CHARTING THE COURSE: NAVIGATING SUSTAINABILITY PRIORITIES IN SWEDISH HOUSING COMPANIES

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Housing companies must increasingly prioritise between multiple and often conflicting sustainability demands to address wicked societal challenges. The paper seeks to understand this prioritisation, and what criteria influence their decisions on what sustainability goals to pursue and solutions to implement. By conducting 22 interviews within Swedish housing companies, and by applying a multi criteria decision analysis (MCDA) framework, the findings show how housing companies struggle with sustainable decision making. To facilitate this messy process, they base their sustainable decision-making on criteria related to calculations, evaluations, and visualisations; what is most profitable and cost-effective; on internal and external demands; and on urgency. By understanding these criteria, the paper contributes insights into improving sustainability practices, highlights the importance of structured decision-making processes, and how this can be achieved.

Keywords: housing; multi-criteria; decision-making; prioritisation; sustainability

INTRODUCTION

The built environment finds itself at the nexus of many societal challenges, spanning from regulatory complexities to socioeconomic instability. New legislation, such as sustainability reporting (CSRD) and the EU taxonomy, adds layers of intricacy to an already complex landscape. Simultaneously, financial instability, exemplified by increasing inflation and interest rates, exacerbates the burden on organisations and people, as the cost-of-living skyrockets. Moreover, the threat of severe climate change necessitates urgent updates to buildings to withstand extreme weather events. Concurrently, social unrest engenders concerns about safety and security, underscoring the imperative for safer neighbourhoods. In this ever-evolving landscape, the adage "looking back to move forward" has never rung truer.

It becomes increasingly evident that the delivery and maintenance of the built environment require a holistic view—one that transcends traditional boundaries and considers the interconnectedness of economic, social, and environmental systems (Thomson *et al.,* 2021). In this pursuit, housing companies, i.e., large-scale public and private organisations that own and/or manage residential properties, emerge as pivotal actors in shaping the future of our built environment (Heitel *et al.,* 2015; Troje 2023).

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Housing companies are tasked with the formidable responsibility of navigating competing and conflicting sustainability demands and solutions. This necessitates a carefully charted course to navigate and prioritise initiatives that align with overarching sustainability goals while addressing immediate concerns and constraints (Troje 2023). As key stakeholders, they are uniquely positioned to drive innovation, foster collaboration, and champion sustainability within our communities, due to their large square footage within the built environment and their ability to promote sustainable lifestyles, wellbeing, and quality of life (Heitel *et al.,* 2015; Troje 2023).

This paper seeks to examine how Swedish housing companies prioritise amidst conflicting sustainability goals and what criteria influence their decisions on what sustainability goals to pursue and solutions to implement. The paper builds on 22 interviews conducted within Swedish housing companies and is analysed through a framework rooted in multi criteria decision analysis (MCDA). In a review of MCDA methods for sustainable decision making within the construction and civil engineering field, Zavadskas *et al.,* (2018) found that MCDA is especially suitable for understanding sustainable decision making, as sustainable development within this context is strongly characterised by conflicting goals and uncertainty.

This study provides insight into the prioritisation of sustainability demands and solutions. By understanding the criteria underlying sustainable decision-making, i.e. decision-making that fosters sustainable development, the study hopes to provide a glimpse into the future trajectory of sustainable development within the built environment. By understanding how Swedish housing companies navigate conflicting sustainability goals, this paper enriches our understanding of sustainability management practices and underscores the nuanced complexities inherent in managing the built environment amidst a backdrop of profound change and instability.

The Context of Housing Companies in Sweden

In the Swedish context, housing companies are private and public organisations that own/mange residential properties for rent. According to the Swedish organisation for regions and municipalities, SKR (2020), housing companies foster housing provision within their municipalities. Central to this responsibility is the provision of a diverse and high-quality housing supply capable of catering to varying tenant needs. Legally bound to act in the public's best interest while adhering to commercial principles, public housing companies are obligated to operate profitably and sustainably to avoid market distortions. Consequently, they are compelled to manage their affairs akin to private housing companies, ensuring competition in the market (Grander 2017; SKR 2020). Swedish housing companies, therefore, embody a hybrid organisational model, pursuing financial success while simultaneously fulfilling sustainability demands (Grander 2017). Furthermore, the deregulation of the Swedish housing market has catalysed a shift towards profit-driven approaches among public (and private) housing companies, elevating market competitiveness over providing housing for all and sustainable development (Grander 2017; Maine *et al.,* 2022; Troje 2023).

Regarding environmental sustainability, buildings are responsible for approximately 40% of energy consumption and 30% of greenhouse gas emissions (Nielsen *et al.,* 2016). Regarding social sustainability, research by Maine *et al.,* (2022) illustrates a positive correlation between financial and social performance among Swedish public housing companies, highlighting the potential synergies between profitability and social impact. With that said, sustainability is sometimes co-opted to obscure profit-driven agendas, thereby exacerbating societal issues (Stender and Walter 2019).

Despite the large impact housing companies have on their communities, on environmental and social deterioration, and considerable power within the built environment (Heitel *et al.,* 2015; Troje 2023), many housing companies struggle with contributing to sustainable development. For example, in a study of sustainable renovation in Sweden, Mjörnell *et al.,* (2014) found that building owners' decisions regarding sustainable renovations are often based on technical problems with the buildings or in response to tenant demand. These renovations are not sought out proactively but are rather tackled when the issue becomes urgent. Moreover, one of the main barriers of sustainable building renovation is the complexity in decision-making and prioritisation in the early stages of the projects, due to the many decisions that goes into sustainable building renovation (Jensen and Maslesa, 2015). Tools to facilitate the decision-making process is therefore becoming more and more important (Mjörnell *et al.,* 2014). MCDA is an example of a tool that could be useful to help structure this messy decision-making process (Nielsen *et al.,* 2016; Gade *et al.,* 2021.

Multi-Criteria Decision Analysis Framework

Sustainability in the built environment is a particularly wicked problem, due to the conflicting nature of the three sustainability pillars, diverse stakeholder values and preferences, and a combination of short- and long-term perspectives of an uncertain future (Kandakoglu *et al.,* 2019). Subsequently, the decision on what sustainability goals to pursue and solutions to implement is particularly complicated.

Decision analysis have several different theoretical foundations, such as individual social choice theory, decision theory, and game theory, and is used within several different academic disciplines, such as behavioral science, economics, psychology, and operations research (Edwards *et al.,* 2007). The framework of multi-criteria decision analysis (MCDA) stems from the decision analysis field and is a framework that facilitates decision making in complex and uncertain contexts. MCDA is especially useful in the construction sector, due to its complex organisational structure and disparate activities and dispersed responsibility allocation (Zavadskas *et al.,* 2018; Thakkar 2021). MCDA is an umbrella term that describes different analyses that explicitly consider multiple criteria that influence decision making (Belton and Stewart 2010). MCDA is useful when there are conflicts between choices, when stakeholders have different preferences for available choices, and when intuitive decision-making is unsatisfactory, e.g., because the decision greatly impacts the organisation. MCDA will not provide a right nor objective answer to a decision dilemma. Instead, MCDA help to structure and manage the decision process. Decision criteria are by nature chosen on subjective measures, but MCDA helps to identify and acknowledge trade-offs between choices and criteria (Belton and Stewart 2010; Afsordegan *et al.,* 2016).

Sustainable development is by nature a multi-criteria problem, as it builds on the three sustainability criteria: financial, environmental, and social (Belton and Stewart 2010; Kandakoglu *et al.,* 2019). Assessing different sustainability solutions require taking social, environmental, financial, technical, geographic, and political criteria into account. These criteria are evaluated based on different indicators, such as efficiency, reliability, capacity, investment costs, maintenance costs, emissions, noise, risk, social acceptability, job creation, among others. These criteria, their respective indicators, and the weight given to them, is often an imprecise and subjective evaluation expressed in linguistic, rather than numerical, terms (Afsordegan *et al.,* 2016).

Before different available solutions can be evaluated, the criteria must first be established (Belton and Stewart, 2010; Afsordegan *et al.,* 2016; Khadra *et al.,* 2020). However, previous research on MCDA tend to focus on the specific analysis method applied, rather than the initial stages of an MCDA process, i.e., clarifying the problem and identifying the decision-making criteria. This is problematic as these initial phases of an MCDA is often very complex and lays the foundation for the actual analysis. Yet, this is often overlooked or assumed to be clear and already established, in much previous research (Belton and Stewart 2010). In response, this paper focuses on these initial phases of the MCDA process and tries to understand the main criteria that influence sustainable decision-making for housing companies. In other words, a complete MCDA is not applied in this paper, but rather an examination of the criteria such an analysis would build upon is in focus.

METHOD

A qualitative research design was employed to understand how housing companies prioritise amidst conflicting sustainability goals. The sampled organisations owned and/or managed residential housing (between 4 000-200 000 apartments). The selection of housing companies (see Table 1) for the study aimed to provide a comprehensive perspective on sustainability development work in Sweden. As a result, the sampled organisations encompassed both private and public organisations, situated across various regions of Sweden. These organisations owned diverse property portfolios, including high-income residences, low-income dwellings, and student accommodations, spanning buildings of varying ages. Furthermore, they held properties in neighbourhoods characterised by different socio-economic statuses. This heterogeneity in organisational sampling (Etikan *et al.,* 2016) aimed to capture a representative spectrum of housing companies in Sweden.

Table 1: Information on interviewees

Organisation	Professional roles	Interviewee codes
Public housing company A	Business manager, CEO, FM manager	PubA 1-3
Public housing company B	FM manager	PubB 1-3
Public housing company C	FM manager, sustainability manager, CEO	PubC 1-3
Public housing company D	Business manager, CEO, environment manager	PubD 1-3
Public housing company E	Development manager, manager of project managers	PubE 1-2
Private housing company A	CEO, FM manager, technical FM specialist	PriA 1-3
Private housing company B	Development manager, sustainability manager, sustainability specialist	PriB 1-3
Private housing company C	FM manager, social sustainability manager	PriC 1-2

Data was collected through semi-structured interviews (Kvale 2007) with 22 individuals in strategic leadership positions, conducted digitally via Zoom or Teams, for approx. one hour each. The interviews took place during the winter of 2021-2022. 2-3 individuals from each organisation were interviewed to capture both breadth and depth in the findings. The interviewees were purposively sampled (Etikan *et al.,* 2016) based on their influential roles in shaping sustainability initiatives within their organisations. Interviewees held positions such as CEOs, business managers, sustainability managers, development managers, and facilities management (FM) managers. Consent for the interviews was ensured written over email and then orally at the time of the interviews directly with the interviewees. The interviews were structured around three key themes: (1) challenges and innovations of sustainability

work, (2) prioritisations within sustainability work, and (3) organisation of sustainability work. This paper predominantly focuses on the second theme.

All but two interviews were recorded and transcribed verbatim and subsequently imported into NVivo software, facilitating a methodical organisation of the data. Employing a thematic analysis (Braun and Clark 2006), the initial coding involved categorising the data based on the three interview topics, with a specific emphasis on the second topic, "Prioritisations within sustainability work," as the primary focus of this paper. Subsequently, the data underwent further coding to identify more detailed patterns in the data. Through multiple rounds of coding, codes were abductively derived by iteratively referencing both existing MCDA research and the empirical data. These identified patterns were reviewed and refined multiple times until no new insights were generated (van Maanen *et al.,* 2007). After the abductive coding and reviewing of patterns, four categories of criteria that influence sustainable decision-making were identified: (1) Based on calculations, evaluations, and visualisations; (2) Based on what is most profitable and cost effective; (3) Based on external and internal demands; and (4) Based on urgency. These four themes structure the findings chapter.

Regarding the trustworthiness of the study, the 22 interviews were sufficient to reach saturation as they captured diverse perspectives from both private and public housing companies across various regions of Sweden, encompassing a wide range of property types and socio-economic contexts. This broad representation enhances the credibility of the findings. Additionally, in purposive sampling, as in this thesis, the appropriate sample size is determined by data saturation, where 22 interviews were sufficient. Through the iterative coding process, responses began to converge and exhibit similar themes, indicating that further interviews would likely yield repetitive information without significantly enhancing the depth of insights (Etikan *et al.,* 2016). Employing thematic analysis with multiple rounds of abductive coding also facilitated a thorough and systematic analysis process, supporting the confirmability of the findings.

FINDINGS

Category 1: Based on Calculations, Evaluations and Visualisations

Many of the interviewees explain how they try to prioritise what goals to pursue and solutions to implement depending on various calculations, evaluations, and visualisations, to make the fuzzy nature of sustainability more tangible. This is to ensure that the "sustainability portfolio" is balanced across projects, and to ensure that chosen initiatives have the desired effect on the (mostly financial) bottom line. These evaluations are said to be important as it is impossible to prioritise everything in a single project. Making visualisations and calculations of what is most appropriate in a specific project then helps to choose what goals and solutions to pursue: "We make an analysis of the project, which results in a radar chart […] The bigger the area in the chart the better, but you have to make choices … It's a utopia to think we can achieve every dimension in a single project, because then it becomes too expensive" (PubE1).

Common aspects to measure include customer satisfaction, social sustainability ratings of different neighbourhoods, and most commonly, profitability, value for money, and cost-effectiveness. However, despite making attempts to quantify these evaluations to produce a basis for decision-making, these aspects are not necessarily easy nor objective to measure. It is often unclear if the chosen initiatives, which are based on previous evaluations, have the intended effect in practice. Nevertheless,

these evaluations are important as they help to establish a sustainability development plan, as without plans, prioritisations will be ad hoc and poorly motivated.

Category 2: Based on What is Most Profitable and Cost-Effective

As previously mentioned, decisions tend to be made based on what goals and solutions are most profitable, cost-effective, and provide best value for money. Within this sub-theme, the discourse is highly commercialised, where sustainability is framed as something that can be used for marketing purposes, as something that can increase financial gains, and as something which is done because it is rational, not because it is morally right: "If we look at solar panels, on our smaller properties […] they may not become profitable for ten years. But, if we can put out a press release that creates a positive image of us as a company, that makes it alright" (PriA 2). Many of the interviewees thus see monetary potential in sustainability work.

Several of the interviewees said that a few years ago their refurbishment strategies were much more aggressive in terms of how thoroughly they renovated their properties. Now, with increasing inflation and material prices, such thorough refurbishments mean that rent would become too steep for their tenants to handle, and therefore many organisations have had to find new ways to renovate both financially, environmentally, and socially sustainably. The focus on profitability is particularly tied to social sustainability. All interviewees exclaim that the social sustainability of a neighbourhood has a direct impact on property values: "If we are truly honest, our properties are not worth as much if they are unsafe. There is a business model there. It's not like we're proclaiming that outwardly. But yes, there is a business model here, otherwise we wouldn't be doing it, that's reality" (PubB 1). This is one of the main sustainability areas which both public and private housing companies are Targeting.

Category 3: Based on Internal and External Demands

It is said that many of the criteria for decision-making comes from "outside" the organisations. The interviewees refer to an organisational strategy that determines what sustainability issues to prioritise. At the same time, they provide little insight into how these strategies are established in the first place, despite the strategies being said to be important to narrow down possible choices. Most of the interviewees refer to demands from their owners as a major determinant on what issues are prioritised, and that this informs strategy. This is especially true for public companies owned by their municipality: "We are wholly owned by the municipality. We have directives from the owner, that points to all these different issues 'you must take care of this, you must work with social issues, you must also build new housing, we also expect to work with environmental sustainability'. So, when the owner has demands on us, it's a long list" (PubB 2). Prioritised goals and solutions thus come "top down", even for the interviewees who have strategic and/or management positions. This means that the priorities set by owners often becomes ill-fitting with the actual property stock of each company. It also means that an overload of goals and issues are deemed equally important, making it difficult to sort between these and know what to prioritise.

Demands from tenants may not always be verbally communicated, but foreseeing their needs and keeping tenant satisfaction high, and prioritising what is in their best interest, is said to be a strong guiding force amongst the housing companies. It is said that despite there now being a lack of housing in Sweden, and tenants thereby having less power to influence their living situation, this could change in the future, to a situation where housing companies compete for tenants. Therefore, the interviewees

emphasize how it is important to always have the tenants in mind when choosing what issues to prioritise. Other, less formal demands are based on current trends in the sector. The interviewees talk about AI, green mobility, CO2 emissions and tenant wellbeing as issues high on the agenda. At the same time, the interviewees are hesitant to try new and untested solutions and admit being late adopters.

Category 4: Based on Urgency

Some prioritisations are a result of ad hoc, urgent issues that must be addressed immediately. Much of housing companies' sustainability development work function as a form of problem solving: "It's an incident-driven business, and sometimes you lose a lot of structure that way. We don't work methodically […] we live hand to mouth, and we don't have time to plan. We think long-term, but we do not have time for that, because we have to fix things now" (PubC 3). It is said to be difficult to work proactively, and instead day-to-day issues dictates what issues are prioritised. The state of the buildings and/or neighbourhood is especially definitive. Depending on if the building is older or newer, in a well-off or low-income neighbourhood, and how much of a renovation debt has been built up, often decides what solutions are implemented. For example, for housing companies with building stocks in disadvantaged neighbourhoods with high crime rates, social sustainability is often prioritised, while in newer buildings with tenants with higher purchasing power, digitalising different building-related services is instead prioritised.

To summarise, the interviewees in this study describe prioritisations of sustainability goals and solutions to be mostly dictated by evaluations, profitability, internal and external demands, and urgency. There is not one widely established and controlled way in making these prioritisations, often stemming from the entangled and intangible nature of sustainability. The major difficulty in prioritising is said to be due to goal multiplicity, where goals are often conflicting, due to too many possible available solutions that may lack empirical evidence of their effectiveness, and due to a lack of resources, mostly in terms of time, competence, and knowledge. As one interviewee put it: "Right now we have to do some work to find what we should focus on, and not get lost in this jungle" (PriB 3). By applying a MCDA framework, the underlying logics of the decision-making criteria could be better understood, which follows next.

DISCUSSION

Attempts to use evaluations, measurements, and visualisation illustrates the challenges involved in sustainable decision-making for housing companies. These attempts also show how housing companies try to minimise decision uncertainty and provide structure and methods to operationalise decision making for sustainability priorities (Jensen and Maslesa, 2015). The use of visualisations such as radar charts can expose the trade-offs between sustainability goals (Belton and Stewart 2010; Afsordegan *et al.,* 2016; Kandakoglu *et al.,* 2019). Exposing these trade-offs will enable prioritising different goals and solutions across the property portfolio and may also expose shortcomings in the organisations' sustainability work. Some of the evaluations and measurements made are more straightforward, like customer satisfaction or cost related aspects, while others, like social sustainability, is more difficult. Nevertheless, these evaluations are inherently subjective, in terms of how these specific criteria were chosen, what indicators are used, and how the results are interpreted. This supports previous research that criteria and the weight given to them is an imprecise and subjective evaluation (Belton and Stewart 2010; Afsordegan *et al.,* 2016). Thus, the attempted "quantification" may only have a limited effect on mitigating subjective

judgement, and more serve as a personal comfort to mitigate the feeling of uncertainty and help legitimise plans and motivations underlying certain prioritisations.

With that said, prioritisations are mostly based on cost-effectiveness and profitability, two factors that are more quantifiable, and thereby easier to measure and operationalise. This may provide a feeling of rationality and objectivity, but it may also be due to the Swedish housing companies' current organisational model. Swedish housing companies, no matter if they are private or public, tend to have a strong commercialised business model that try to combine financial prosperity and sustainable development (Grander 2017; SKR 2020; Maine *et al.,* 2022). The idea of framing sustainability work as something that could, and should, incur profits is a strong indicator of what goals and solutions are prioritised. It is stated that sustainability is not about being nice, it is about being rational and profitable. Social sustainability is a form of risk management, as lower social sustainability usually means lower property values. Considering this openly commercialised view of sustainability, the risk of whitewashing, much like Stender and Walter (2019) describe, could be a risk. However, Maine *et al.,* (2022) found a positive correlation between financial and social performance among Swedish public housing companies, highlighting the potential synergies between profitability and social impact. Thus, if contributing to one sustainability criteria, such as social sustainability, will inevitably lead to benefits in other sustainability criteria, such as financial sustainability, this is nonetheless positive, no matter if the intentions were genuine or not.

Much like the choice and evaluation of different criteria are somewhat vague and subjective, so is the strategy that is said to influence sustainable decision-making. Strategy functions in a similar way as evaluations, as it helps to narrow down and legitimise decisions. However, for many organisations strategy instead creates more uncertainty, as it either becomes too top down, making it difficult to understand in the context of the organisation, from municipal owners that are politically appointed and thereby also change every four years or is unaware of the practical reality of the organisations. Leaning on strategy thus exposes the diverse stakeholder preferences (Belton and Stewart 2010; Kandakoglu *et al.,* 2019) that housing companies must juggle.

Luckily, demands from tenants seem to be easier to understand and prioritise. Mjörnell *et al.,* (2014) found that sustainable renovations in the Swedish housing sector is often initiated as a response to tenant demand. This would suggest that involving tenants more in decision-making could facilitate the process in terms of identifying criteria that could and should be evaluated, and it would also increase social sustainability in terms of participation. Granted, coordinating such activities would complicate decision-making, as it would inevitably entail more stakeholder preferences to consider (Belton and Stewart 2010; Kandakoglu *et al.,* 2019). This is yet another of the major trade-offs housing companies must navigate.

Finally, urgency drives many sustainability investment decisions, much like Mjörnell *et al.,* (2014) has also found. Managing the housing stock is said to be a reactive, incident-driven operation. This means that fighting fires sometimes overtakes the beforementioned strategies, where short-term perspectives overshadow long-term goals (Kandakoglu *et al.,* 2019). Sustainable renovations are often initiated as a response to technical problems with the buildings (Mjörnell *et al.,* 2014). Because the state of the buildings and needs of the neighbourhood dictate much of the decision-

making, this creates unevenness across the property portfolio, inhibits cohesive and replicable sustainability work, and creates more uncertainty for housing companies.

CONCLUSIONS

This paper sought out to investigate how Swedish housing companies prioritise amidst conflicting goals and what criteria influence their decisions on what sustainability goals to pursue and solutions to implement. The findings showed how sustainable decision-making is complex, much due to goal multiplicity. Therefore, housing companies try to make this process more manageable by basing criteria for sustainable decision-making on calculations, evaluations, and visualisations; what is most profitable and cost-effective; on internal and external demands; and on urgency.

The paper makes several contributions to the construction management field by addressing the complex issue of sustainable decision-making. For practice, understanding how housing companies prioritise different sustainability goals helps systematise and improve these processes. By identifying decision criteria, the paper illustrates what features new sustainable technologies should incorporate for better adoption. Empirically, it provides insights into the real-world challenges of decision-making within housing companies. By applying the MCDA framework, decision-making becomes more structured and observable, enabling well-informed decisions. Conceptually, the paper contextualises and empirically explicates sustainable decision-making, balancing financial, social, and environmental sustainability. Thereby it offers practical implications of the theoretical framework.

The paper faces limitations, for example in its qualitative design based on 22 interviews, with mostly public organisations. Future research should thus explore an even wider sample, for example by also employing quantitative methods like surveys. Additionally, the study focuses on criteria influencing decision-making rather than a complete MCDA, thereby limiting its applicability. Future research could thus build on this study and conduct a full MCDA for even more in-depth insights. Also, drawing on broader decision analysis theories could provide nuanced perspectives on sustainability prioritisations. Moreover, research should enhance the operationalisation of sustainability priorities in housing and construction and examine the impact of sustainable technologies on decision-making criteria and adoption rates.

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