainability', while other roles support finance, stakeholder management, visual communication, LEAN construction, and digital management including a data specialist. Each role includes detailed explanations. Thus, E&P's head of sustainability takes on a key

role in the narrative of the management of sustainability initiatives. The role of the head of sustainability is constructed in the following:

> *"Focus on sustainability management through innovation projects (including fundraising) within upcycling, CO_2 footprint, where he supports with experiences from completed projects focusing on overall economy and circular economy".*

From this quote, certain sustainability wordings are made valuable in the prioritization of consciously emphasizing '*upcycling*', '*CO_2 footprint*', '*overall economy*', and '*circular economy*'. Thus, the tender team stresses that the head of sustainability is part of the co-creating value of sustainability activities by having prior experience in doing so, and how this can be achieved by the sourcing of financial means in 'fundraising' for innovation projects. This illustrates the efforts of presenting what the head of sustainability can offer that holds value for the client.

The head of sustainability's role is elaborated further in the section "*Sustainability in focus throughout all phases*" as follows:

> *"At the portfolio and partnership level, ('head of sustainability') is appointed as the sustainability and innovation manager within E&P. He will continue his work connecting meaningful industry development projects to specific projects within 'the Reliance', thereby advancing and fundraising for our sustainable construction efforts".*

The value of E&P's contribution to 'sustainability' at the portfolio and partnership level manifests itself with the role of the head of sustainability. The skills of the head of sustainability are attached to providing development projects and allocating resources to support the offerings of sustainability efforts. This illustrates how the head of sustainability occupies a central position that entails channeling funds and knowledge into the partnership. This is facilitated through networks he has established through participating in multiple development projects. The underscoring of 'meaningful' development work also entails an organizational interest in highlighting that E&P is already involved in these types of activities. Thus, a brand image is crafted by unraveling how E&P can participate in innovative projects while ensuring financial support to bring the visions to fruition in practice.

E&P's role appears once more in the section "*Sustainability in focus throughout all phases*" in the following:

> *"In the spring of 2021, E&P has trained 27 project managers and tender calculation employees in DGNB, during the same period as X's (the client) project leaders were trained. This ensures that from the beginning of the new partnership,*

> *we 'speak the same language' and can ensure implementation and anchoring at the sites".*

The fact that E&P has trained 27 employees to become DGNB consultants creates a persuasive narrative regarding the value this provides. Thus, both the participants of the client and E&P's employees are portrayed as acting in 'alignment' and are 'coordinated' when it comes to the DGNB training. This illustrates the tender team's efforts in including both the client's employees and their own employees in the same grouping, referred to as 'we'. From here, the narrative emphasizes the unity of the actors in terms of a shared motivation to improve collaboration because of a mutual understanding of each other with similarities in the level of competencies. In addition, the tender team reassures the client that the DGNB training results in employees who are knowledgeable and capable of implementing and working with the DGNB initiatives at the construction sites.

Another example, where E&P gets involved in the narrative, but in a more indirect role, is the proposal for an advisory board. The purpose of the advisory board is to support the partnership's ambitions for realizing initiatives related to circular economy and sustainability efforts. The tender team sets the scene by taking on a self-promoting approach as follows:

> *"Even though we have one of the country's strongest teams in sustainability, we want to push both ourselves and the industry standards at ('client name') & the Reliance".*

The tender team argues that the suggestion should not be seen as a sign of weakness in terms of having adequate competencies internally. However, the introduction of an advisory board can serve value that will go beyond the influence of the 'Reliance' partnership. The following excerpt reveals who participates in realizing these ambitions:

> *"The Advisory Board consists of four leading experts in sustainable construction as well as 1-2 representatives from ('client name'), so we are sure that the latest knowledge is available through a sparring group, for qualifying new solution proposals, collaboration models and knowledge sharing".*

The proposal for an advisory board represents yet another initiative aimed at bringing the client closer to the decision-making process, closer to the solutions, and actively involving them in sustainability initiatives. In the subsequent sentences, the four experts are listed and include a professor of architecture, an architect and partner, a project development director at a pension fund, and a manager at a contractor firm. Each of these experts is a high-ranking member of their respective organizations and thus, engaged in strategies, development, and

long-term planning. They are each involved in sustainability activities in their respective roles, and as public figures in the construction industry, they contribute to dialogues and panel debates concerning the circular economy agenda. Consequently, this panel can offer a distinct form of contribution to the projects, as the majority of these experts (excluding the 'manager from a contractor firm') do not typically engage with the practical, technical, and operational challenges of solutions. Therefore, the contributions of the advisory board are characterized more by strategic and developmental insights. The narrative highlights the need for a sparring group to ensure the capturing of the latest knowledge but also to qualify new solution proposals in case the project teams are in need of consultancy. With the inputs from the advisory board, the tender team aims to increase the potential value of attaining the client's sustainability ambitions by addressing new solutions through quality assurance and thereby reducing the risk of any omissions or unexpected consequences. Ultimately, this is sought to support the tender team's claim of being capable of pushing industry standards, as new solutions are put to the test through the work efforts of the advisory board. Nevertheless, the advisory board's evaluations of 'tests of solutions' are likely to prioritize strategic potential over operational and practical considerations due to the professional background each member brings.

The narrative concludes by describing how the advisory board should put their knowledge to work:

> *"The Advisory Board meets 2-4 times a year with a fixed structure for reporting, development, and external presentations".*

The question of how this knowledge will be captured and realized in a structured manner has now been answered. The potential knowledge creation within circular economy initiatives is part of strengthening the involved participants' (experts, companies including E&P, and the client) external image as proactive contributors for developing the construction industry in a sustainable direction. Thus, there is an exchange of value for all the companies involved, as the acquisition of new knowledge (and the potential realization of new initiatives) can serve as a competitive advantage in the market.

Do the sustainability proposals create value from the client's perspective?

The client's perspective on the second value package is based on their evaluation report for the final tender that was submitted in November 2021 [From the document: 'Final tender – evaluation report']. The report indicates that the tender evaluation was conducted by a working group consisting exclusively of representatives from the client ('Municipality'). The participants included a project manager, a project leader, a project economist, a department manager,

and two employees from the legal department. The analysis is based on client excerpts from the evaluation of the two award criteria '*organization and staffing*' and '*Process, optimization, and sustainability'* each accounting for 30%. Sustainability proposals are discussed within these two criteria that ultimately resolve with an assigned quantitative score. The client evaluates the criteria on a scale from 0 to 10, where a score of 0 indicates a completely unsatisfactory fulfillment of the criterion and a score of 10 represents the best possible fulfillment of the criterion. This demonstrates that the tender team's qualitative descriptions in the value package are faced with qualitative judgments that are ultimately translated and reduced to a quantitative score. These scores serve to compare and rank the evaluations of the four tenders and eventually, a winner to be selected.

Process, optimization, and sustainability (30%)

From the client's procurement conditions (Table 12), the client requested the bidders to describe: "*The process for handling sustainability at the project and portfolio levels to promote sustainable construction as an integral part of the construction project"*. The client has weighted sustainability within the same criteria as process and optimization, and this is also reflected in the parts where sustainability is specifically mentioned. Thus, the client's evaluation highlights the sustainability proposals significantly in relation to the tender team's described process for achieving the proposed solutions as follows:

> *"The bidder demonstrates a high level of understanding of sustainability by incorporating a joint sustainability screening at the project initiation, describing an inclusive sustainability workshop led by the sustainability manager, involving all partners, and focusing on the pre-certification of projects. The proposed process ensures a clear focus on important priorities at the start and the joint involvement of site managers and contractors in all phases, which contributes to ensuring sustainability from design to execution".*

The client has primarily focused their attention on the tender team's process planning, where sustainability is detailed at the project level through workshops and DGNB pre-certifications, which occur before the projects enter the execution phase. In this way, the instrumentalization and quantification of sustainability are evaluated as important, but the emphasis is placed especially on the involvement, coordination, and collaboration surrounding these initiatives. The client recognizes the value of the executing stakeholder's participation, involving E&P's role, in the sustainability efforts during the earlier phases. This indicates that the client seeks assurance that the overall management frameworks surrounding sustainability efforts are convincedly clarified, and thus, take precedence over the specific content of those efforts. Certifying the buildings according to the DGNB scheme becomes central in this process planning, which reveals that achieving certification is, in practice, the client's main priority.

The client concludes the evaluation by assigning E&P's tender team with the highest score as follows:

> *"After an overall assessment, the fulfillment of the sub-criterion is evaluated as the best possible and receives a score of 10".*

The value package turned out to address this criterion according to the client's wishes regarding what this criterion should include and emphasize. Especially, the proposals on the planning of processes, detailing the project deliveries, were given a high priority in the evaluation. In comparison, the three competing bids received scores of 8, 8, and 9, respectively, with criticism primarily centered on the inadequate concretization of the described process for implementing sustainability initiatives.

Organization and staffing (30%)

From the client's procurement conditions, the criteria requested the following in relation to sustainability proposals (Table 12): "*The bidder's organization must ensure that sustainability is addressed throughout all phases of the project, with clear and logical responsibilities and command channels that ensure the timely and correct collection of documentation, with comprehensive involvement of the client guaranteed".* In this context, the client's evaluation particularly emphasized the tender team's proposal for the advisory board and the DGNB competencies of the companies, which I will now unfold in further detail.

The tender team's proposal for an advisory board tasked to quality assure sustainability efforts, such as circular economy initiatives, was positively received by the client with this commendation:

> *"The bidder offers […] an Advisory Board tasked with assessing efforts in sustainability and the circular economy. This is considered highly positive as it provides an overarching and strategic external perspective that can support and enhance the overall sustainability efforts".*

The proposal for an advisory board has achieved the intended value for the client, who believes that its presence will help strengthen the partnership's sustainability efforts. In this way, the client is convinced that the panel of chosen experts has a validating effect on the proposed solutions. Furthermore, the mentioning of the word 'strategic' gives us insight into how the client evaluates that this proposal carries strategic value. This value entails the client gaining access to new networks through the three experts, which potentially offers strategic advantages for the client's sustainability efforts. Furthermore, the assessment board opens possibilities for resources they can draw on during the timespan of the partnership and prospectively as part of the client's own knowledge production in sustainable solutions.

Sustainability efforts were also mentioned in connection with the tender team's proposals that illustrated the DGNB competencies of the companies:

> *"It is highly regarded that the contracting authority can overall draw on a number of DGNB auditors and consultants from the partnership's companies and that the parent companies, which possess experience from many completed and ongoing constructions to at least DGNB Gold standard".*

The tender team's efforts to illustrate the participating companies' commitment to the DGNB scheme and their specialization as DGNB consultants and auditors have proven fruitful. We thus see how the DGNB scheme becomes a qualifying premise for addressing the client's sustainability objectives, especially relating to the proven performance of DGNB-Gold certified construction. In this way, the DGNB scheme's inclusion in the tender team's value package serves as a convincing argument in terms of showcasing that requisite competencies are in place to operate within the DGNB system. In the value package for 'The Reliance', we also learn that the client has their own trained DGNB consultants. This expertise sets an expectation that their partners will share the same understanding and approach surrounding the DGNB scheme. For example, the value package also illustrates how this creates a ripple effect where the companies' own employees become representatives and spokespersons for the scheme. Ultimately, the commitments to the DGNB scheme, along with the prior experiences of the participating companies from previous and ongoing projects, gain significant value in the client's evaluation.

Once again, the client assigns E&P's tender team with the highest score:

> *"After an overall assessment, the fulfillment of the sub-criterion is evaluated as the best possible and receives a score of 10".*

The client evaluates the tender team's proposal for organization and staffing in the best possible outcome. This positive reception is likely influenced by the tender team's history and familiarity with the very same client, which gives them an advantage over the competitors in identifying and decoding the competencies the client values in their partners. In comparison, the three competing bids received scores of 8, 9, and 8, respectively. One bid with a score of 8 was criticized for unclear organization around sustainability roles. The other two bids did not contain any points of criticism, which makes it difficult to uncover why E&P's bid received a higher score.

Final remarks on the client's perspective

The value package, 'The Reliance', was resolved in a favorable outcome, with E&P's tender team securing the partnership contract. The assessment of sustainability initiatives in the two evaluated award criteria both received a score

of 10. Despite their bid being more expensive compared to two other competitors [From the document: 'Final tender – evaluation report'], the tender team won the contract. The client's prioritization in their weighting particularly emphasizes sustainability initiatives related to process planning, which organizes the involvement of the participating stakeholders (e.g., E&P's role) with deliverables along the way (e.g., pre-certification) from the concept stage to delivery and operational start-up. The DGNB scheme's role becomes central, as the client's evaluation highlights only the sustainability activities associated with fulfilling certification. Additionally, the role of the DGNB scheme reappears in the evaluation of the companies' sustainability competencies, which become a qualifying premise for meeting the client's sustainability requirements. The tender team's proposal for an advisory board is also well-received, as it potentially holds strategic importance for the client by granting access to the experts' networks and possibly offering a competitive advantage in their own knowledge development. As previously mentioned, E&P's tender team benefits from a prior history with the client. This allows E&P's team to build on learnings from their first strategic partnership while also gaining first-hand experience with the client throughout their collaboration. Despite E&P's prior collaboration with the client, it remains uncertain whether this was a decisive factor in securing the contract. However, this becomes a significant competitive advantage because the tender team has worked closely with the client over several years, thereby gaining knowledge of their individual client organizations, end-users, work processes, and priorities in their sustainability strategy. Furthermore, we observe that the values of the client align and coincide with those offered by E&P's tender team. For example, in the identification of the DGNB scheme as the client's highest sustainability priority to comply with.

The value of sustainability across the two value packages

The sustainability narratives in the two value packages distinguish themselves through their contractual form and project scope. 'The Patchwork' represents a single construction project, allowing for a closer connection to the core users of the buildings (students across different grades) and a more detailed examination of the implementation of specific measures. In contrast, 'The Reliance' includes narratives intended to cover a broader project portfolio, involving numerous stakeholders (such as end-users, departmental units, and representatives from the Municipality) with diverse construction tasks, ranging from school renovations to the construction of new daycare facilities.

In the value package for the new build school, the narrative starts by introducing the project's buildings ('the large Patchwork' and 'the little Patchwork') in the introduction and vision. The environment and atmosphere surrounding the buildings is described as an experiential learning place and a fun activity space.

The social life in the buildings is connected to sustainability through how the buildings are experienced. The descriptions portray the sense of being present, where elements of sustainability form the background for social spaces and encounters between people. The narrative emphasizes the buildings' low carbon footprint, achieved by the visibly integrated and upcycled building materials in the facades. Simultaneously, the client is encouraged to actively participate in elevating these ambitious sustainability goals by becoming a material and advisory partner for minimizing the CO_2 footprint. In this way, the tender team makes the client's role tangible by incorporating their input into the co-creation of the facade design, thereby ensuring that the decisions on materials provide the intended value for the client. Furthermore, the tender team also attempts to include the buildings' users and passersby. Consequently, the buildings not only act as stationary frames for the children but also contribute to expressing independent stories with the aim of positively influencing both adults' and children's sustainability behavior and awareness. This illustrates how the tender team's efforts to create value from sustainable initiatives are ensured by placing them in the context of their core users, 'the children'. Thus, the value of these solutions is maintained by integrating them into the everyday life of children's learning and play activities.

Despite the similarities between both value packages to deliver school construction for a large municipality, the overall narrative in 'The Reliance' has a different character. The narrative begins with the ambition of the partnership, which is to achieve both cheaper and more sustainable construction. Hence, sustainability is intertwined with economic considerations from the outset, emphasized in the staging through the 'prologue' section. This underscores the need for the presented solutions, including sustainability, to be quantifiable as part of the persuasion. It also illustrates that sustainability initiatives are qualified on the basis of cost efficiency. The narrative on how this ambition can be realized primarily depends on the collaborative processes of the partnership and past experiences in employing trust- and interest-based approaches. Sustainability is outlined as 'the new normal', where the narrative involves that sustainability measures naturally integrate into interdisciplinary collaborations across all stages and processes. The two value packages demonstrate that the value of sustainability is not treated in isolated narratives but is rather integrated into other core narratives such as the well-being and learning activities of children ('The Patchwork') and the collaborative benefits, including economies of scale, gained by entering a strategic partnership ('The Reliance').

Both value packages are examples of how sustainability proposals count as decisive in the award criteria. In the two value packages, there is particularly one common denominator that plays a guiding role in the presented sustainability solutions, namely the DGNB scheme. The DGNB scheme appears in the value

package for 'The Patchwork', where the client's sustainability strategy of 12 topics is aligned with the DGNB system's criteria. This demonstrates how the DGNB scheme's conceptualization of sustainability shapes the client's strategic objectives and thus is made actionable by the earning of points. This alignment also supports the client's goal of certifying the buildings to the DGNB-Gold standard. Additionally, the DGNB scheme reappears in the establishment of a task force to ensure the fulfillment of the client's sustainability requirements. In the value package of 'The Reliance', competencies within the DGNB scheme become a qualifying premise for achieving the client's sustainability requirements. We see how the participating companies (including E&P) become representatives and spokespersons for DGNB by having specialized training and how this knowledge serves as the common language that they expect will ensure the anchoring of sustainability practices at the construction sites. Sustainability solutions in the two value packages are therefore largely reproduced by adherence to the DGNB framework that structures and coordinates the clients' sustainability objectives. Although both value packages include other sustainability solutions, such as CO_2-reducing measures and circular solutions, the DGNB scheme remains the focal point of the narratives when efforts to achieve the value of sustainability are made tangible and actionable.

The clients' evaluations of the two value packages contributed to two different outcomes. Consequently, the value packages' qualitative descriptions, based on the tender teams' interpretations of what should count from the award criteria, face the critical test: do they create the intended value? The tender project 'The Patchwork' was considered as a 'sustainable pioneer project' within a geographic area, where E&P's organization anticipated that winning the contract could pave the way for similar projects. In this value package, the tender team specifically focused on fulfilling the client's sustainability requirement with an ambitious CO_2 target of 5.8 kg CO_2 eq per m^2. This approach translates the value of the proposed sustainability measures into demonstrating the project team's capabilities within the circular economy agenda. This is recognized both as a material discipline and as having symbolic value through visual integration into the buildings' facades and interior spaces. The client's evaluation reveals that this communication strategy does not align with the values the client prioritizes. This illustrates that the tender team was blindsided because other factors, such as operational reliability, material quality, simplicity in architectural expression, and cost considerations, proved more decisive. Thus, the fact that the tender team was the only bidder to meet the client's CO_2 requirement did not present an advantage. Despite the tender team emphasizing the values the client seeks in other aspects, such as responding to the 12 topics in the client's strategy, the contract is ultimately awarded to another bidder with a lower bid price. The lack of insight into the evaluation of the winning bid makes it challenging to determine whether the lower bid price was the decisive factor in the client's

selection. However, submitting a bid more closely aligned with the client's budget and placing less emphasis on the use of circular materials might have been a more persuasive strategy for winning the contract.

For the second value package, 'The Reliance', the outcome was more favorable for E&P's tender team, which was awarded the contract. The client's evaluation reveals how the proposals in the value package align with the values that proved decisive for the client. This alignment is demonstrated through the phase planning of sustainability initiatives, the suggestion of an advisory board, and the emphasis on DGNB competencies and previous experience with the scheme among the participating companies. E&P's value package distinguished itself from competitors on the qualitative criteria by achieving the highest score of 10. The other bids were less able to concretely describe the process for implementing sustainability measures and organizing sustainability roles. This indicates that process planning approaches and specialized competencies, primarily centered around the DGNB scheme, were decisive in securing the bid for 'The Reliance'. Moreover, the prior relationship and collaboration between E&P, the other participating companies, and the client also become relevant. E&P's role in the client's ongoing strategic partnership holds value because the infrastructure is already established in the form of communication channels, relational networks, coordination mechanisms, a common project culture, and shared office facilities. This provides a competitive advantage for E&P's tender team to continue as a 'partner' because it is possible to build upon the experiences and knowledge already acquired. However, it is not possible to conclude that E&P's prior history with the client was the most decisive factor in securing the contract, but it is an important backstory that should be mentioned in this context.

CHAPTER 6. TENDERING PROCESSES AT E&P

The third chapter of the analysis addresses the third research question of "*Which organizational challenges and considerations do environmental sustainability requirements present for employees involved in the tendering processes of a building contractor?*". To answer this question, this analysis will build upon insights from the two previous analysis chapters and will draw on empirical data (e.g., interviews with E&P leaders and documents) that illustrate the impacts of the new reality that E&P faces in their tendering processes.

The prior two sub-analysis chapters focused respectively on the market for sustainability and how sustainability requirements unfold in E&P's tender practices for references and value packages. The first sub-analysis highlighted how clients frame sustainability requirements through the three tendencies of economization, instrumentalization, and specialization. In this way, sustainability requirements are intertwined with economic considerations, e.g., in the allocation of financial funding or gaining market advantages, and how clients pursue frameworks or tools to make sustainability initiatives tangible and comparable. The third tendency of specialization shows that clients particularly chose the DGNB scheme as their approach for instrumentalizing sustainability, which is accompanied by a need for clients to acquire certain competencies to operate within the DGNB system.

The second sub-analysis focused on E&P's tender practices. The analysis for references demonstrated how E&P's tender practices involve an instrumental approach to selecting projects for prequalification that are screened through a wide range of criteria in the decision-making process. When PQ projects are selected for application, the four reference examples showed that they undergo many bends and turns to fit into the client's specific criteria, and frameworks. The analysis of value packages showed how E&P's employees adopt an instrumental approach that makes an effort towards standardized work practices for meeting the increasing sustainability demand in tenders. In this context, the DGNB scheme also became an overarching framework to achieve conformity with. The two value package examples illustrated how E&P's tender teams created value from sustainability requirements, which, through interpretations and adaptations, became part of a co-creation process. We see how this value creation was particularly successful in one of the value packages, 'The Reliance', where the process planning of sustainability initiatives, primarily DGNB

certification, and sustainability competencies, specializing within the DGNB scheme, became decisive in winning the contract.

The first sub-analysis illustrates how E&P's clients, serving as the contextual setting, work towards framing sustainability requirements in their procurements. While the second sub-analysis showed how E&P's employees strive to accommodate specific sustainability criteria through the devices of references and value packages. This external influence that is manifested through sustainability requirements leads to a range of implications for E&P's tendering processes. Thus, this analysis sheds light on the competitive aspect of this new reality which draws connections when it comes to E&P selling their products/services.

6.1. THE COMPETITIVE ASPECT OF THE NEW REALITY

Drawing on insights from the other two analyses, competing for tender projects with sustainability requirements necessitates a different approach. One aspect is how E&P wins tender projects involving sustainability criteria, but there are also other implications. Another insight from the other analysis chapters is the intricate interplay between sustainability objectives and a multitude of other considerations that influence decision-making in terms of what is ultimately prioritized. This complexity, wherein new practices face resistance or conflict with other interests, will be further examined. Furthermore, this analysis explores E&P's considerations in choosing which projects to participate in, as well as the practices being developed. This involves upgrading competencies and reallocating resources to prepare for fulfilling new client demands. Fulfilling these demands implicates how E&P gets evaluated in tenders but also how they are perceived in the market.

The following quote from E&P's head of clients, market, and business development (CMB) illustrates how the sustainability agenda is contributing to changes in multiple areas:

> *"One of the most crucial aspects is our sustainability agenda and the significance it has gained […] It's something our clients are interested in, something we ourselves are focused on and interested in, and new competencies we need to adopt within CO_2 and sustainable construction. These are also new issues that society is concerned with, which we need to address. So, the deeper understanding of what the sustainability element entails […] Perhaps the change that has occurred in the last 5-10 years is that we have rethought E&P's brand and identity".*

The quote introduces the growing importance of the sustainability agenda at E&P. The head of CMB refers to the sustainability challenge as presenting new

issues, even though environmental problems in the industry have been known for many years. However, this interest has increased and originates from E&P's clients, which implicates the development of new competencies within the organization. Thus, there is a shift in terms of what is considered valuable in the market which influences new terms that E&P's services (e.g., sustainability competencies and initiatives) and products (sustainable construction) must be able to fulfill. In this way, E&P's employees must decode what their clients consider valuable in relation to their contextual understanding of what this entails. Thus, through their work with references, value packages, and other activities, E&P's employees translate clients' wishes in a specific way and thereby translate solutions to meet those wishes and needs accordingly. In this way, sustainability gains increased value and is expressed through the concrete actions undertaken by the employees, the recruitment of additional staff with specialized skills, and the enhancement of competencies in various areas. Concurrently, there exists ambiguity regarding the precise nature of the sustainability agenda, which is a matter that E&P is in the process of exploring. Thus, E&P's leaders engage in valuation practices of both evaluating and negotiating what the sustainability agenda means for E&P's activities in a market that is still being defined. This illustrates how E&P navigates a dynamic landscape of evolving sustainability agendas by responding to and adapting their organization to these changes. Consequently, there is a mutual dependency between clients and E&P, where E&P responds to the market/clients, and the market/clients in turn respond to E&P as well as other contractors, consultants, etc.

Moreover, we gain insight into the transformation process that E&P has undergone in recent years which has necessitated a rethinking of the company's brand and identity. In line with the sustainability development, E&P has reconfigured the company's identity to align with new values. This reconfiguration is also linked to how the business has developed significantly in recent years. Historically, E&P was predominantly involved in social housing renovations and lowest-price tenders. However, E&P has since emerged as a market leader in strategic partnerships by securing four major framework agreements and has expanded its market share in the private sector particularly involving new construction projects.

The increased importance of the sustainability agenda implicates the considerations E&P makes regarding the selection of market segments and project types. I will delve deeper into these considerations in the next section.

6.1.1. MARKET OPPORTUNITIES FOR SUSTAINABILITY

The sustainability agenda is also linked to E&P's market opportunities, where some market segments are considered to have a greater potential for realizing

and operating sustainability activities. E&P serves a wide variety of clients due to their extensive involvement in different market segments, including private, public, and social housing projects, as well as locations across Zealand, Funen, and Jutland. Consequently, E&P both works with clients who select construction companies based on sustainability qualifications and clients who operate in a different reality where the lowest bid price remains the dominant competitive parameter in the selection process. E&P's employees must therefore consider the potential competitive advantages that could strengthen their position in the sustainability market when selecting certain market opportunities and excluding others. However, the sustainability agenda is not the only market position that E&P can take. E&P's leaders prioritize multiple market options and vary their focus on them over time to respond to the market they are part of. Consequently, sustainability is one area of emphasis, while work environment and safety, digitalization, and the use of technologies, for example, represent other critical areas. These focus areas allow E&P's leaders to strategically prioritize or deprioritize depending on their desired company position in the next 5-10 years. The preceding 'Chapter 5' outlines initiatives that E&P's employees undertake to strengthen their positioning in the sustainability market. While these work efforts are expected to strengthen their market position, a sudden market shift towards other priorities (e.g., digitalization) could leave E&P's organization disadvantaged if they have not prioritized these areas in recent years. In this way, strategic considerations become crucial for E&P's company positioning moving forward.

The first quote from the head of clients, markets, and business development (CMB) illustrates how segments have different opportunities for engaging in the sustainability agenda:

> *"It also has something to do with the possibilities within each segment. There is a fixed budget for social housing organizations regarding what they can build for. When renovating, there are completely legitimate considerations for the residents and their rent, etc. This does not mean that social housing is not part of the sustainability agenda; there are just limits to how sustainable they can be. But generally speaking, all clients are currently reflecting on new sustainability goals".*

From this perspective, the market segment for social housing projects, in which E&P is market-leading, has more challenging conditions for allocating financial resources to implement sustainability initiatives in practice. Thus, the head of CMB associates sustainability initiatives with incurring additional economic costs. Consequently, high sustainability ambitions are constrained by other considerations that outweigh sustainability efforts such as affordable rent. This serves as an example of an area where E&P strategically decreases sustainability initiatives and actions supporting sustainability while intensifying financially driven actions. In this way, we also gain insight that this market segment is less

involved in the sustainability agenda compared to other clients they work with. This market segment can thus limit E&P's opportunities to implement sustainability initiatives and thereby advance their own market position in this area. However, the second analysis chapter showed how social housing renovations are especially monitored in prequalification as 'lifeblood cases' and thus, remain a high priority as a market segment that E&P pursues to be a part of. This priority can be explained by E&P having established expertise in participating in these projects and the social value that also lies in E&P's core identity as being perceived and recognized as a socially responsible contractor in the market. This illustrates how other considerations, beyond achieving sustainability advantages, are also at stake when E&P's employees select projects to work on.

Conversely, there are concurrent market trends where projects are tendered differently which E&P's leaders expect can create better opportunities for advancing in the sustainability market. For example, E&P's COO explains how the tendering approaches in partnership models help create value in construction as follows:

> *"New ways of tendering have been introduced, and there are the partnership models, and then there's the aspect of inviting the right competencies at the right times – that is, consultants, clients, and contractors sitting down together. They try to figure out how to put the most value into the construction for the target we have. And sustainability also becomes an element in the value package".*

From this perspective, changes in contract forms also impact how E&P can act and respond in the market. E&P's COO particularly emphasizes the collaborative advantages of timely involving all project participants, which collectively leads to co-constructing what will create value for the projects. At the same time, this value is subject to a 'target', giving us insight into how economic considerations potentially hinder or at least set the limits for how much value can be achieved. Sustainability is mentioned as an element of the value package, and thus, feeds into the early dialogues about what should be prioritized in the projects. In this way, sustainability activities become intertwined with the project participants' work efforts to find the solutions that generate the most value through close collaboration with the client. Thus, from this perspective, E&P's COO argues that a closer dialogue with the client can better decode their expectations for sustainability activities and, thereby, create the value that the client is requesting.

E&P's former head of partnerships also highlights the benefits of linking sustainability initiatives with partnership projects:

> *"Partnerships are an excellent example. This is the kind of approach that is needed. Prioritizing these aspects early in the budgets allows for in-depth discussions about, for instance, what sustainability means. What does the reuse of materials entail? And how do we allocate funds for it?".*

In this quote, two aspects are highlighted when it comes to linking sustainability initiatives with partnerships, including the definition of sustainability and its financing. Thus, partnerships facilitate discussions about what sustainability initiatives entail and the financial considerations that involve budgeting and allocating funding. This perspective shows an economization of sustainability, where the pricing of sustainability initiatives becomes decisive for their prioritization and ultimate realization. Thus, the alignment of expectations regarding what sustainability initiatives involve provides an opportunity to translate these into monetary terms, thereby achieving the value needed to implement them in practice. We also see how sustainability must fit within economic frameworks before these are finalized. If they fail to do so, they could lose their intended value, as they might not be prioritized. In this way, sustainability initiatives also become a timing-related issue of project budgeting that partnerships can help resolve.

In the final example, E&P's current CEO emphasizes the benefits of partnerships and development projects with early involvement in realizing sustainability initiatives within the circular economy:

> *"If I look at the circular economy, some of the most unique aspects are the partnerships and negotiation projects such as the development projects where the contractor and the client work extremely closely on the product they want to have completed and brought to life in one way or another. This is where the circular economy can really come into play […] before the project even comes to life, you have the stakeholders, you have the parties involved. And you can set so many goals and guidelines to actually reach the final product, and you can adapt your organization accordingly".*

From this quote, partnerships and development projects enable contractors to work closely with the client and thus, provide a market advantage for creating the value that the client seeks in their final product. The quote also entails that initiatives within the circular economy depend on having stakeholders involved from before the project's initiation. Thus, once again, the value of sustainability initiatives is linked to a timely issue. From this perspective, the value is created through the presence of specialized competencies that collectively organize goals and guidelines that lead to the realization. Another way to reach the value of sustainability initiatives is by adapting the organization. In this way, E&P's CEO emphasizes that these types of projects entail greater flexibility compared to traditional projects. Thus, E&P's CEO advocates for a flexible approach.

Depending on the project and contract form, the organization can be adapted to the goals and sub-goals that project participants establish throughout the project's duration. This approach contrasts with the more rigid and strictly controlled process for construction projects in Denmark, which involves specific phases with designated actors in each phase. At each phase transition, considerable additional work and coordination are necessary to ensure coherence. From this perspective, E&P's CEO emphasizes the benefits of flexibility in aligning goals and organizational structure, as well as the importance of assembling the team of consultants, contractors, and other stakeholders early in the project and maintaining collaboration for as long as possible. This illustrates a fundamentally different approach to construction projects compared to the conventional methods typically employed today. Therefore, project teams are not necessarily fixed entities but can benefit from the larger organization that they are part of e.g., in partnerships, where resources can be shared and distributed among the projects.

Partnership projects were especially considered as part of E&P's efforts to engage in sustainability activities. Thus, E&P's business areas of strategic partnerships and development projects are emphasized as market opportunities for gaining competitive advantages in the sustainability market. In this way, they become a sort of gateway to 'sustainable projects'. Furthermore, the completion of sustainable projects presents an opportunity to use them as references to secure additional sustainable projects. This, in turn, contributes to the growth of their market share in sustainability. Additionally, we observe how alternative contract forms such as partnerships and integrated project delivery (IPD) collaborations have played a significant role in E&P's development by strategically focusing on expanding these business areas. These are facilitated by E&P's close collaboration with clients, which allows them to translate sustainability interests into tangible value for their clients. Additionally, from the perspective of E&P's leaders, E&P's early engagement with all project participants ensures that sustainability initiatives maintain value through aligned expectations, early goal setting, and financial budgeting.

The next section examines how E&P's practices require other competencies than previously experienced when competing for projects that involve sustainability requirements.

6.1.2. CHANGES IN ORGANIZATIONAL CAPABILITIES

This section focuses on organizational capabilities and addresses two changes in internal competencies; specialization through education of employees and the transformation of E&P's tender practices to meet the increased demand for 'best ratio between price and quality' tenders. Sustainability requirements play a

significant role in both changes. In the first example, we revisit the value package of 'The Reliance' from the previous chapter, where the client's sustainability objectives, aiming for all projects in the portfolio to achieve DGNB certification, prompted an internal investment in DGNB training. In the second example, sustainability requirements have become one of the most important priorities to address in the qualitative criteria that E&P encounters. The analysis delves deeper into the implication that qualitative criteria have on E&P's tender business when competing on new terms requires different capabilities than before.

Before we get to the analysis of the two examples, I will present a quote from E&P's head of HR, highlighting what is considered necessary for future recruitment at E&P:

> *"We need people who have expertise in sustainability. This applies not only on the construction sites but also here in the office when submitting tenders".*

The quote implies that sustainability competencies must be prioritized internally in the organization, both for the employees working on the construction sites (e.g., craftsmen and site managers) and for the tender employees involved in calculating bid prices and communicating about E&P's sustainability services in the value packages. In this way, the enhancement of sustainability competencies is linked to the tendering processes and the execution of project activities. This provides us with insights that for certain parts of the organization, such as administrative functions, the acquirement of these competencies might be evaluated as less important. We take a closer look at which priorities within sustainability competencies E&P's leaders have evaluated as necessary to improve competitiveness in the tender market.

Specialization in internal competencies

This section examines the example of the demand from a strategic partnership tender 'The Reliance'. The demand involved that the project portfolio of approx. 40 projects over the contract sum of 20 million DKK had to be DGNB-certified in accordance with 'gold' for new buildings and 'silver' for renovations. This significant demand for DGNB certification in the framework contract ultimately led to the prompt reaction to train around 25-30 DGNB consultants in-house. Strategically, it was particularly important for E&P's tender team to win the partnership because they had already completed one strategic partnership with the very same client and the considerable size of the contract sum would contribute to securing a stable income over a period of at least five years. From the second sub-analysis, we gained insight into how DGNB competencies in the value package were positively weighted and achieved the highest score for the sub-criterion of 'organization and staffing'. We therefore know that this initiative led to the positive outcome of E&P's tender team winning the contract.

However, this analysis examines the considerations behind this investment from E&P's leaders and the role this specialization of employees will serve in the future. The client's final decision on 'The Reliance' tender was finalized in November 2021. The strategic decision to invest in the DGNB scheme took place in connection with preparing the value package for 'The Reliance' in the spring of 2021. This analysis draws upon interviews with E&P's top leaders conducted in the summer of 2021. Therefore, the interview statements reflect the period shortly after this decision.

In the first examples of interview statements, some of E&P's leaders directly link the decision to pursue DGNB training with the clients' procurement requirements. The former director of the business operations in WEST mentions:

> *"If a client states in the procurement that the building must be certified to a certain level, e.g., silver, gold, platinum, or heart certification - this is typically DGNB. Then it makes some demands on some skills that we did not have 5 years ago. So, we have also recently educated some of our colleagues as DGNB consultants".*

The leader of in West underscores how sustainability certification schemes, with a particular focus on DGNB schemes, have found their way into clients' tenders, which represents a change that did not occur a few years ago (prior 2021). E&P's access to the market segments that demand DGNB-certified construction, enables them to maintain and expand within this market share. However, it requires dedication, hard work, and investments, such as developing competencies, to maintain their presence in the market segments where DGNB-certified construction is requested. This also illustrates the temporality of shifting market trends that E&P must address as a bidder. Thus, the DGNB scheme represents a new form of value in the market, which is recognized by clients as a decisive competitive parameter when choosing or potentially, excluding construction companies to execute their projects. This creates an opportunity for E&P's organization to find ways to differentiate itself from its competitors, thereby serving this value better than others in the market as a competitive advantage. We see how this value is translated into the training of employees as DGNB consultants, which further signifies the organization's commitment to these standards in the context of tender submissions.

Another example of E&P's top leaders linking the investment in DGNB competencies to their potential value in tenders is illustrated in the following quote from E&P's head of HR:

> *"Now there has just been this DGNB certification course. It is not certain that we would have done it if there had not been any demands and expectations that we*

> *must commit to in the tenders we make. So, in that way, there are some trends which help to shape us".*

From this perspective, the decision to invest in DGNB training is contingent on meeting external demands and expectations from their clients. This illustrates the interaction between market trends and E&P, where E&P responds to the market, and the market responds to E&P alongside many other construction actors present in the market. E&P's head of HR states how the DGNB scheme is part of the trends that help shape E&P. I argue that what shapes E&P is also part of the co-creation process that takes place. This co-creation involves the top management's strategies, employees' competencies, clients' demands, the introduction of new contract forms, clients' focus on partnerships, and many other factors. Together, these factors constitute the co-creation where many networks of actors work together and have shaped E&P into what it is today. Thus, the demand for the DGNB scheme becomes a factor in shaping the top leaders' decision-making at E&P. The DGNB training represents a form of added value that unfolds in the value package, and thus, enables E&P's tender team to justify that their employees possess the specialized knowledge accompanied by the DGNB scheme. However, the clients do not know if the employees are proficient in the DGNB scheme simply because they have attended a course. Additionally, the clients cannot ascertain whether E&P's newly educated DGNB consultants have practically applied these competencies in their work at E&P or if they are genuinely passionate about the subject. Moreover, it remains uncertain to the clients whether the DGNB courses facilitate internal knowledge exchange and collaboration within E&P, thereby enhancing the overall knowledge level in the organization. All these questions and many more are unknown to the clients, as they only know that a certain number of employees have attended a course. Nonetheless, demonstrating DGNB competencies becomes instrumentally valuable as they serve as a means to help E&P's organization achieve the specific goals of winning tenders and possess knowledge in documenting requirements according to the DGNB system. In this way, DGNB competencies provide competitive advantages in the context-specific situations of persuading clients during the tender process of DGNB-certified projects or projects with related requirements.

E&P's current CEO explains in the following quote which employees have been prioritized for DGNB training:

> *"Our internal project organization has been part of the investment in training a large portion of E&P's employees - ranging from those working on tender descriptions to tender calculations to production. So, there has been a broad group from all business areas who have undergone the training, and this is to ensure that*

> *we can bring in some knowledge. This way, our employees know how to handle it or can handle it in both bids and execution".*

This quote provides insight into how specialization in DGNB competencies is intended to create value in E&P's business. The specialized knowledge of DGNB is considered equally important during the tender processes as it is during the execution of projects. Therefore, the preparation of tender documents plays a significant role. Thus, gaining this specialized knowledge among E&P's tender employees is part of capturing value. This value unfolds in the ability to calculate DGNB services as part of future bid prices and to communicate an understanding of what these services entail for E&P's deliveries and how these newly developed competencies within E&P's organization contribute to delivering them. This illustrates how the investment in DGNB education, designed to equip practitioners for sustainable construction, is also capitalized on as part of E&P's strategy to enhance competitiveness in tenders. However, the realization of this value creation necessitates that E&P's employees, through their training as DGNB consultants, have acquired the requisite knowledge and competencies to translate them into their respective work roles.

Acquiring DGNB competencies is also addressed as necessary in the new role that E&P must undertake during project collaborations, which is pointed out by a few of E&P's top leaders. For example, E&P's former CEO mentions:

> *"And the fact that we have just sent 30 people to become DGNB consultants is not an indication that we plan to do all our certifications ourselves, but we need to be able to act as a valuable and competent partner when we discuss sustainability. Therefore, we must expand our competencies in this area".*

From this perspective, the knowledge gained from the DGNB training becomes valuable when E&P acts as a project partner, and discussions on sustainability initiatives require collaborative efforts. In this way, E&P's role as a contractor is changing because they must create value in a new way compared to previously, thus, by expanding their level of knowledge within the sustainability agenda. Thus, E&P's top management does not want to risk being perceived as incompetent by the market, which could result in clients seeking valuable discussions with other contractors and awarding the work to them instead. Consequently, E&P's former CEO recognizes the value of these competencies and knowledge in light of this prevailing market trend. However, the quote also indicates how this knowledge is primarily anchored in the DGNB scheme as the framework within which E&P must operate. This specialization may lead to E&P's own employees becoming spokespersons of the DGNB scheme, as this knowledge gets reproduced across their range of activities from tender preparation to project execution. Consequently, the investment in DGNB

training also incentivizes an interest in maximizing the value it can bring to the organization.

In the final example, E&P's head of clients, markets, and business development points out how E&P's own employees must also be able to recognize the limitations of the value they can bring within sustainability competencies:

> *"That knowledge, e.g. about DGNB standards, we must have that knowledge ready or have access to the knowledge. So, we are valuable to include in the conversations and processes […] And ensure that what we don't know internally, then we have some strong partners - so we are a strong team overall. There may be parts of knowledge that are too specialized, so we must go into collaborations with externals".*

In this quote, the importance of acquiring specialized knowledge of the DGNB scheme is emphasized once again and helps justify why this investment will contribute to the organization's intended value. Nevertheless, how E&P is part of generating value in the sustainability agenda also entails recognizing the limits to the specialization required in their role as a contractor. Thus, delivering value to clients, particularly in meeting their sustainability requirements, equally involves assembling the appropriate competencies within project teams. These teams, which include partners with higher levels of sustainability expertise, must collectively generate the necessary value to be delivered in the end. Therefore, internal sustainability competencies involve certain limitations, which indicates that E&P's employees should act more as generalists rather than specialists.

The next subsection will explore in greater detail the challenges E&P's tender practices encounter in addressing new types of requirements and criteria that they need to respond to.

Capabilities in tender practices

This section will revisit the challenge presented in the introduction and in the case company description ('3.1.3'), where we were introduced to E&P's organization facing new norms in tendering. As previously highlighted, it is particularly tenders with negotiations, where criteria other than price are part of the client's evaluation process, that have changed the way E&P participates in tenders. E&P's current CEO explains how their tender practices involve many more activities and resources than before in order to participate and compete in tenders:

> *"Before, we only had calculation staff for calculating offers. Now we have to deliver so much more […] we have fewer who sit and calculate, but more who sit and*

> *write, make diagrams, processes, construction site plans, schedules, logistics plans, etc. for the tenders".*

Thus, E&P's role as a contractor in tendering has traditionally been a calculation discipline focused on translating labor time and material procurement into a competitive bid price while adhering to the company's profit margin goals. However, today, this has expanded due to the emergence of a new discipline that E&P's tender staff must also encompass, which requires different capabilities. The qualitative criteria increasingly demand a dissemination discipline, involving graphic communication and writing convincingly about how E&P has previously handled similar projects through references as well as detailing how E&P's project team will meet the client's criteria from project organization to construction site activities in the value packages. This shift illustrates how tender activities have moved from calculative practices to qualculative practices that entail E&P's employees providing their qualitative judgments and assessments in articulating why their services align with the client's wishes and needs. In qualculative practices, there is also a co-dependent relationship between price budgets and the response to qualitative criteria, as these directly influence each other. For example, the proposed solutions in the value packages also change what should be accounted for in the bid price and vice versa. Furthermore, these changes also involve E&P's tender employees to demonstrate reflections on the choices and solutions they present to the client and actively take positions on how they are part of contributing to the value the client is seeking.

The shift to qualculative practices in tendering has led to an increase in staff related to competencies in communication, where E&P's current CEO states:

> *"[…] we can see that there is constantly more being added. We are among those who have been frontrunners, hiring communication staff in the construction industry, whereas before, there might have been some in the marketing department. And we have continually been raising the bar in terms of the quality level that is delivered to the client. Now we can also produce video spots and include them in our tenders, so that's another way we have raised the bar and keep adding more all the time. So it has definitely changed a lot".*

This quote illustrates how the upscaling of staff in one area, highlighted here as dedicated employees within communication, is a method to address this challenge of responding to new market demands. This prioritization highlights E&P's efforts to lead in the competitive bidding landscape, where the strongest prevail. It serves as a means for E&P's tender teams to differentiate themselves when convincing clients in their tenders. Additionally, we observe how value adopts a more relational approach, as it is increasingly co-created by E&P's tender communication employees, who interpret the clients' criteria and thus, take part in defining the services to be delivered. Furthermore, what is considered

valuable in tenders is thus not static but has and is evolving concurrently with market trends. Thus, the quote also reveals that E&P is continually exploring new ways to create value, such as incorporating video spots, to maintain competitive advantages.

Throughout the course of this PhD project, E&P's tender practices have also undergone a transformation that has resulted in a redistribution of resources. At the beginning of the project in 2021, E&P's tender activities were organized in its own independent department, which included employees specializing in tender calculation, tender communication, and competencies within virtual design and construction (VDC). Figure 11 below shows E&P's organizational chart with the tendering department highlighted.

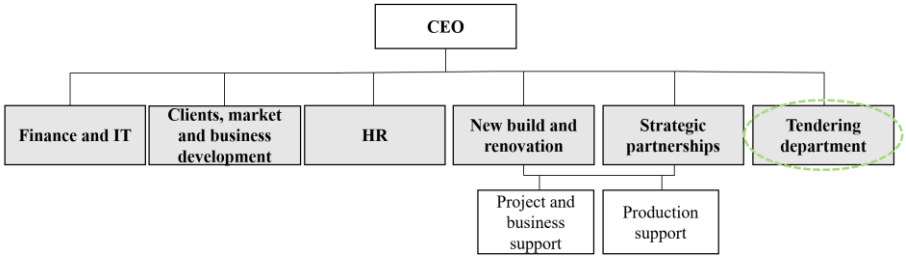

Figure 11. E&P's organizational chart in 2021

In February 2023, organizational changes were carried out, and the functions of the tender department were split into two other departments (Figure 12) [From the document: 'Adaptations in the organization']. Thus, the tender calculation teams were redistributed to the production units ('New build and renovation') to achieve a greater alignment between production activities and the calculation of bids. The decision aims to create closer integration of tender calculation with the production units to improve the coordination of resources and projects. This is to ensure that chosen tender projects can be carried out at the planned execution periods in accordance with other ongoing projects and that sufficient resources, such as equipment and personnel, are available at the specific project locations. Additionally, there is an expectation that tender calculation, through closer dialogue with production, enables more accurate price estimates e.g., through project expenses. This illustrates how E&P's leaders evaluate that tender calculation gains more value in this organizational setup because bid prices and project selection are, to a greater extent, co-created with the practical expertise of the production units.

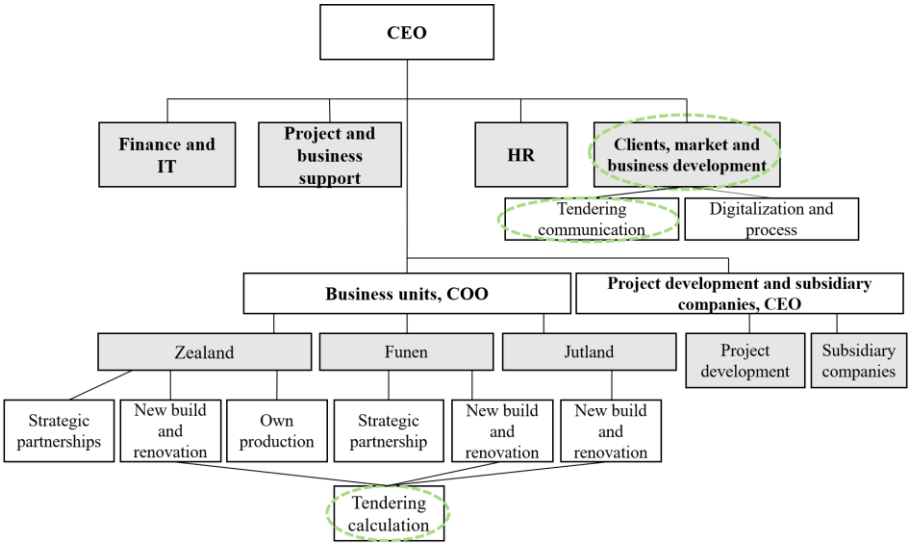

Figure 12. E&P's organizational chart in 2023 and as of 2024

Tender communication and VDC ('Digitalization and process') were redistributed to the department of 'Clients, market, and business development', as illustrated in Figure 12. We observe how E&P's dissemination activities are placed under the same department, where the VDC team contributes to ongoing tenders with tasks such as construction site drawings, logistics, schedules, and graphic design. However, I will primarily focus on the new placement of tender communication, which has gained more strategic significance. The tender communication team consists of four communication employees, one specialist in graphical communication, and a tender communication coordinator. The organizational change is argued to bring the tender communication team closer to the knowledge of branding communication, business development, client relations (e.g., in the form of head of markets), prequalification, and sustainability (e.g., head of sustainability). This is expected to create space for knowledge sharing regarding tender opportunities, prequalification, and tender content in the communication of references and value packages. The aim of this decision is also to establish a common platform within the competencies of communication. In this way, E&P's leaders evaluate that tender communication employees have greater access to knowledge regarding E&P's clients, ongoing sustainability activities, and the strategic work devised in the business development function. This knowledge is considered to enhance the value of the content that tender communication employees must convey when crafting value packages. Consequently, it provides a more comprehensive understanding of their target audience ('the clients'), the communicative elements that generate a favorable response in PQ through references, and the strategic objectives in progress, particularly in relation to E&P's sustainability initiatives. Thus, E&P's leaders

assess that the task of tender communication in addressing qualitative criteria necessitates a specialized effort. This effort entails an integration with interdisciplinary capabilities to generate the requisite value.

The integration of the two tender functions with other disciplines is also tied to the response to dealing with increased sustainability requirements. In the quote that follows, E&P's former director of the business area in WEST discusses how these demands necessitate a new approach:

> *"So the distinctions that have existed between sales, estimation, production, and our partners are becoming increasingly irrelevant, you could say. It is becoming more and more important to break down these barriers and communicate across these professional boundaries, so we can meet the heightened demands for sustainability and productivity".*

In this quote, sales, price estimation, production, and partners are linked as the distinctions that need to be broken down when handling sustainability requirements. From this perspective, sustainability requirements are also tied to productivity goals, and in the pursuit of meeting both agendas, they may potentially conflict in their coexistence. In the same way, the organizational change in tender calculation reveals that this discipline is more closely linked to E&P's productivity agenda, such as optimizing and coordinating resources compared to the discipline of tender communication. However, the separation of the two functions of tender calculation and tender communication does create some challenges. This creates a larger gap between tender communication and tender calculation when these disciplines are placed in separate departments, as budgets and tender documents need to be co-produced in a coordinated and cohesive effort. This situation may lead to discrepancies between arguments presented in calculations and narratives in the tender submissions. Concurrently, divergent forces from different organizational divisions that must collectively collaborate on preparing the same tenders can create a challenging balance influenced by potentially conflicting interests and demands. Thus, tender communication's placement in another business unit, with a more strategic and client-driven perspective, complicates the close interaction with attaining insights from the project teams in the production units. This separation poses challenges in collecting persuasive success stories from the construction sites and gathering evaluations on whether employees in production can fulfill the commitments specified in the value packages. This illustrates how E&P's tender practices continue to be challenged by the new terms they encounter. Consequently, E&P's employees are actively working on identifying the most effective strategies to address these challenges. This involves finding ways that continuously create the value their clients seek and balancing operational needs with maximizing strategic market advantages during the tender processes.

The final section reflects on how E&P's organization balances achieving market advantages while contributing to the sustainability agenda.

6.1.3. MARKET ADVANTAGES VS. SUSTAINABILITY?

The sustainability agenda is closely linked to E&P's considerations regarding achieving market advantages. This section explores how E&P's employees endeavor to integrate both objectives and finally, discusses the challenges that arise from this integration in relation to E&P's role as a contractor. Drawing on an internal strategy document [from the document: 'Strategy 2025'] and observations from CMB team meetings, I will emphasize a few examples that illustrate E&P's leaders' efforts in initiating strategic efforts aimed at advancing their market advantages within the sustainability agenda.

One of the outlined strategic goals from the 'Strategy 2025' is 'green synergy' which entails delivering on and actively participating in shaping the framework conditions within the sustainability agenda. This strategy goal includes four key focus areas: 1) Clients, 2) Knowledge and research environments, 3) Authorities, and 4) Certification bodies. From the individual descriptions of key focus areas, the DGNB scheme continues to serve as a means to fulfill this strategy. Thus, the DGNB scheme finds its way to clients through their demand, to knowledge institutions because they contribute to the DGNB scheme, and not least to authorities because they also utilize the DGNB scheme. However, I will first direct my focus towards the clients.

The initiative for clients aims to influence the green agenda in projects where E&P's impact is considered most significant. In this regard, partnerships and projects with early involvement (e.g., integrated project delivery (IPD)) are emphasized, and once again, the two business areas of 'strategic partnerships' and 'project development' are considered leverage for E&P's sustainability efforts. The strategy underscores the importance of visionary and long-term decisions within partnerships, in contrast to the traditional market, which typically involves numerous rapid decisions. Consequently, partnerships and IPD projects are evaluated as reconciling with E&P's sustainability efforts due to early project involvement, long-term decision-making, and the closer integration of competencies within a unified delivery team. Conversely, E&P's sustainability efforts targeting the traditional tender market are not addressed. We thus gain insight into how E&P perceives their impact as potentially limited in scenarios where the clients do not prioritize the inclusion of sustainability requirements, and where E&P's tender teams must submit bids after project definitions have been established, such as in the case of a design-bid-build tender. This differentiation indicates that sustainability efforts also face constraints that may lie beyond E&P's sphere of influence. At the same time, the traditional market,

which includes 'social housing renovations', represents a business area where E&P seeks to maintain its market-leading position. This situation could potentially lead to a division where sustainability development initiatives are concentrated in specific areas of the business, while other parts may continue with only minor improvements to sustainability initiatives or adhere to a 'business-as-usual' approach. This can pose challenges in conveying consistent messages to clients regarding E&P's commitment to the sustainability agenda. Additionally, it may result in fragmentation within E&P's organization, where various project teams (e.g., those in partnerships and traditional projects) pursue disparate directions and objectives concerning sustainability. Thus, we observe how E&P attempts to promote the sustainability agenda as a core value while ensuring that project teams working on projects with a lesser focus on sustainability efforts are not undervalued.

We also observe how sustainability efforts are not only linked to projects but are also part of other value-creating work at E&P. This includes collaborating with knowledge and research environments (e.g., industrial PhD projects), participating in industry initiatives, and influencing the agenda of authorities and interest groups. However, I will particularly focus on E&P's efforts to influence certification bodies. The primary effort of E&P's organization has been to influence the Green Building Council Denmark regarding DGNB criteria. The strategy mentions that E&P's projects are highly impacted by updated certification criteria, with the DGNB scheme, as the most widespread certification scheme in Denmark and among E&P's tenders (see Appendix A), has gained a particularly significant influence in both tender projects and ongoing projects. In this context, the role of E&P's head of sustainability becomes interesting. Thus, the head of sustainability works proactively towards influencing E&P's activities and initiatives to count in DGNB's scoring criteria. I will briefly mention two examples of these efforts that have led to changes in the DGNB criteria.

E&P's head of sustainability has contributed inputs to the Green Building Council (the organization behind DGNB) for changes to DGNB's criterion 'PRO2.1 Construction Site/Construction Process' for the manual 'New Buildings and Extensive Renovations' based on two pilot projects on green construction sites from a strategic partnership. These experiences included solutions to reduce the carbon footprint through waste sorting, the use of electric or biodiesel construction machinery, and more responsible consumption of energy and water. Similarly, E&P's head of sustainability has provided inputs on their experiences with job interventions from social housing renovations and collaborations with social enterprises. This led to the creation of a new DGNB criterion, 'PRO1.4 Sustainability in Contractor Procurement', where points can be earned if the project contract includes requirements that oblige companies to

initiate social initiatives focused on employment and education in connection with the specific project (Green Building Council Denmark, 2020). Through this approach, the head of sustainability becomes part of a network that facilitates the creation of a DGNB point system tailored and directed specifically to one of E&P's professional competencies, namely social sustainability initiatives during construction. This approach contributes to strengthening E&P's market position. Thus, since its implementation, E&P's head of sustainability has experienced a growing interest among clients seeking collaboration with social enterprises e.g., activation of unemployed locals helping with building gangways or outdoor furniture. The DGNB criterion enables clients to earn DGNB points and generates good branding value for their organization in showcasing social responsibility [From the document: 'Identify the low-hanging sustainability initiatives on the construction site']. This illustrates how E&P's head of sustainability strategically works towards influencing certification bodies that can lead to increased client demand for the construction site activities they have already gained experience with (e.g., green construction sites and social construction site initiatives). Thus, shaping the DGNB manuals in their favor creates the value of promoting sustainability practices that are more closely aligned with the tasks undertaken by contractors. Through this lobbying effort, E&P's leaders aim to turn the DGNB scheme into a market advantage by recognizing its growing influence on their project activities. Consequently, E&P's employees become even more representatives and spokespersons for the DGNB scheme, as their active participation incentivizes efforts to sustain and expand those activities that are awarded points within the DGNB system.

E&P's strategic engagement with the sustainability agenda exemplifies their efforts to create value by maximizing their influence. The first example is how E&P's leaders evaluate projects with early involvement, including partnerships and IPD projects, as those where sustainability efforts can harvest the greatest value due to E&P's level of influence as an equal project participant in co-creating sustainability visions and objectives. In the second example, E&P's leaders attempt to influence the DGNB criteria to their own advantage in the recognition of their clients' frequent preference for the DGNB scheme in achieving sustainable construction. These two examples illustrate a few of E&P's strategies to address this new reality of client demands.

CHAPTER 7. DISCUSSION

In this chapter, I will first examine the findings from each of my three sub-analyses by providing a foundation for contextualizing and interpreting the nuances of these findings within the discussions in the existing literature. Additionally, I will also explain the implications of my findings in comparison to existing literature and consider their significance in relation to my research questions. Thus, the aim of this discussion is also to establish a basis for addressing my research questions, which will be summarized in the conclusion. In the second part of the discussion, I will extend the focus to consider the contributions of this thesis to academic research and its practical implications for contractors and other construction companies.

7.1. THE MARKET FOR SUSTAINABILITY

In the first section, I will base the discussion on my first research question: "*What characterizes the market for environmental sustainability in tendering and the different ways that building clients frame sustainability requirements during procurement*?". To investigate the characteristics of the market for environmental sustainability in tenders and the diverse approaches building clients use to frame sustainability requirements during procurement, I conducted an analysis based on 13 client interviews. This analysis identified three predominant tendencies, which I will examine in greater depth in relation to existing literature and the implications of my findings. Thus, the findings illustrate diverse types of arguments and interests that unfold when clients attempt to economize sustainability. Therefore, I will examine in greater detail how economic considerations impact clients' decision-making processes regarding sustainability requirements in procurement. The other two tendencies involved clients' instrumentalization and specialization of sustainability, particularly through the implementation and adherence to the DGNB-DK certification scheme. Consequently, I will explore the challenges and limitations associated with requiring certification systems to direct sustainability efforts in client procurement.

Economization of sustainability – Balancing costs and benefits

My findings on clients' framing reveal that sustainability initiatives are assessed based on their economic implications, which significantly influence the decision-making and prioritization of these initiatives. Economic considerations, therefore, play a crucial role in shaping and framing the realization of sustainability initiatives. Consequently, I will explore in greater depth how these economic decision-making criteria establish the framework for incorporating sustainability requirements in clients' procurement processes. I will particularly

draw inspiration from Callon's work, among others (Callon & Muniesa, 2005; Callon et al., 2002; Callon, 1998a; Callon, 2007), on how economic values are established and stabilized, while also supplementing with empirical insights from other studies that have investigated similar phenomena in client procurement.

Clients' procurement of sustainability services can be understood as a discipline of making these services 'calculable'. This involves initially detaching the entities to be considered in their overall 'project budget'. This step includes considerations on how to arrange and organize these entities. Once categorized, the entities are then combined and manipulated to enable informed decisions, such as through comparisons or forecasts. The final calculation step entails producing a new entity (e.g., the final project budget) that captures the manipulations performed in the calculative space, thus linking and summarizing the entities considered (Callon & Muniesa, 2005). However, these steps of calculation may also lean more towards intuition or judgment if clients struggle to achieve a purely 'algorithmic formulation'. In such cases, the process can be categorized more as a qualculative practice (ibid, p.1232). So how can this help us understand the clients' account for conducting environmental decision-making in my findings? Drawing on the first calculative step (Callon & Muniesa, 2005), we see that clients underscore how the procurement of sustainable construction projects entails additional costs, which often involve struggles to secure and convince the organizational management or investors for funding. In this scenario, it remains uncertain whether sustainability initiatives are considered as 'entities' within the project budget to begin with. In some cases, financial frameworks for project procurement are pre-determined. For example, a client representative from a municipality (R1, p.89) mentioned that they must adhere to a maximum price concept when procuring a school or daycare institution. This further complicates the calculation process for sustainability initiatives, as the 'calculation' has already been finalized. Consequently, sustainability initiatives face increased challenges, as they must fit into existing framings of financial budgets. This necessitates potential reframing of the initial financial budget based on weightings against other potential trade-offs involved in the renegotiation process. Thus, in the quote by the client (R1), sustainability initiatives are framed as additional components, where the associated costs must be justified to the management. In comparison, Isaksson and Linderoth's (2018) study indicates that decision-makers in construction companies do not always look beyond the direct costs of sustainability considerations. This often leads to a disparity between the perceived (short-term) value and the actual (long-term) value of sustainability considerations (ibid, p.617). This may also be attributed to the inherent challenges in quantifying the economic impacts of specific sustainability initiatives. For instance, assessing the long-term economic value of a green construction site for the building or client organization over a five-year period presents difficulties in quantification such as translating these benefits into a

formula. In some instances, identified in my findings, clients' framing disproportionately prioritizes direct costs over long-term considerations. This neglects potential operational savings or increases in the long-term value of building investments. Consequently, this framing gains a stronger positioning, and thus, clients' calculative space becomes predominantly shaped by categorizing entities that fulfill immediate budgetary needs, rather than incorporating long-term financial implications.

Similarly, the study by Varnäs et al. (2009) finds that environmental considerations as evaluation criteria appear very infrequently due to a risk of delay, increased costs, and a desire to simplify the tendering process. However, it is important to note that this study was conducted in 2009, and it is likely that the evaluation criteria related to sustainability and environmental considerations have evolved since then. Furthermore, the traditional construction objectives are highlighted as the golden triangle of time, costs, and quality (Varnäs et al. 2009; Wong et al., 2016). I argue that this traditional approach to understanding project management and procurement in construction projects also entails a framing that gets challenged by decisions regarding sustainability initiatives. From this perspective, these three factors are interdependent, such that changes in one factor influence the others. Sustainability initiatives present a challenge to this traditional project management model, as they necessitate them to be seen as part of the necessary quality for project completion. Otherwise, they risk being excluded from the framing due to their perceived misalignment with the established factors. My findings demonstrate that social negotiations occur within this framing of the 'traditional' project performance triangle. For instance, one client interview (R7, p.90) highlights how investors must be persuaded to pay additional costs for investing in sustainable buildings over traditional ones. This social negotiation necessitates a trade-off between the economy and the implementation of sustainability measures, making it an 'either-or' scenario due to the perceived impossibility of achieving both. In the project triangle, sustainability measures can be argued to fall under the category of 'quality', and thus align with the framing of procurements projects based on the criterion of the 'best ratio between price and quality'. However, this separation between quality (where sustainability measures are categorized under qualitative criteria) and economy in the shape of the bid price creates a distinctive division that can lead to potential overflows (e.g., conflicting priorities). Thus, this separation can obscure their interconnectedness and mutual influence, and result in a 'purification process' – a clear division between calculative disciplines (natural world) and qualitative disciplines (human society) (Latour, 1993). Therefore, I argue that clients' framing, based on my excerpts, shows a tendency for sustainability efforts to become a compromise that is detached from other disciplines such as project budget calculations. This poses a risk of de-prioritization and thus, potentially hinders the market development in clients'

procurement of sustainability solutions. Quantifying sustainability clearly presents a challenge, as it often falls within a qualitative domain, such as 'quality', and is therefore treated separately from budget considerations. This disconnect between sustainability initiatives and budgets in procurements and tenders is problematic for the construction industry as a whole. It encourages a tendency to view sustainability measures as isolated components that can simply be 'added on' to a project to make it green, which can potentially result in greenwashing.

My findings also illustrate how economic agents, such as pension funds and developers, make the procurements of sustainability services 'calculable'. In the economic world where these agents operate, procuring construction projects is framed within the context of achieved economic benefits, where buildings are perceived as profitable asset investments. Revisiting how sustainability services are made calculable through the lens of Callon and Muniesa (2005), sustainability investments must conform with this profit-oriented framing to be 'detached' as entities in the calculation. Some clients (R6, R12, R2) consider the DGNB-gold certification label and low LCA standards within their framing of sustainability procurement, which aligns with their forecasting and comparison methods to maximize economic returns in their calculative space (drawing on Callon & Muniesa, 2005). Boxenbaum and Georg (2020) highlight the attractiveness of the DGNB scheme for construction actors pursuing the label, as its attainment can result in higher returns on investment and reputational gains and has particularly been recognized by developers. Furthermore, these advantages incentivize construction actors to continuously stimulate the development of the DGNB-DK certification system, thereby enhancing its competitiveness over other certification schemes (ibid, p.135). However, selecting the DGNB scheme as the sole requirement for sustainable building in clients' procurement poses challenges in achieving sufficient differentiation (e.g., highlighted by R6 p.91). For economic agents, competition becomes central to their success, with Porter (1985) identifying cost advantage and differentiation as the two primary types of competitive advantages an organization can possess. However, when the majority of construction actors adopt the DGNB scheme, it no longer confers a competitive advantage for strong positioning in the investor market. I will thus draw upon the notion of 'calculated encounters' (Callon & Muniesa, 2005) to explain what this more specifically means. Initially, economic agents calculated the choice of investing in the DGNB scheme to differentiate themselves. As adopting the DGNB-certification label becomes widespread, these agents must reassess their strategies to maintain or regain their position in the competitive investor market. Consequently, the calculated encounter shifts focus to discovering new methods of differentiation, as the dynamics of the competitive landscape evolve by introducing other sustainability measures/standards or regulative frameworks to account for (e.g., the EU Taxonomy, limits on CO_2-levels, etc.). Therefore, the industry is continuously required to adapt to emerging

and appealing 'buzzwords' such as 'Life Cycle Assessments (LCA)' or 'biodiversity', as organizations seek to distinguish themselves and capitalize on the returns from their investments. This is done, among other things, by predicting the actions and responses of competitors to optimize sought-after outcomes. Thus, this may necessitate updating the algorithm with new variables or parameters that involve the evaluation of multiple factors and potential implications to ascertain the most beneficial course of action from the perspective of investors.

Nonetheless, the properties of the DGNB certification scheme were still evaluated by the interviewed clients (e.g., R2 and R12) as representing the desired 'return of investments'. Thus, a market label represents a type of symbol that signifies membership in a particular market category (Granqvist et al., 2013). Callon et al. (2002) highlight how consumers participate in the process of qualifying available products. Thus, it is the market actors' ability to judge and evaluate that contributes to the mobilization and classification of relevant differences, such as distinguishing a DGNB-certified building from a non-certified one. As long as the perception of the DGNB label as indicative of certain standards and qualities persists among market actors, it retains its attractiveness and serves as a means for investors to evaluate the value of their investments. Although this economic maximization of value through prioritizing investments in deliberately chosen sustainability solutions (e.g., based on their calculability) can positively influence environmental decision-making in procurement, it can also create inequalities in the construction industry. For example, Boxenbaum & Georg (2020) highlight that the DGNB-DK certification is challenging to obtain, thereby excluding certain actors within the construction sector. Thus, smaller companies may lack access to the necessary resources to invest in sustainability solutions. Moreover, this focus can also risk greenwashing, as the emphasis might be placed on achieving symbolic environmental measures rather than prioritizing other, potentially more suitable and transparent considerations for sustainability improvements. In this context, Granqvist et al. (2013) highlight how executives can use ambiguity as a tool for symbolic management. Labels, such as the DGNB system, indicate that building practices adhere to sustainable construction standards. However, the inherent ambiguity of these labels necessitates that clients must be prepared to justify why and how their labeled buildings qualify as 'sustainable' to defend themselves against accusations of greenwashing.

Instrumentalization and specialization of sustainability through certification systems

The second and third trends specifically highlighted how clients use the 'DGNB scheme' to guide and implement their sustainability practices and develop sustainability competencies. Consequently, this subsection discusses how

certification systems such as the DGNB scheme facilitate the tangibility of sustainability, as well as the associated limitations and challenges. For this purpose, I will first draw upon Latour and Woolgar *'Laboratory Life'* (1986). Clients employ the 'DGNB scheme' in their efforts to address the abstract concept of establishing sustainability requirements in procurement. In doing so, they use it as a tool to create 'order' from 'disorder'. By adopting the DGNB scheme, sustainability initiatives become 'understandable' and 'actionable', as clients are introduced to a categorized system of potential solutions and the related role distributions (e.g., tasks of engineers, architects, client organization, etc.). At the same time, space for action is created. In other words, the descriptions of solutions and roles are formulated intentionally broad to allow for a multitude of solutions and tailored roles specific to the construction project. This system involves a framework for quantitatively assessing and weighing each individually chosen solution, thereby enabling the measurement and evaluation of sustainability efforts. Thus, voluntary sustainability guidelines serve to advise companies on what to report and the format this should take (Comyns et al., 2013). But why do clients prefer the DGNB scheme over other sustainability solutions? Callon et al. (2002) emphasize how 'the economy of qualities' is based on the singularity of the goods offered to consumers. It is thus a relationship between what consumers want and expect and what is offered on the other side. According to my findings, the interviewed clients have already 'tested' the DGNB scheme in their previous projects, where both collective evaluations have been conducted and learning has taken place. This learning is also intensified by many clients specializing in the DGNB scheme, often achieved through taking courses and becoming certified DGNB consultants. The clients' prior experiences give rise to further evaluations, as social networks have already formed around the DGNB scheme, thus, influencing discussions about this preference. However, these are not merely social (Callon et al., 2002), because evaluations are also based on material devices such as the DGNB guidelines/manuals, Excel sheets, calculation tools, documentation files, etc., which support how information is captured and distributed. A client (R13, p.95) highlighted the benefits of using an Excel sheet to measure and compare the DGNB criteria options, where these are eventually translated into tangible tasks, time scheduling, and role organization. When sustainability efforts are operationalized through the DGNB scheme, it is also part of reducing the construction actors' uncertainty regarding what sustainable construction entails (Boxenbaum & Georg, 2020). Thus, reducing uncertainties connected to the choice of certification systems over other sustainability solutions is part of giving the DGNB scheme properties that represent value for the interviewed clients. This process, referred to as 'singularization', involves integrating the good (e.g., the DGNB manual) into the owner's world (Callon & Muniesa, 2005). This can further be explained through the two-way relationship between description and action, which the DGNB system helps facilitate. Akrich (1992) highlights that operating instructions are

meaningless without the corresponding material device, and similarly, the material device is likely to be incomprehensible, unusable, and passive without instructions (cited in Callon, 2007). Thus, the DGNB scheme provides the necessary instructions to make the clients' sustainability efforts actionable. These actions are further supported by standardized documentation, calculation methods (e.g., LCA calculations), and third-party verification of compliance. Should clients opt for sustainability measures (e.g., using recycled materials) outside of certification systems, they may risk lacking the instructions, verifications, and documentation to support their efforts in achieving these measures. In comparison, Caldwell et al. (2009) emphasize the importance of dedicating additional time to the project's organizational setup, including coordinating communication processes, selecting suppliers, and managing stakeholders, when procuring complex performances such as environmental practices. Thus, the organizational structuring of actions, entailing sustainability initiatives, contributes to minimizing the uncertainties surrounding their implementation in practice.

I argue that clients' instrumentalization and specialization of sustainability through certification schemes such as the DGNB system also aim to mitigate potential overflows. These overflows may include reputational challenges associated with acting environmentally responsible, unforeseen economic expenses, and regulatory issues that emerge from pursuing sustainable solutions that are not legally feasible. Callon (1998a) illustrates this with the example of a farmer working next to a polluting factory. To define his interests and quantify the impact of the overflows on the efficiency of his operations, he must have access to legitimate and recognized measuring instruments (ibid, p. 259). Similarly, clients must be able to justify investments in construction projects, which are subject to scrutiny and criticism due to the construction industry's considerable negative environmental impacts, particularly in the case of new constructions. The DGNB system enables clients to measure externalities by providing 'objective data', that involve quantitative assessments of a range of categorized sustainability actions. These assessments are further validated by a 'label' (e.g., DGNB silver or gold) aimed at signifying 'sustainable construction'. Furthermore, Cortéz et al. (2023) emphasize how companies commit to sustainability reporting as it functions as an instrument to reduce existing information asymmetries between the company and relevant stakeholders concerning corporate sustainability performance. I argue that clients' adoption of the DGNB scheme as their preferred choice in my findings also decreases inconsistencies of information flow in their sustainability efforts due to the scheme's established market recognition. Additionally, sustainability reporting can align with societal expectations to gain, maintain, or defend organizational legitimacy (Cortéz et al., 2023). Thus, companies respond to societal expectations to preserve their license to operate (Hansen & Schaltegger, 2013). This pressure

to legitimize or justify business activities is particularly high for companies in sectors subject to public scrutiny or awareness (Cortéz et al., 2023). I argue that many of my interviews involved public clients, social housing organizations, or large private investors (e.g., pension funds) who must respond to this external pressure. Therefore, the choice of the DGNB scheme serves to legitimize client organizations' sustainability efforts and thus, manage the risk of overflows, when they are held accountable to their key stakeholders, including citizens, government agencies, investors, suppliers (e.g., architects or contractors), and other industry actors.

Although the DGNB scheme's framework mitigates clients' uncertainties about how they should and must act on the sustainability agenda, this same uncertainty and 'license to operate' fosters a reliance on familiar and recognizable market solutions. Consequently, this reliance may create challenges in conceptualizing sustainability initiatives beyond this established framework in the Danish construction industry. In the most extreme scenario, this could diminish the value of sustainability initiatives to merely conforming with the attainment of points within the DGNB system, thus reinforcing and replicating only those solutions encompassed by this framework. The DGNB label also signifies membership in the accepted product category of 'sustainable building'. Zuckerman (1999) underscores how firms that do not gain membership in accepted categories are punished. Thus, obtaining a DGNB label or participating in the network, for example as a DGNB consultant, has a ripple effect driven by the concern of not being included within the 'societal' acceptable category of DGNB membership. Consequently, the DGNB scheme remains dominant in the Danish construction industry as long as there is no equivalent competitor in the market that has similarly managed to integrate regulations in a national context and continuously adapt to market demand. Additionally, the Danish construction industry is already populated with its spokespersons in the form of DGNB consultants and auditors, who disseminate these practices, among other ways, through the procurement of sustainable construction projects.

7.2. VALUATION PRACTICES IN TENDERING

In the second section, the discussion focuses on addressing my second research question: "*How are environmental sustainability requirements co-created in the tender documents (also referred to as 'devices') of a building contractor?"*. To explore this question, I will examine the role of tender documents, including references and value packages, as devices in the tendering process. The discussion elucidates how references and value packages shape and influence decisions and actions among E&P's employees. Additionally, I will investigate the co-creation of sustainability values within references and value packages. In this context, I will discuss how

the communication in these tender documents provides insights into what is considered valuable in the construction industry.

The role of tender documents as devices

Callon et al. (2002) highlight how the organization of markets depends on transactions between groups that often have differing and sometimes even opposing views and interests. Furthermore, in a market transaction a good changes hands (Callon & Muniesa, 2005). I argue that tender documents help structure these market transactions in the tendering process, where the client must determine which of the bidders is most qualified to transform client demands into the tangible realization of the building project. Both references and value packages contribute to prescribing certain actions and decisions in the formulation of how bids should be presented that influence the behavior of market participants (bidders and clients). This influence and its implications will be examined in greater detail.

I will begin by discussing how references, as devices, performatively shape decisions within the tendering process. During the prequalification project selection, E&P's tender employees evaluated whether these projects would serve as 'useful references' for future endeavors. Thus, references, as devices, prescribe decision-making processes regarding which projects E&P's tender employees opt to pursue. I draw on the notion of 'positioning' (Callon & Muniesa, 2005) to better understand what this means. 'Positioning' defines target consumers (singularization) while also defining the field of competition (ibid, p.1235). In the context of 'references', I argue that the selection of PQ projects, and thus, the application of references, is also considered with the aim of improving E&P's positioning. In this situation, PQ projects are both connected to potential references and assessed for their potential to serve as future references. From here, references are qualified by being singularized as a product through processes of classification, clustering, and ordering, thereby making the future product of 'a reference' both comparable and distinct (drawing on Callon & Muniesa, 2005). This involves identifying 'properties' that facilitate the production of distinctions (Cochoy, 2002). For instance, my findings reveal how a prequalification project, a health facility constructed from wood, was identified as having the sought-after 'properties' for serving as a reference. Thus, the project type 'health facility' was deemed capable of enhancing E&P's market positioning, as references for this project type were nearing expiration. This underscores the importance for E&P's tender employees to maintain their target clients that entail this project type. Furthermore, 'wood construction' was also considered as a desirable 'property', as it would provide a distinctive advantage in qualifying for similar projects within the competitive field in which E&P's tender employees aspire to operate. References are also performative in the sense that they can be shared and used across companies within the same holding group, which includes

E&P. This means they can play a role in improving the positioning of other companies in the market. For example, my findings showed that E&P's tender employees could benefit from acquiring 'references' that included experience with 'modular buildings', identified as properties lacking in their own references. When E&P gets prequalified in the tendering process based on references from other companies within the holding company, these references function as mediators that actively facilitate the management of social relations. For instance, this includes the interaction between E&P and the company providing the reference. Thus, one of E&P's subsidiary companies, a contractor company in Jutland, needed a reference to apply for a social housing renovation project. For the 'shared' reference to act as a persuasive mediator, it detailed that E&P could supply 1-2 site managers either as consultants or as part of an advisory board. As this interaction is constructed through the reference, E&P's employees function as components within the system of action that structures one of the phases in the market transaction between the bidder and the client. In this way, references grant access to the social network and expertise of other companies. Thereby, references can be distributed and transformed to serve the purpose from one situation to another (drawing on Latour, 2005). This 'reusable' application of the same references in new market transactions also occurs internally within E&P's organization. Thus, the same references, within the five-year timeframe, undergo repeated 'bends and turns' to emphasize specific 'properties' that sufficiently distinguish E&P in context-dependent prequalification applications. These properties are 'revealed' through tests and trials involving interactions (Callon et al., 2002) between the tender team and the references being qualified by the client. Callon et al. (2002) further underscore that the definition of characteristics is modified as products develop and change. Similarly, the PQ coordinator at E&P must ensure that references from past performances reflect solutions (e.g., sustainability practices) that align with current developments in the Danish construction industry and qualify for the market needs (e.g., type of project or solutions) sought by the client. I argue that the social practices surrounding references within a contractor company have implications for understanding how references not only serve the purpose of achieving prequalification for specific projects. Thus, references must also be understood as having strategic consequences that reach into the core of organizations' efforts and priorities related to market positioning.

The device of value packages is not solely concerned with the tender team emphasizing the 'properties' that ensure qualification, as in the case of 'references'. Instead, value packages must sufficiently differentiate as the most qualified, mitigated by the client's set of award criteria, among the other bidders for the market transaction to take place. In this way, the device of value packages is directly involved in the social negotiations that determine whether E&P is awarded the project contract or not. So, what does this more specifically mean?

For a market transaction to be realized, the good or service must be objectified with properties and singularized by making these properties represent value for the buyer (Callon & Muniesa, 2005). A good or service can be the object of a market transaction even when it has no physical reality if it has been transformed into a thing (ibid, p.1233). This suitably characterizes the situation in which value packages operate. While the final physical product of the building desired by the client does not yet exist, the value package can transform these desires by explicitly detailing how the project team plans to execute the requested tasks. Therefore, I argue that 'value packages' are part of the transformation into something concrete, 'a thing', that helps structure this market transaction. However, I will specifically discuss how the device of value packages is made valuable for clients (or 'singularized') by E&P's employees and the implications this has for its performativity. The process of singularization consists in a gradual definition of the properties of the product that must be shaped in a way so it can enter into the clients' world and become attached to it (Callon & Muniesa, 2005 p.1233-1234).

In the analysis, we observe how the head of sustainability and tender communication employee work to incorporate sustainability solutions into the value packages. These efforts are complicated by the dual challenge of identifying 'objectified properties' while simultaneously ensuring that these solutions are perceived as 'tailored' to the specific client targeted by the value package. To address this challenge, sustainability solutions can be categorized into 'project-specific' and 'generic option'. Within the project-specific ('singularized') approach, sustainability solutions must be tailored to various types of projects, such as school renovations or new residential constructions. These solutions must undergo a qualification process before being transformed into a good (Callon & Muniesa, 2005). For clients to qualify E&P's proposals, the presented solutions need to exhibit flexibility concerning the client's terms and requests (e.g., award criteria). In this context, the 'cost of sustainability' became particularly critical. Thus, certain segments of E&P's market perceive 'sustainability initiatives' as potentially burdensome to their financial budgets and regard them as extra services. Consequently, cost-efficient solutions, particularly those considered 'low-hanging fruits', become objectified properties intended to enhance the likelihood that clients will recognize their value. Therefore, these sustainability solutions exist at the intersection of qualitative judgment and a 'calculation discipline' that necessitates close collaboration with E&P's tender calculation staff. This intersection forms the core of a 'qualculative practice' during the tendering process.

Callon and Muniesa (2005) emphasize the marketing challenges posed by the complexity of products in terms of singularization. Specifically, a product with a high degree of singularization exhibits low substitutability, whereas a high degree

of standardization results in strong substitutability (ibid, p.1235). Similarly, sustainability solutions that are uniquely tailored to individual clients are more difficult to replace in other value packages. In contrast, standardized solutions make it easier to replace and use them across different value packages, as they are not customized to a specific client's situation. This standardization is particularly evident in the integration of the DGNB scheme by the tender communication employee and the head of sustainability. According to Callon and Muniesa (2005), a quality label or quality standards (e.g., such as the DGNB scheme) quantify and objectify specific properties. The framework of the DGNB scheme, aligned with E&P's sustainability concepts, is included because it is perceived as 'recognizable' by the majority of their clients. Greeson's (2020) study provides an illustrative example of selling old books at an auction, where the auction tickets increased the perceived quality and attractiveness of the books. In comparison, the persuasion in selling sustainability solutions/services can be contingent on the setting they are placed in by E&P, thereby, potentially enhancing the clients' perceived value of these proposals. Hence, placing 'sustainability solutions' within the DGNB framework is deemed (by the head of sustainability) to generate higher value for clients, who often already require DGNB certification. In this way, value packages are part of emphasizing certain aspects of sustainability that can be quantified and standardized, as exemplified by the DGNB scheme.

To summarize the implications of 'value packages' as a 'device' in relation to performativity, I argue that value packages do not merely function as intermediaries that transport information. Rather, value packages are granted the capacity to do things (drawing on Georg & Tryggestad, 2009), as they actively contribute to shaping the solutions that clients demand through their qualitative award criteria. Consequently, they engage in the social negotiation that determines whether a market transaction between E&P (as the bidder) and the client can occur. Understanding value packages as mediators with both qualitative and quantitative (e.g., the pricing of the building) effects has significant implications for their role in managing interests including strategic considerations. Furthermore, the device of value packages influences bidders' decision-making behavior in marketing their solutions by requiring them to balance the objectification of properties with the customization needed to meet clients' criteria. The latter entails the solutions to become entangled in the networks of sociotechnical relations constituting the client's world (Callon & Muniesa, 2005). For example, this necessitates that E&P's proposals must align with the specific sociotechnical conditions present in the client's environment, including organizational arrangements, regulatory requirements, cultural norms, and the collaborative relationships between involved stakeholders, such as the local community.

'References' and 'value packages' are not the only devices that contribute to the co-creation of sustainability in tenders. Scholars within the field of construction management research also highlight the importance of investigating other devices in construction, such as visualizations/pictures (Nicolini, 2007; Justesen & Mouritsen, 2009), project files (Sage et al., 2010), project budgeting (Georg & Tryggestad, 2009), construction law (Müller, 2015), and procurement scripts (Gottschling, 2018). Consequently, the role of other devices in the tendering process, such as project drawings/visualizations, bid pricing, the client's project material, or relevant legislation, including the Public Procurement Act or the Danish Building Regulations, could also have been investigated in relation to their impact on sustainability initiatives. Thus, if I had more time and resources, it would have been interesting to explore a wider range of devices that influence the co-creation of sustainability in the tendering process. Additionally, I would like to emphasize the importance of us, as construction researchers, recognizing references, value packages, and other nonhumans as active participants (mediators) in the co-creation of what constitutes sustainability in a construction project. They help shape and define the boundaries of sustainability in these projects. Thus, they are just as active and influential as the individuals involved in these qualculative practices.

Co-creation of value in tender documents

While the previous subsection examined the role of tender documents, references, and value packages as 'devices', this subsection delves more specifically into their content and focuses on how sustainability values are reproduced and conveyed. This will assist in answering my second research question regarding how environmental sustainability requirements are co-created in tender documents from the perspective of E&P. For this purpose, I will draw on the study of Hamann and Velarde (2023) in terms of how they conceptualize 'value frameworks'. Hamann and Velarde (2023) apply the concept of 'value frameworks' within the context of application guidelines for selecting academic candidates, specifically in the settings related to grantmakers selecting candidates for funding and universities selecting candidates for professorships. These guidelines establish a value framework that encompasses organizational expectations of the candidate or 'applicant' (ibid, p.69). In comparison, I argue that clients' selection criteria during prequalification and award criteria during the final bid each constitute a value framework within which bidders must position themselves. Thus, they offer insights into the expectations placed upon bidders by providing instructions on the weighting of various themes, which reflect the clients' prioritization of the work tasks to be performed by the bidders. Nonetheless, there are also underlying 'values' that may not be explicitly reflected in the client's criteria. These involve the ways in which an organization engages with certain concepts or elements, assigns value to them, and establishes the frameworks through which their values and interests are articulated. This process

may occur even before the clients issue a project for tender. Consequently, value frameworks are continually shaped and reshaped within the developer organization, and a tender represents a 'snapshot' of a particular value framework within a specific context and time. Therefore, my study could have also explored the formation of these value frameworks more closely on both sides of the tendering process by involving both clients and contractors. I also argue that the bidders' responses to the clients' value frameworks, in the form of 'references' and 'value packages', create their own value frameworks. These responses reproduce values defined by the client and contribute to the collective value framework aimed at selecting the most qualified bidder. At the same time, the bidder, in the form of the contractor organization and other participating companies, also has a set of values that may be expressed in ways other than a direct reflection of the client's criteria. Thus, I will discuss more specifically what this means through the presented examples of the four references and the two value packages.

The client's selection criteria, or 'value framework', required the bidder to provide references similar in nature to the tendered project, 'Wooden building', which involved terraced family houses to be certified with the Nordic Swan ecolabel. These references were also instructed to include experience with timber construction and projects featuring special green and/or sustainable initiatives. This reflects a rather wide and ambiguous value framework for the bidders in finding comparable and distinctive projects of completed or ongoing performances. Furthermore, the value framework does not provide specific expectations regarding what is more precisely meant by 'special green and/or sustainable initiatives'. E&P's tender team provided four references that constituted its own 'value framework'. Thus, the client's values were reproduced through the presentation of a DGNB-certified new building project ('The Waterside buildings'), a Nordic Swan ecolabel certified new building project ('The Townhouse'), and two references that included prefabricated wooden elements ('The Lakeside residences' and 'Youth accommodation'). To understand how these values are reproduced, I will present E&P's value framework in the shape of comparing the checklists ('what the references demonstrate experience with') for each of the individual references (Table 15).

Table 15: E&P's reproduction of the client's value framework for each reference

Client's value framework	**Waterside buildings**	**The Townhouse**	**The Lakeside residences**	**Youth Accommo-dation**

The tender project should be certified with the Nordic Swan ecolabel	Performance of DGNB-certified buildings	Performance of Nordic Swan eco-labelled residential building		
References featuring special green/and or sustainable initiatives	Implementation of specific green and sustainable initiatives (*reuse of temporary wood, potential use of reused bricks and co-housing community*)		Implementation of specific green and sustainable initiatives (*use of reused materials, meeting energy class 2015 standards, sustainable urban drainage system*)	
The tender project's contract form	The project has been carried out with Enemærke & Petersen as the turnkey contractor		The project has been carried out with Enemærke & Petersen as the turnkey contractor	
References demonstrate experience with timber construction	Use of prefabricated wooden elements (*facades in courtyards where structurally possible*)		Use of prefabricated wooden elements (*facade elements and roof cassettes*)	Use of prefabricated wooden elements (*facade elements*)
The tender project's location		Execution of a local project in x		Execution of a local project in x

The references' checklists can be compared to what Callon et al. (2002) would refer to as a list of characteristics that E&P's tender team ought to take into

consideration. This also entails the value to be given to each of them (ibid, p.199). Thus, characteristics are the perceived qualities or attributes of a product or service, where E&P's tender team must connect the proposed sustainability initiatives, in the shape of products and services, to the client. To illustrate my point, Callon et al. (2002) bring the example of the characteristics given to a vehicle that would most likely differ significantly in different contexts from the research laboratory to the sales brochure, and the sub-contractor, who designs and supplies the parts. Thus, the values that the tender team attributes to each characteristic are emphasized for a particular client and market segment within the specific situational context of seeking prequalification and are contingent upon individual preferences. For example, the values given to the DGNB certification scheme are the use of 'appropriate' materials, and achieving the DGNB Gold label, which includes how the framework inherently incorporates sustainability efforts across economic, social, and environmental dimensions. Moreover, obtaining the DGNB certification label indirectly implied that it played a role in securing a finalist nomination for the Developer Award at the Building Awards 2020. In this way, E&P's tender team leverages the value of engaging with the social networks associated with the DGNB scheme and the Building Awards (e.g., interactions with judges, competitors, and understanding winning criteria), all of which offer advantages to the client. By participating and gaining recognition within these networks, E&P's tender team can assemble allies who may support the client's sustainability objectives. Furthermore, Callon et al. (2002) states that goods are temporarily stabilized products. As a result, qualities differ e.g., in terms of the place it is sold and the year it is licensed (ibid, p.199-200). This transient nature of stability is particularly evident in the reproduction of 'special green and/or sustainable initiatives' to the characteristic of meeting the energy class 2015 standards. This standard was initially associated with the project team's strong focus on achieving energy optimization and environmental sustainability. However, as highlighted in the analysis, this characteristic no longer signifies an exceptional sustainability initiative, as it has since become a mandatory requirement under the Danish building regulations. Consequently, the discussion of qualities involves a continuous process of qualification and requalification (Callon et al., 2002). The fulfillment of energy class 2015 standards was temporarily stabilized as a distinctive quality at the time of reference but has since become part of standard practices, thereby losing its former distinctiveness. I argue that by understanding the client's criteria as a value framework against the reproduction of these values in the bidder's value framework, it is possible to trace how sustainability values are co-created. The client's value framework does not necessarily present the 'values' explicitly; instead, based on selected 'clues', the bidder must construct their own interpretation of which values should contribute to a (temporary) qualification.

For the two value packages, it is possible to trace the client's value framework in the form of award criteria and how these are reproduced both in the form of the tender team's proposals and in the client's evaluation situations. The study by Hamann and Velarde (2023) refers to this situation of evaluation, where candidates both submit themselves to and simultaneously are subjected to, a multiplicity of value frameworks. For example, in the context of professional hiring, the value framework becomes more defined as the selection process advances by addressing values such as research experience, teaching, as well as administrative skills (ibid, p.82). Thus, throughout the processes of evaluation, evaluators with different interests mobilize a diverse set of criteria and principles in identifying their 'ideal candidate' (ibid, p.59). In comparison, clients' evaluations both reproduce their own value framework derived from the award criteria and incorporate bidders' proposals in determining the criteria for selecting the 'ideal project team' to manage the realization of the building project. Table 16 below shows selected examples from the client's award criteria to the proposal team's suggestions, and again to the client's evaluation to understand the reproduction of these values (drawing on Hamann & Velarde, 2023).

Table 16: A multiplicity of value frameworks (examples of excerpts from the tenders of the Patchwork and the Reliance)

An excerpt of the collective value framework for 'The Patchwork'		
Client's award criteria	Tender team proposal	Client's evaluation
Architecture and function (30%): *To what extent the theme of sustainability (physical, social, and mental) is clearly and prominently integrated throughout the entire project, including how it both inspires and challenges various user groups, for example, through visibility and demonstrative effects in waste management.*	Examples: *"The project's architectural main concept is 'sustainable architecture', […] in the physical expression and volume design of the building".* *"The architectural design emphasizes visible sustainability, passive measures, and social sustainability. Particularly, CO_2 savings through upcycling have been a motivating design driver for the project".*	*"The overall appearance of the building clearly signals its high sustainable ambitions, which, however, in terms of expression and scale, somewhat overshoot the mark in relation to cost, architectural expression, and the desire for a rational and operationally reliable school building".*
An excerpt of the collective value framework for 'The Reliance'		
Client's award criteria	Tender team proposal	Client's evaluation

Process, optimization, and sustainability (30%): *Description of the bidder's approach to sustainability, outlining:* *- The process for handling sustainability at the project and portfolio levels to promote sustainable construction as an integral part of the construction project.* *- The internal collaboration within the tender team concerning sustainability.*	Examples: *"Sustainability is an integrated part of all project processes in 'the Reliance' and is anchored in all levels, methods, and tools".* The tender team visually presented 'the project model' for sustainability (Table 14) divided into '*agreement phases*', '*deliveries*', '*sustainability',* and '*DGNB-certification*' with the planning of workshops in which 'special effort with sustainability focus' is highlighted, e.g., in connection with 'milestone planning', 'risk management', 'optimization', and 'commissioning'.	*"The bidder demonstrates a high level of understanding of sustainability by incorporating a joint sustainability screening at the project initiation, describing an inclusive sustainability workshop led by the sustainability manager, involving all partners, and focusing on the pre-certification of projects. The proposed process ensures a clear focus on important priorities at the start and the joint involvement of site managers and contractors in all phases, which contributes to ensuring sustainability from design to execution".* Grade: 10 out of 10 (best possible fulfillment of the criterion)

The two client evaluations from my analysis elucidate how the reproduction of sustainability values either aligns with or fails to meet the client's desires and needs, exemplified by 'The Reliance' and 'The Patchwork'. To delve deeper into these dynamics, I employ the concept of 'singularization' as discussed by Callon and Muniesa (2005) and Callon et al. (2002). I thus argue that the client's evaluation of the value packages helps determine whether bidders can define properties of the presented solutions/proposals shaped in such a way that they can enter into the client's world. This 'singularization' of the solutions must take place before the transfer can occur. It also involves these solutions being sufficiently adjusted to the customer's world, if necessary, by transforming that world (Callon & Muniesa, 2005). In the 'The Patchwork' scenario, the criteria set by the client underscore the need for architectural sustainability to not only be visible but also to inspire and challenge user groups through demonstrated waste management effects. This requirement poses interpretive challenges for bidders, as the terms 'inspiration', 'challenge', and 'visibility' of waste management practices are subject to varied interpretations. Nonetheless, these values are reproduced by E&P's tender team in their project proposal, which utilizes diverse materials in their architectural design of the school characterized by upcycled facade elements. However, this proposal appears misaligned with the client's

priorities, which emphasize factors such as cost efficiency and operational reliability - values not explicitly outlined in the client's award criteria, thus remaining obscured from E&P's tender team for incorporation into their solution. This example illustrates that both 'cost efficiency' and 'operational reliability' are values prioritized by the organization and integrated into its value framework, but they were not reflected in the award criteria. Callon et al. (2002) describe how the difference that enables a product to capture the consumer is dependent on the relation between the consumer's former attachments and the new ones proposed. Consequently, the tender team's solution may also be too divergent from the solutions the client is accustomed to working with, and thus the facade solution cannot lead to its attachment. This attachment is also linked to the client's world through a network of sociotechnical relations (Callon & Muniesa, 2005). These relations may involve issues related to the client's routine operational practices, and a preference for solutions with a verified track record in the construction industry. Moreover, the client ('Municipality') is likely constrained by an economically and politically dictated framework that imposes strict adherence to budgetary limitations.

In the case of 'The Reliance', the client emphasizes that sustainability must be an integrated part of the construction project, and the sustainability description should account for the internal collaboration on sustainability. E&P's tender team translates and reproduces these values into a project model for sustainability efforts, with a particular focus on sustainability workshops and planning for DGNB certification. In the client's evaluation, this proposal manages to fit into the client's world, where a singularization occurs through the configuration of sustainability practices, such as DGNB certification, in all phases of the projects from initial screening to project execution. The client highlights the distinct values of focusing on the pre-certification of projects and involving contractors and site managers throughout all phases. Unfortunately, without access to the tender submissions of competing bidders, it is unclear whether this proposal markedly differs. In the study by Esposito and Stark (2019), it is pointed out that ratings and rankings facilitate action but are also surrounded by uncertainties in establishing a common reference point. Similarly, Kreiner (2012) highlights how evaluations in architectural competitions are neither objective nor unequivocal, and therefore cannot be established in advance. During the course of the evaluations, a project is awarded as the winner and this project becomes the reference point for clarifying the winning criteria (Kreiner, 2012). In the same way, the evaluation of E&P's tender submission of 'The Reliance' may be subject to qualitative criteria, which only take shape in their comparison against competitors' tender submissions. The client's evaluation of the other bidders' proposals was described as lacking concretely described processes for implementing sustainability initiatives. However, the specific reasons that contributed to the higher evaluation of E&P's proposal remain ambiguous.

Callon et al. (2002) emphasize the significance of clients' previous attachments. Thus, this may foster a familiarity for the client in essentially understanding and relating more to the described work processes outlined in E&P's submission due to their prior history.

Other studies that provide insight into client criteria and evaluation in the procurement of construction projects include Koskinen & Mäkinen (2009) and Gottschling (2018). The first study (Koskinen & Mäkinen, 2009) examines how contract negotiations lead to modifications in the project contracts across three different cases. The outcomes of these cases vary significantly relative to the client's expectations, ranging from minor changes ('case 1') to no changes ('case 2') to substantial major changes ('case 3'). In case 3, this resulted in the failure to reach a shared understanding of what was necessary for the project to deliver (Koskinen & Mäkinen, 2009). Similarly, the outcomes in my two cases involving value packages were also quite different. For 'The Patchwork,' the client's criteria were challenging for the bidder, E&P's tender team, to discern and interpret. This was also evident in case 3 from Koskinen & Mäkinen's (2009) study, where the project description included only a brief outline of the required delivery, leading the project contract to essentially represent a guess at the client's actual needs (ibid, p.37). In Gottschling's (2018) study, an example is provided of an architectural competition for the renovation of a school, where the winner was selected based on repetition and re-narrations of the selection procedure. Similar to the findings in my thesis, Gottschling (2018) concludes that the selection procedure plays an active role in co-creating building projects by shaping design choices and playing a crucial role in the final decisions.

In conclusion, I argue that by examining the values within the three value frameworks - namely, the client's criteria, the bidder's proposal, and the client's evaluation - it is possible to achieve a deeper understanding of how sustainability values are co-constructed throughout the tendering process. These value frameworks are interdependent and mirror one another. Consequently, these frameworks represent a significant social negotiation in which distinctive characteristics are highlighted or downplayed to get the client to attach to the individual bidder's project proposal.

7.3. IMPLICATIONS OF E&P'S TENDERING PROCESSES

The third section focuses on addressing the third research question: "*Which organizational challenges and considerations do environmental sustainability requirements present for employees involved in the tendering processes of a building contractor?".* This section will explore in greater detail how sustainability mandates and the increasing competition on qualitative criteria in tendering influence E&P's structuring of these processes. Additionally, the discussion considers how these

emerging competitive criteria in tendering influence strategic decisions regarding investments in sustainability resources, the pursuit of market segments, and the potential for resulting conflicting interests.

The introduction and third sub-analysis highlight the shift in tender practices from a strictly calculative discipline to also emphasizing competition on qualitative criteria, focusing on the criterion of 'best ratio between price and quality'. This shift has significant implications for how bid pricing and qualitative criteria are integrated. It also affects how E&P must adapt its organization to compete on selected qualities using 'references' and 'value packages'. The merger of the tender communication team with the Department of Clients, Markets, and Business Development (CMB) aims to improve the marketing of E&P's services by consolidating resources. Drawing on Callon's (2007) concept of sociotechnical agencements, the practice of responding to qualitative criteria involves components necessary for its functioning. I argue that tender communication is guided by clients' award criteria, which shape how tender responses are crafted to capture client attention. The configuration of human and non-human actors in the tender communication team influences their ability to incorporate sustainability into the tender submissions. The tender communication team's placement within the CMB department forms a network of social and technical entities that contribute to creating and delivering tender responses. This network includes sustainability staff, PQ coordinators, PR communication staff, market analysts, and strategic business developers, alongside the tools they use (e.g., databases, PQ statistics, strategic market forecasts, social media, etc.). The employees in this department focus on understanding clients' behaviors and interests in building project investments. This includes identifying client engagement with the sustainability agenda, strategizing client communication through social media, determining relevant projects for prequalification, and capturing client interest through dialogue and business objectives.

The interactions within the CMB department are crucial for assessing whether the tender communication team's placement supports the co-creation process of value packages and references. Consequently, the production of necessary knowledge targeted at specific client segments may rely on, for instance, the head of sustainability's insights from a recent sustainability conference or a new cooperative agreement with a supplier. Additionally, the work could be influenced by the PQ coordinator's latest input on a prequalification application that featured similar sustainability criteria, or the business developer's efforts to identify upcoming sustainability trends. Whether these arrangements manage to improve the work efforts of responding to qualitative criteria depends on the actualization process (Callon, 2007). Thus, if these abstract proposals transform into real-world outcomes of winning contracts during the tendering processes.

However, an actualization process is a long sequence of trial and error, reconfigurations, and reformulations (Callon, 2007). Therefore, once the tenders have been submitted, feedback from clients or evaluators may necessitate adjustments. This can lead to new framings, for instance, by reorganizing sociotechnical agencements - such as integrating tender communication with tender calculation within the same department as previously - because such an arrangement may produce more coherence between the bid pricing and tender descriptions for the tender submissions. The tender communication team is therefore repositioned closer to the client knowledge within the CMB department, yet this shift introduces a new challenge. The separation between tender calculation and tender communication creates a disconnect, not only between these two functions but also with the production teams ('New build and renovation', Figure 12). Callon and Muniesa (2005) underscore how a calculation process is not 'pure' but is also informed by intuition or judgment. Thus, it is between these arrangements that enable calculation either quantitative or qualitative (ibid, p.1232). I argue that qualitative judgments, particularly regarding proposed sustainability initiatives in the context of bid pricing calculations, are necessary components that must be considered within the calculative space. This includes, for instance, estimating the time required for these initiatives in terms of labor costs and material procurement, as well as accounting for potential savings, such as reductions in site electricity usage and water consumption, etc. Furthermore, this disconnect can lead to a misalignment between the long-term sustainability objectives of the CMB department and the more short-term needs among E&P's production teams. Consequently, tender communication may overpromise relative to what the production teams can deliver, which can lead to conflicts over time. Thus, the qualculative practices are further challenged, as the lack of insights from completed and ongoing projects from the production teams can weaken the qualitative arguments concerning the practical feasibility of promised sustainability initiatives. Additionally, the lack of inputs from the tender calculation employees can decrease the transparency concerning the time demands of these initiatives, such as the allocation of employee resources, while also obscuring the associated costs and potential savings as part of the value packages. To return to Callon's (2007) concept of sociotechnical agencement, it can be argued that the tender communication team may be lacking essential components, such as knowledge from tender calculation employees and the production teams, within their current configuration. This deficiency could hinder the optimal functioning required for convincingly responding to qualitative criteria, where the tender communication team currently relies more heavily on knowledge derived from 'marketing competencies'.

Cochoy (1998) underscores how the history of marketing is characterized by a gradual separation between marketing knowledge and market practices. In comparison, I argue that the internal dissemination of knowledge concerning

sustainability initiatives for tender submissions at E&P encounters challenges and is often viewed as a marketing activity focused on promoting 'qualitative values' to clients. This issue is also highlighted in the study by Key et al. (2020) where marketing is described as not addressing issues that are conceptually relevant to the firm's financial success. Instead, marketing's contributions are more closely associated with intangible assets such as brand equity, customer loyalty, and distributor relationships (ibid, p.164). Tender communication staff are often tasked with articulating qualitative criteria in writing, despite their typically limited expertise in areas such as building practices or organizational structures, due to their professional background in communication. This necessitates heavy reliance on knowledge from other experts - such as the head of sustainability, project leaders, and site managers - while working under tight tender submission deadlines. As a result, sustainability proposals risk becoming abstract and out of touch with reality, as the practical insights and expertise needed are not adequately conveyed to the tender communication team. Similarly, Cochoy (1998) highlights the challenge of marketers not only producing words and concepts but also making sure that their concepts and words are adopted and adapted in business practices. The integration of 'practical insights' with responses to qualitative criteria is further complicated at E&P by the challenge of acquiring the necessary skills for tender communication. Thus, it is challenging to find personnel who possess expertise in both sustainability and construction, while also having strong communication skills. E&P's organization may opt to enhance the competencies of existing employees, such as assigning project-experienced staff to proposal writing, or they may recruit individuals strong in either practical knowledge or communication skills. For tenders with a large contract sum, such as 'The Reliance' value package, E&P hired an external communication consultant to manage the tender process. This approach underscores the substantial resource demands required for securing strategic partnerships, which the organization struggles to meet with its current structure. I am not necessarily advocating for the reintegration of tender communication and tender calculation into the same department as before. However, it is notable that they have been designated distinct functions within E&P's organization. Given that E&P's tender practices have historically focused on competing through lowest bid pricing, the growing recognition of tender communication's importance may necessitate allocating additional resources to this support function. However, this also poses a challenge for a contractor company, where financial means typically derive from construction projects with low profit margins (also highlighted in the study by e.g., Rajala et al., 2019). Similarly, the head of sustainability faces the challenge of securing financing to invest in sustainability activities and capabilities, which often depends on external funding sources. Nonetheless, the communication of sustainability services in tenders has assumed markedly greater relevance at E&P. This tendency is further

intensified by the increasing demands for documentation and transparency regarding the presented solutions on which E&P competes.

Furthermore, I argue that the CMB department represents the core of disciplines that must carry out practices aimed at enhancing E&P's competitiveness. Callon et al. (2002) define competition between companies as occurring around the tension of attachment and detachment. Thus, the main driving force is attaching consumers by detaching them from the networks built by rivals (ibid, p.205). However, this does not imply that tender calculation, production teams, and other employees within E&P's organization are not contributing to the creation of 'attachments', where their work also contributes to this collective effort. This perspective is also aligned with the organization's own interpretation, as expressed in E&P's slogan: "*We are all salespeople*". Nevertheless, I argue that the employees in the CMB department have a distinctive role in understanding and interpreting client interests as an integral part of their responsibilities. Callon et al., (2002) state that attached consumers are characterized by being caught up in routines. I would liken these 'attached consumers' to E&P's client segment, who may be reluctant to adopt ambitious sustainability requirements because such demands diverge significantly from their customary practices. Nevertheless, there are clients who actively engage in a requalification process (drawing on Callon et al., 2002) by reconsidering the requirements they impose with each new construction project. In E&P's efforts to destabilize clients and prompt them to reassess the value of sustainability solutions, it is crucial that these solutions are aligned with E&P's interests. This implies that sustainability investments, such as DGNB certification training for E&P's employees, should differentiate E&P's proposals from those of its competitors. However, this strategy presents challenges, as the justification for these investments may be questioned if not all of E&P's clients participate in a requalification of sustainability services. My analysis therefore identifies a division within E&P's client base: between those adhering to business-as-usual practices (the 'traditional market') and those clients increasingly seeking sustainability practices, particularly within alternative contract forms (such as 'strategic partnerships/IPD projects').

We also observe that E&P's ability to influence project objectives is considered to be most significant in alternative contract forms with early involvement and that these types of projects are attributed characteristics that align with the sustainability agenda (also highlighted by scholars e.g., Larsson et al., 2022; Akintoye & Main, 2007). Investments in sustainability resources, therefore, have the potential to differentiate E&P's marketing and strategic positioning by fostering stronger attachments with specific client segments. However, these investments may also be perceived as a financial burden by those employees at E&P who operate within a different reality than the CMB department. For instance, in the traditional market context, where sustainability resources are not

widely regarded as a critical competitive factor in tenders, such resources may be viewed as an unnecessary cost rather than a strategic benefit. In this scenario, the reliability and profitability of individual projects may be undermined by the financial 'costs' associated with sustainability resources. For the CMB department and the employees within E&P who engage in partnerships or IPD projects, investment in sustainability resources is considered a central part of the future market, and thus, these competencies are qualified as critical for creating value and differentiating E&P. This divergence in the qualification and requalification of sustainability (drawing on Callon et al., 2002) can lead to internal tensions regarding the justification of such investments. As long as there exist different realities among E&P's clients when it comes to evaluating the 'quality' of sustainability initiatives, E&P's organization will remain in the challenging position of marketing services designed to capture the attachments of clients across various market segments. Furthermore, as Callon et al. (2002) note, all attachments are inherently unstable, meaning that these connections can either weaken or strengthen depending on the actions taken by E&P's organization. The decision to invest or refrain from investing in sustainability resources may thus be necessary to maintain certain client attachments, but it may also pose negative consequences for others.

7.4. CONTRIBUTIONS

In my thesis, I have placed particular emphasis on integrating theory from valuation studies and the foundational principles of an actor-network theoretical perspective. This theoretical framework has equipped me with a vocabulary for examining the social processes involved in prioritization, weighting, and the creation of value within tender practices. From an actor-network theory perspective, I argue that 'theory-borrowing' from this field is particularly suitable for my empirical context, as tender practices involve numerous 'non-human' entities (e.g., tender documents, calculation tools, standards, and regulations) that play a significant role in the unfolding activities. While most valuation studies primarily address the centrality of economic aspects in the valuation practices they examine (Helgesson & Muniesa, 2013), I argue that the theoretical concepts within this field are applicable to my empirical context. Fellows and Liu (2020) underscore the importance of understanding the historical roots of the theory being borrowed. The research field of valuation involves many different disciplines derived from contributions entailing sociologists, economists, marketers, STS researchers, anthropologists, philosophers, and semioticians (Kjellberg & Mallard, 2013). For my thesis, I argue that studying the processes of value is relevant in terms of how clients and tender employees in E&P work towards framing the values of sustainability initiatives. This further presents an opportunity to examine how the value of these solutions takes place in the context of market transactions within tendering (Callon & Muniesa, 2005; Callon

et al., 2002, Callon, 2007). In this way, this thesis benefits from drawing on an interdisciplinary research discipline, which offers a pragmatic approach to understanding these social processes.

In the following two subsections, I discuss how my study, theoretically informed by valuation, contributes to empirical research in the areas of construction tendering, sustainable building, and environmental decision-making. Additionally, I examine the practical implications of this thesis, with a particular focus on contractor companies, while also addressing other relevant actors within the construction industry engaged in tender practices.

7.4.1. RESEARCH CONTRIBUTIONS

My thesis contributes to the interdisciplinary field of construction management research (CMR). However, I argue that there are three specific empirical contexts within the field of CMR where my research offers relevant analytical insights, which are further addressed below.

Construction tendering

My analytical findings highlight the critical importance for clients of benchmarking sustainability to recognized industry standards during procurement. In this context, the DGNB-DK scheme assumed a particularly important role. This study, therefore, contributes to highlighting how clients and contractors strive to make sustainability both tangible and actionable in the tendering process. I argue that further research is needed to deepen our understanding of how construction stakeholders prioritize investments, particularly in sustainability initiatives, during procurement.

This study also contributes to the understanding of the tendering process and client requirements as actively constructed through the continuous interactions between clients, contractors, and the documents exchanged between them. Thus, the categorization and weighting, which contribute to the framing of sustainability within tendering processes, are not neutral activities; rather, value frameworks actively shape the potential for addressing sustainability initiatives in construction projects. Thus, I argue for a greater emphasis on the importance of value frameworks and their critical role in comprehending construction tendering. To fully grasp tender practices, researchers must examine the diverse activities that contribute to the co-construction of procurement and tender submissions. This involves studying the roles of employees who address both qualitative and quantitative aspects, and those engaged in strategic decision-making. Furthermore, attention should be paid to the prequalification process, particularly the filtering of potential projects for bidding, such as the work performed by the PQ coordinator. I also argue that there is a critical need to

focus on the creation and influence of nonhuman actors, or 'devices,' such as tender documents in the context of construction tendering. Thus, these devices are not only essential to the co-creation of procurement and tendering processes but also occupy a central position in the social negotiation of the content within tendering activities. Moreover, rather than viewing contractors as a unified, self-contained entity - an ‘organization’ with defined boundaries and goals - it may be more insightful to consider contractors as networks of relationships. Within these networks, strategic decisions create alliances that can either strengthen or weaken the contractor's market position in relation to tender opportunities. Recognizing the efforts involved in building relationships through networks, educational ties, prior work experiences, and similar factors can help illuminate the power dynamics in which contractors are involved and to which they contribute.

Sustainable building

My thesis contributes to research focusing on ‘sustainable building’, particularly by highlighting how clients' emphasis on short-term costs and investment returns (e.g., through DGNB certifications) during procurement can hinder the progress of sustainable initiatives. This is particularly the case when sustainability is treated as a separate entity or an additional feature in the procurement process, rather than being integrated into all aspects of the project as a fundamental quality measure. Moreover, construction actors are increasingly investing in sustainability education and training, which is a necessary development for the industry's transition towards more sustainable practices. However, the delegation of authority to specific frameworks or methodologies for addressing sustainability may lead to a concentrated focus on particular approaches. Consequently, the challenge lies in ensuring that sustainability efforts are not isolated activities that take place separately from the other work tasks involved in building projects. My findings further underscore the significance of established relationships between industry partners, as they provide a common basis for the exploration of sustainable solutions. However, these relationships are also fragile, as they require significant effort to maintain and sustain over time.

Furthermore, a common misconception about sustainable buildings is that clients should simply impose stricter sustainability requirements. However, this study reveals that this is not necessarily the case. Sustainability requirements are co-created through relationships between clients and their various partners, as well as within the broader industry and society. The value frameworks that clients use to specify their requirements are shaped through interactions with other clients, industry partners, and societal expectations. Additionally, the specific demands of a project are co-developed between the client and the tender teams bidding on the project. Therefore, gaining a more nuanced understanding of

these relationships is essential to exploring how more sustainable buildings can be achieved.

Environmental decision-making

In the context of construction actors' environmental decision-making, my findings emphasize that being recognized as an environmentally friendly client is largely contingent upon what is considered socially acceptable within the industry. Clients seek to articulate their sustainable actions in ways that are perceived as legitimate by their business partners. Moreover, the DGNB-DK scheme is notably featured in this study. However, there seems to be a consensus that the DGNB-DK scheme is currently regarded as the 'best possible tangible approach' to sustainability, at least until a better alternative comes up. This underscores the need for continued efforts to refine guidelines and frameworks that will aid clients and contractors in effectively addressing sustainability during tendering processes. Our future actions are contingent upon our previous endeavors: An established infrastructure provides the foundational framework necessary for advancing environmental sustainability. Immediate and radical changes are impractical; rather, progress must be incremental and deliberate, incorporating increasingly sustainable solutions over time. Furthermore, contractors are mandated to use references no older than five years, which limits their ability to bid on projects unless they possess relevant experience. Consequently, if clients abruptly adopt new sustainability solutions or approaches, contractors may encounter difficulties in demonstrating their expertise in these novel practices. Moreover, certain sustainable solutions and decisions have increasingly become routine aspects of construction projects, and thus, often being taken for granted and fading into the background. Examples include energy-efficient buildings and installations that have become established standards e.g., in the Danish Building Regulations. Meanwhile, emerging topics are receiving greater focus and scrutiny. These emerging areas, among others, include voluntary sustainability certification schemes, Life Cycle Assessment (LCA) practices, biodiversity measures, and the circularity of materials. Thus, my study also highlights how environmental decision-making can be viewed as tendencies or initiatives that take center stage until they become normalized or stabilized, at which point attention shifts to other issues.

7.4.2. PRACTICAL IMPLICATIONS

This study also provides insights for practitioners in the construction industry. For contractor companies, it highlights the challenges associated with managing increasingly complex demands and tender criteria. In this regard, I emphasize the critical importance of allocating sufficient resources and establishing a robust organizational setup for communication flows and coordination throughout the tender communication process in responding to qualitative criteria. This entails

ensuring adequate time allocation and collaboration with necessary internal personnel, such as inputs from the tender calculation employees, employees from the production teams (e.g., site managers or project leaders), and sustainability employees. Thus, the division of labor plays a crucial role in the work of producing convincing arguments, particularly within the preparation of value packages. I argue that tender communication should not be relegated to a secondary role when preparing tender submissions. If responses to these 'complex' selection and award criteria (e.g., sustainability criteria) are inadequate, contractor companies will be disadvantaged in their ability to compete. This is particularly significant given the increasing prevalence of procurements based on the criterion 'best ratio between price and quality' among clients. Consequently, other capabilities, such as writing expertise and more in-depth knowledge of sustainability topics, assume a more prominent role in this emerging dominant approach to competing for construction projects. Future practices will also necessitate greater transparency and documentation, especially concerning sustainability practices and measures. Therefore, construction companies, both clients and contractors, must be cautious about describing sustainability requirements and solutions by ensuring these are anchored in practical considerations and experiences rather than being reduced to mere strategic or visionary intentions. This is, of course, easier said than done, as the sustainability agenda is still evolving in terms of how these services and initiatives should be procured and marketed.

This study further underscores the challenges associated with procuring sustainability services when clients' decision-making processes are predominantly shaped by short-term needs and inflexible financial structures. This issue is also apparent in the construction projects involving E&P, where strategic partnerships and integrated project delivery (IPD) projects have been particularly emphasized by employees as offering more beneficial conditions for addressing sustainability matters. This contrasts with the more conventional project-based approach, where one-off contracts, typically in the form of design-bid-build, are often tendered. My study also contributes by critically examining the ways in which construction practitioners attempt to incorporate sustainability into economic frameworks as a form of 'add-on' or supplementary element within projects. This critique extends to the practice of categorizing sustainability initiatives within specific instrumental approaches. Thus, I question whether it is possible to move towards a scenario where both clients and contractors adopt a perspective in which sustainability is not merely 'weighed' within isolated systems or separately economized. Instead, sustainability matters should become a more integrated component of decision-making processes and economic structures within construction projects.

CHAPTER 8. CONCLUSION

The purpose of this study was to understand why qualculative practices in tendering, especially those related to environmental sustainability requirements, are so challenging to manage in practice from a contractor's perspective. This overall objective of gaining deeper insight into these challenges was pursued by studying:

"How does the shift towards qualculative practices involving environmental sustainability requirements challenge and influence the tender processes of a building contractor company?"

The background for this study was an industrial PhD research collaboration with the Danish contractor company Enemærke & Petersen (E&P), which has experienced a significant increase in demand for sustainability services and solutions in connection with their tendering work. Through the contractor company's tender history, we gain insight into how employees must navigate a transformed market where the competition during tender submissions is increasingly evaluated on a combination of bid price and qualitative assessment criteria to secure contracts. This situation necessitates a greater understanding of the integration of both qualitative and quantitative deliverables, termed 'qualculative' practices, that the contractor company must now adopt to market its services. This study employed the theoretical lens of valuation from an actor-network theoretical (ANT) perspective and data has been collected through a research methodology based on a qualitative and ethnographic approach. I argue that this theoretical framework allowed for a more nuanced understanding of the social processes involved in creating and assessing value, particularly in the context of sustainability solutions. To study my research objective, I focused on guiding my investigations with the following three research questions:

1. *What characterizes the market for environmental sustainability in tendering and the different ways that building clients frame sustainability requirements during procurement?*
2. *How are environmental sustainability requirements co-created in the tender documents (also referred to as 'devices') of a building contractor?*
3. *Which organizational challenges and considerations do environmental sustainability requirements present for employees involved in the tendering processes of a building contractor?*

The subsections below address each of the three research questions, and the final subsection will summarize these insights and respond to my overall research objective.

The market for sustainability

To address my first research question, I draw upon the main conclusions from the first sub-analysis and the first section of the discussion chapter. In my analysis, I identify three primary tendencies: economization, instrumentalization, and specialization, which constitute the framing of sustainability requirements by 13 clients in their procurement processes. The economization of sustainability procurement by clients was characterized by different framings. My findings show that sustainability initiatives are often assessed through an economic lens, where the trade-off between incurred costs and potential financial returns is critically assessed. In this context, the procurement of sustainability services becomes part of a calculation discipline (Callon & Muniesa, 2005) when budget decisions are considered. For some clients, the challenge emerges at the initial stage of calculation, where the entities to be considered in the overall 'project budget' must be detached. Consequently, when sustainability initiatives are perceived as an 'additional' cost or an add-on service, it often leads to difficulties in securing and justifying funding to organizational management or investors. As a result, it remains uncertain whether these initiatives are even accounted for as 'entities' within the project budget from the outset. From this client perspective, sustainability services become part of potential 'trade-off' situations, where economic objectives must be compromised to accommodate sustainability investments. For other clients, it is noted that investments in, for example, DGNB-gold certification and achieving a low LCA reference within their framing help maximize economic returns as part of their calculative space, e.g., through forecasting and comparison methods (Callon & Muniesa, 2005). This is particularly relevant for clients operating in the economic world, such as developers and pension funds, where sustainability procurement in construction projects also involves distinguishing themselves and capitalizing on the returns from their investments. While this is not inherently problematic, it can lead to a prioritization of achieving symbolic environmental measures rather than focusing on other, potentially more suitable and transparent considerations for sustainability improvements.

The second tendency indicates that clients attempt to instrumentalize sustainability initiatives in their framing through the use of frameworks and tools. My findings show that the DGNB-DK scheme, in particular, plays a significant role in making the complexity of sustainability more tangible, measurable, and comparable. The use of the DGNB scheme also leads to my third tendency of specialization, where clients train as DGNB consultants, for example, to acquire specialized knowledge about using this scheme, help manage their projects, and

mitigate economic costs. However, this specialization through DGNB training also contributes to client organizations becoming representatives and spokespersons of the scheme, as this knowledge is reproduced through their range of activities. My findings thus suggest that the DGNB scheme has particularly succeeded in 'singularizing' itself within the Danish construction industry by becoming integrated into the organizational practices of a substantial proportion of both private and public clients (drawing on Callon & Muniesa, 2005; Callon et al., 2002). Thus, the DGNB scheme has managed to provide the necessary guidance required to translate clients' sustainability efforts into actionable practices through its singularization. These actions are further supported by standardized documentation, calculation methods (e.g., LCA calculations), and third-party verification of compliance. If clients choose to pursue sustainability measures (e.g., using recycled materials) outside of certification systems, they may risk lacking the guidance, verification, and documentation needed to support their efforts in achieving these measures. This also highlights how the DGNB scheme helps mitigate clients' uncertainties about how they should and must engage with the sustainability agenda. However, this same uncertainty and 'license to operate' fosters reliance on familiar and recognizable market solutions. Consequently, this reliance may pose challenges in conceptualizing sustainability initiatives beyond this established framework within the Danish construction industry.

Co-creation of environmental sustainability requirements

To address the second research question, I will begin by elucidating the role of tender documents, specifically 'references' and 'value packages', as devices. These devices play a critical role in structuring market transactions within the tendering process, where they prescribe certain actions and decisions that shape the behavior of both clients and bidders. References, therefore, are not merely records of past project performance; they actively contribute to shaping decision-making during the prequalification phase. Consequently, to effectively compete for sustainable projects, E&P's tender staff strategically select PQ projects that possess the desired 'properties' to function as future references. In this context, references with sustainability properties are essential for E&P to sustain and enhance their positioning in the sustainability market. This means that the references must be intentionally constructed to target their intended clients and strengthen competitive advantages. Moreover, a reference endowed with distinctive and less common properties can be particularly valuable. This is because the very same reference, within the five-year timeframe, can undergo repeated 'bends and turns' to exert influence in new market transactions. The device of value packages is directly involved in the social negotiations that determine whether E&P is awarded the project contract or not. In the context of competing for sustainable projects, this necessitates that proposals within value packages must be made valuable - or 'singularized' - by E&P's tender teams,

so they can enter into the clients' world and become attached to it (Callon & Muniesa, 2005). My findings illustrate how E&P's employees strive to create this value by ensuring that the proposed sustainability solutions demonstrate flexibility in meeting the client's specific terms and requests (e.g., award criteria). This flexibility is sought achieved through the proposal of both project-specific and generic sustainability options, and by tailoring these solutions to maximize the value of sustainability initiatives within the client's budget constraints. Additionally, the creation of value is pursued by aligning E&P's sustainability concepts or the client's particular requirements with the DGNB framework. The purpose of placing solutions in the setting of the DGNB scheme is to increase the client's perceived value of the proposals, as this framework is widely recognized and utilized by the majority of E&P's clients. These efforts exemplify how E&P's employees aim to present solutions that become intertwined with the sociotechnical networks constituting the client's environment (Callon & Muniesa, 2005). This is done, for example, by aligning with the financial structures funding sustainability solutions or conforming to existing attachments to specific sustainability certification schemes.

To understand how environmental sustainability requirements are co-created in tender documents, I argue that both the client's assessment criteria and the bidder's submissions function as value frameworks. The client's criteria outline expectations and task priorities, though underlying values may not always be explicit. Bidders respond by creating their own value frameworks through references and value packages, reflecting the client's values while also incorporating their own. For the four references, each is accompanied by a checklist that guides the client in evaluating the fulfillment of specific requirements. These checklists represent characteristics where the values attributed by the tender team to each characteristic are emphasized for a particular client and market segment, tailored to the specific context of seeking prequalification, and influenced by individual preferences. For instance, certification schemes such as the DGNB system and the Nordic Swan ecolabel are endowed with particular attributes, such as appropriate material selection, and E&P's expertise in these areas grants access to specialized competencies. However, qualities undergo an ongoing process of qualification and requalification (Callon et al., 2002). This is exemplified by the characteristic of 'meeting the energy class 2015 standards', which has shifted from representing a distinguished sustainability initiative to becoming a mandatory requirement.

The evaluations of the two value packages produced different outcomes. In 'The Patchwork', the client prioritized architectural sustainability that was not only visible but also inspiring and challenging, particularly through demonstrated waste management practices. E&P's proposal reproduced these values by incorporating diverse materials and upcycled facade elements in the architectural

design of the school. However, this proposal did not align with the client's underlying priorities, such as cost efficiency and operational reliability -values that were crucial but not explicitly stated in the award criteria. This highlights how the client's main priorities, though integrated into their value framework, were not explicitly outlined in the client's award criteria, thus, leading to a misalignment in E&P's proposal. In 'The Reliance', the client stressed the importance of integrating sustainability throughout the construction project, with particular attention to internal collaboration on sustainability initiatives. E&P's tender team translated these values into a project model for sustainability efforts that involved sustainability workshops and planning for DGNB certification. In the client's evaluation, this proposal manages to fit into the client's operations by highlighting the distinct values of focusing on the pre-certification of projects and involving contractors and site managers throughout all phases. In conclusion, examining the values within the client's criteria, the bidder's proposal, and the client's evaluation offers insight into how sustainability values are co-constructed during the tendering process. These interdependent frameworks reflect social negotiations where specific characteristics are emphasized or downplayed to attach the client to the bidder's project proposal.

Organizational challenges and considerations

To address the third research question regarding the organizational challenges and considerations posed by environmental sustainability requirements for E&P employees, I will begin by examining the tender practices. The findings reveal that the tender communication team has been integrated into the Department of Clients, Markets, and Business Development (CMB) to enhance the marketing of E&P's services through resource consolidation. This integration brings the tender communication team closer to the areas of branding, business development, client relations (e.g., head of markets), prequalification, and sustainability (e.g., head of sustainability). However, the separation between tender calculation and tender communication may lead to a disconnect, not only between these functions but also with the production teams. This disconnect can lead to inconsistencies between the bid calculations and the qualitative judgments presented in the value packages, which collectively constitute the tender submissions. Moreover, qualculative practices may face additional challenges when insights from completed and ongoing projects are limited, which can compromise the practical feasibility of proposed sustainability initiatives. In this way, the tender communication employees rely heavily on knowledge from other internal employees such as the head of sustainability, project leaders, and site managers. However, if practical insights are not adequately conveyed to tender communication employees, sustainability proposals risk becoming abstract and disconnected from operational realities. This underscores the ongoing challenges that E&P's qualculative practices in tendering face in adapting to these new demands.

Another organizational challenge involves managing the diverse range of client interests that E&P's organization must navigate. The findings indicate a clear division within E&P's client base: between those adhering to traditional business-as-usual practices (the 'traditional market') and those clients increasingly demanding sustainability services and competencies. This trend is particularly prominent within the market segment involving alternative contract forms such as strategic partnerships or IPD projects. For the CMB department and other employees engaged in these partnerships or IPD projects, investment in sustainability resources is crucial for future market positioning. Thus, these competencies are qualified as essential for creating value and differentiating E&P's organization. However, in the traditional market, where sustainability resources are often not regarded as a decisive competitive factor in tenders, such investments may be viewed more as unnecessary costs rather than providing strategic advantages. This divergence in the qualification and requalification of sustainability (Callon et al., 2002) can lead to internal tensions regarding the justification of such investments. As long as differing perspectives on the 'value' of sustainability initiatives and evaluations of their associated qualities persist among E&P's clients, the organization will continue to face the challenging task of marketing services that resonate with clients across diverse market segments.

Answering the research objective of the study

To address the overarching research objective of this study, I draw on the insights from my three research questions. The shift towards qualculative practices involving environmental sustainability requirements challenges and influences E&P's tendering processes in several areas. This shift necessitates that E&P employees increasingly develop the capability to analyze the sustainability market, as this skill has become essential for effectively competing for and securing these types of projects. Clients' economization and instrumentalization of sustainability requirements in their procurement processes impact how E&P's tender staff must find ways to realize the value of sustainability initiatives within these framings. This requires an understanding of clients' economic priorities and engagement with their preferred sustainability solutions. For instance, this is illustrated through the DGNB scheme, where E&P employees undergo DGNB training and contribute to the enhancement of existing DGNB manuals. Qualculative practices are also challenged during tender responses. For example, in the preparation of value packages, E&P's employees must translate and reproduce the values reflected in the client's award criteria. Organizing internal competencies and coordination structures to achieve this goal is also challenging. Thus, communicating sustainability services in tenders is fundamentally interdisciplinary, as it demands a nuanced grasp of the sustainability market and emerging societal trends, along with the ability to translate these insights into actionable solutions that enable clients to envision their practical implementation. The pursuit of delivering value to clients through sustainability

solutions also influences E&P's strategic considerations regarding alternative contract forms. From the perspective of E&P's leaders, these contractual variants (i.e., forms of partnerships) enable close collaboration with clients deemed necessary for preserving the value of sustainability services e.g., through aligned expectations, early goal-setting, and financial budgeting.

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APPENDICES

Appendix A. E&P – Organizational Chart and Tender Statistics

Appendix A presents the organizational chart and more information from E&P's tender statistics concerning won tender projects per year (2016-2021) and tender projects divided on contract forms in 2016 and 2021. Furthermore, an analysis of 151 tenders from 2021 shows the percentage of tenders based on the lowest pricing, and the types of requested sustainability requirements.

Figure 13 shows the organizational chart of E&P divided into the main support functions ('Finance and IT', 'Project and business support', 'HR', and 'Clients, market and business development') and the business units divided into the geographic areas of Zealand, Funen, and Jutland that consist of operations within new build and renovation, strategic partnerships, and own production activities. Lastly, E&P's activities include its subsidiary companies and project development, which involve both E&P's own investments as a developer and building projects with early involvement, such as integrated project delivery.

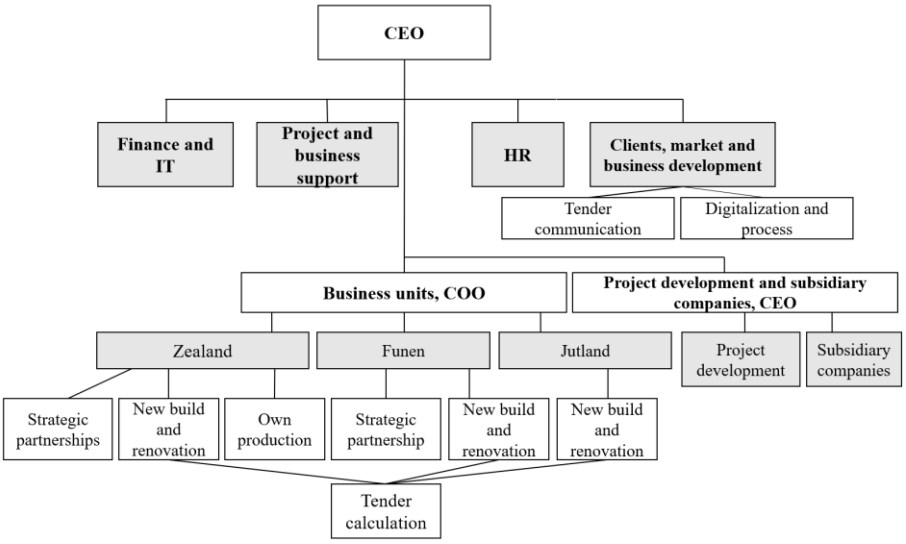

Figure 13: Organizational Chart of E&P as of 2024

Figure 14 presents tender projects won per year by E&P's business areas from 2016-2021 with the growth being particularly evident within partnerships and development projects. At the same time, it is observed that the business unit in West has experienced an increase in tender projects based on tender sum, while the traditional tender market in East has experienced a slight decline over time.

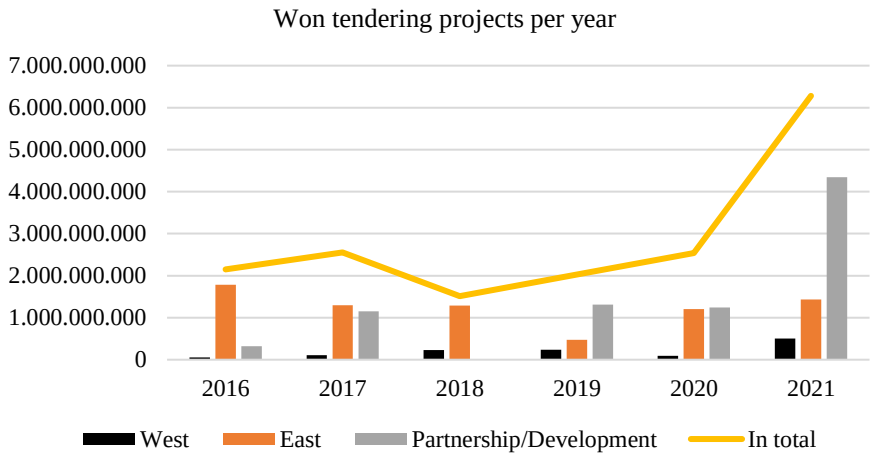

Figure 14. Tendering projects won per year by E&P business areas together with the tender sum in total

Figure 15 shows that most tender projects are within the contract form of 'main contract'. It is important to note that these statistics represent projects that must be put out to tender. Thus, Figure 15 does not represent the private sector, which is not obligated to follow the Danish Procurement Law. The graph also shows a significant increase in turnkey contracts from 2016 to 2021 and a decrease in prime contracts.

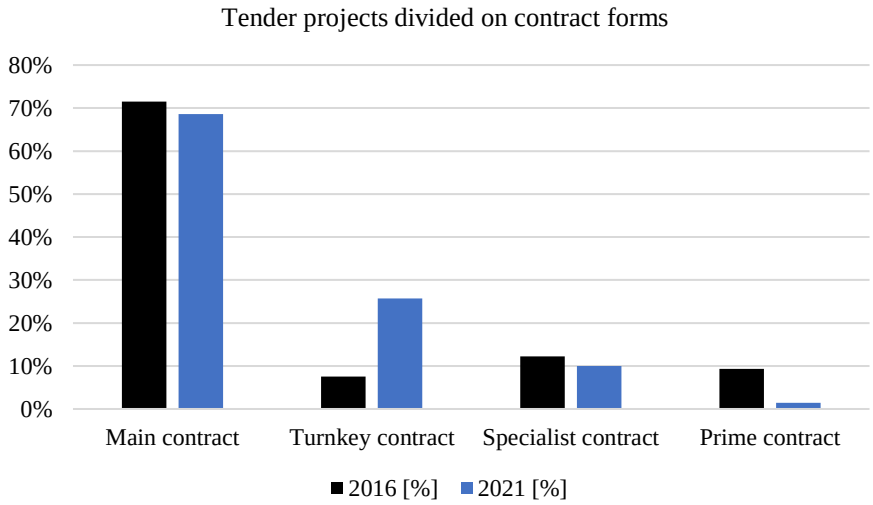

Figure 15: Tender projects divided on contract forms in E&P for 2016 and 2021. In Danish: Main contract = Hovedentreprise, Turnkey contract: Totalentreprise, Specialist contract: Fagentreprise, Prime contract: Storentreprise

Figure 16 shows the percentage of tenders in E&P determined by the lowest pricing in 2021. The business unit for the East shows that the majority of tenders (approx. 80%) include other criteria than the lowest pricing, thus, awarded in the procurement form 'best ratio between price and quality', whereas the business unit for the West shows that almost half of the tenders are determined solely on the bid price.

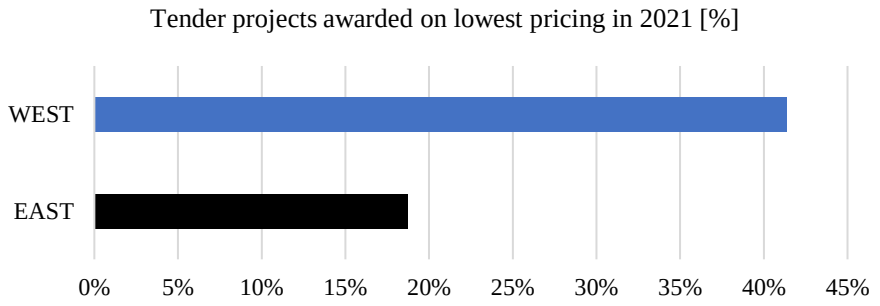

Figure 16: Tender projects in E&P awarded on lowest pricing in 2021-mid 2022 based upon 151 projects

From the analysis of 151 tender projects in 2021 to mid-2022 (primarily from the public market as they are obligated to follow the Danish Procurement Law), the number of tenders that included sustainability requirements was 35, which sums up to approx. 23%. Figure 17 below includes the types of sustainability requirements. The category of other sustainability demands included reuse/recycling of materials (4), healthy and long-lasting materials (4), low CO_2 footprint and/or design for disassembly (5), and initiatives for optimizing the CO_2 footprint on the construction site (2).

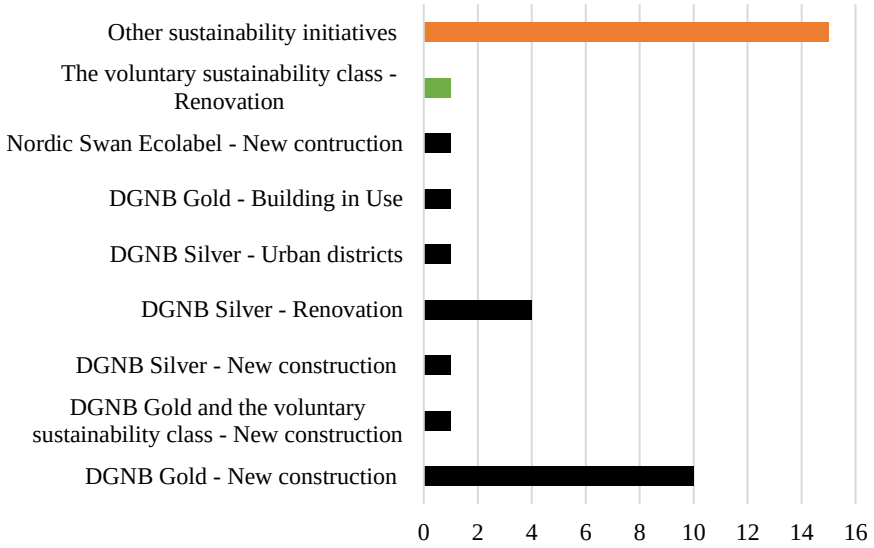

Figure 17: Types of sustainability requirements from 35 tender projects in 2021to mid-2022

Appendix B. References from Two E&P Projects

Retten i Aarhus

Nænsom ombygning til funktionelle, nutidige kontorer - bevaringsværdig arkitektur

PROJEKTINFORMATION

Placering	Aarhus
Bygherre	Bygningsstyrelsen
Kontaktperson	Jesper Wegener, tlf. 20819073, jw@hplus.dk
Arkitekt	H+ Arkitekter A/S
Ingeniør	Tækker Rådg. Ingeniør
Entrepriseform	Hovedentreprise
Entreprisesum	Kr. 39,8 mio.
Udførelse	2014 - 2016
Afslutning	27.05.2016
Bruttoareal	4.080 m²

Kort projektbeskrivelse
Enemærke & Petersen har ombygget og nænsomt renoveret den bevaringsværdige retsbygning i Aarhus fra 1906 til en nutidig kontorarbejdsplads og retsbygning med stor respekt for den oprindelige arkitektur.

Nænsom renovering og optimering af indeklima
Ved ombygning til kontorer og møderum udførte vi komplekst og kompliceret tømrer- og snedkerarbejde med bl.a. flytning af bærende vægge, renovering af gamle træpaneler og radiatorskjulere og etablering af nye etager i tagrum og trapper for at forbinde dæk. Vi etablerede lyd- og akustikpaneler og en ventilationsløsning, der styrker indeklimaet. I retsbygningen lagde vi nye gulve af høj kvalitet og de ældre gulvoverflader blev restaureret. Vi foretog indvendig forstærkning af den gamle tagkonstruktion og udvendig renovering af husets murede facade, hvor vi bl.a. fjernede granitsten.

Flere medarbejdere på en ny moderne arbejdsplads
Det var vigtigt, at ombygningen kom til at leve op til nutidige krav. Bygningen skulle ombygges til at danne rammerne for fornyelse - det skulle være en inspirerende og tidssvarende arbejdsplads. Flere forskellige afdelinger blev samlet i den nye retsbygning, og ombygningen skete som et led i at skabe en ny, fælles virksomhedskultur præget af større arbejdsglæde og forståelse.

Effektiv byggeproces i byen
Den omfattende ombygning midt inde i byen stillede store krav til byggeriets proces. For at sikre flow i byggeprocessen blev arbejdet tilrettelagt med lokationsbaseret planlægning, som sikrede, at der ikke var flere faggrupper i samme område ad gangen.

Egne håndværkere
Det komplicerede tømrer- og snedkerarbejde, som bl.a. indebar indvendig forstærkning af den gamle tagkonstruktion, etablering af nye etager i tagrum og renovering af gamle træpaneler og radiatorskjulere blev udført af Enemærke & Petersens egne håndværkere.

Enemærke & Petersen a/s

Korngården

Renovering af beboede almene etageboliger inkl. klimaskærm, lette facader, altaner, vinduer, tilgængelighed, installationer, bad, køkken og beboerhåndtering

PROJEKTINFORMATION

Placering	Ballerup
Bygherre	Ballerup Almene Boligselskab
Kontaktperson	Klaus Petersen, tlf. 77320000
Arkitekt	Domus Arkitekter
Ingeniør	Dominia
Entrepriseform	Hovedentreprise
Entreprisesum	Kr. 211,4 mio.
Udførelse	2015 - 2018
Afslutning	10.10.2018
Bruttoareal	17.280 etage-m²

Kort projektbeskrivelse
Enemærke & Petersen har i hovedentreprise udført helheds- og energirenoveringen af det almene boligområde Korngårdens 248 etageboliger.

Klimaskærm, lette facader, altaner, isolering og vinduer
Projektet omfattede udskiftning af lette facader, vinduer og altaner. Energibesparelsestiltagene, herunder isolering af facaderne og udskiftning af vinduerne, resulterede i en beregnet energibesparelse på 60%. Desuden udførte vi nye hovedkloakker og fjernvarmeledninger, nyt forsyningsnet med nye hovedkabler og nye hovedtavler.

Tilgængelighedsboliger og sammenlægning
I forbindelse med boligsammenlægning indrettede vi boliger med tilgængelighed og etablerede elevatorer ved tilgængelighedsboligerne.

Nye køkkener, badeværelser og installationer
Vi udførte montering af nye køkkener, badeværelser, nye installationer og etablering af ventilationsanlæg.

Beboede boliger, genhusning og beboerhåndtering
Nogle beboere boede i deres lejligheder under renoveringen, men de fleste beboere var genhuset. Beboerdialog var en stor del af projektet med informationsmøder og -materiale til beboerne.

Udearealer, nye portgennemgange og infrastruktur
Vi opgraderede udearealerne og forbedrede adgangs- og parkeringsforhold. Der blev lavet nye portgennemgange, der skabte forbindelse på tværs af de lange blokke, og gjorde adgang til fællesarealerne nemmere.

Enemærke & Petersen a/s

This thesis examines how a building contractor's tender practices are being challenged by the increasing preference among building clients to procure construction projects based on the criterion 'best ratio between price and quality'. In this context, the demand for sustainability services and solutions has notably increased among Danish building clients. This shift presents new challenges for building contractors, who must now incorporate both quantitative calculations and qualitative assessments into their tender submissions, referred to as 'qualculation'. The research objective is to understand how the transition towards qualculative practices affects a building contractor's tendering processes and their ability to secure projects in an increasingly complex market. Through three sub-analyses, the study provides insight into: 1) how Danish building clients 'frame' sustainability requirements in procurement processes, 2) how sustainability values are co-created through tender documents, and 3) how these new competitive parameters impact a building contractor's organizational capabilities and considerations regarding market opportunities.