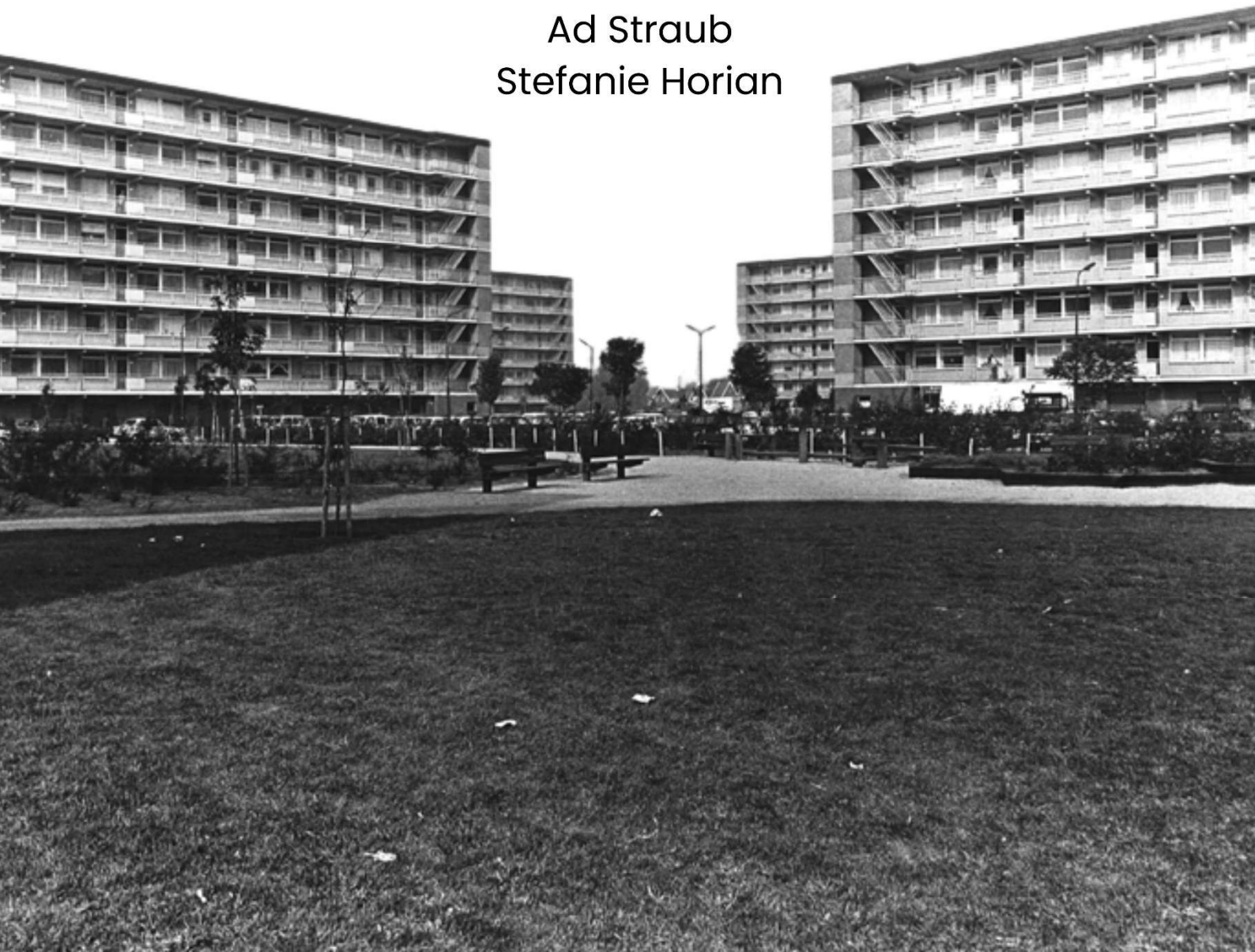

DEFINING RENOVATION QUALITY IN DUTCH SOCIAL HOUSING

*FROM ORGANISATIONAL GOALS TO A SHARED
QUALITY FRAMEWORK*

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Abstract

Dutch housing associations have an important role in the energy transition of the built environment. The housing associations in the Netherlands own a large share of the housing stock and have to meet European, national and regional climate targets, including removing poor energy labels and achieving energy neutrality by 2050. At the same time, their primary task remains social: providing affordable housing for vulnerable citizens. This creates a difficult balancing act. Renovation is urgently needed, but financial capacity is limited, with renovation and maintenance costs rising. Housing associations operate in the same institutional context but do not translate it into renovation quality in the same way. This research examines how organisational goals shape how Dutch housing associations define and use renovation quality indicators, and explores what is needed to align these indicators when housing associations collaborate on renovation projects.

The research employs a qualitative comparative multiple-case study design. Four housing associations from the same regional context were studied. The findings show that renovation quality is shaped through the translation of organisational goals from strategy to project execution. At the strategic level, the housing associations all refer to affordability, availability, sustainability, quality and liveability, and they all respond to national ambitions such as eliminating EFG labels and preparing the housing stock for 2050. The differences become visible when these ambitions are translated into tactical renovation choices. Based on the results, this research develops a shared quality framework for collaborative renovation. The framework is meant as a decision-making tool to help housing associations align the quality of a renovation project. The organisational goals that shape renovation quality are defined by translating strategic ambitions into project requirements. Housing associations operate within the same institutional context and share comparable strategic objectives, but they operationalise renovation quality differently. To enable collaboration, alignment is needed at the tactical layer, where renovation triggers and ambition levels are negotiated.

Keywords: Housing associations – renovation quality indicators – organisational goals – organisational levels – shared quality framework

Preface

This thesis marks my final step in the master's programme in Management in the Built Environment at Delft University of Technology. I studied how Dutch housing associations define renovation quality and how differences in organisational goals influence collaboration in renovation projects. Through this research, I elaborated my knowledge on housing associations and sustainability. As ambitions and costs rise, my research has become increasingly relevant throughout the process.

At the start of the graduation process, I formulated several learning goals. I wanted to develop a better understanding of how housing associations make decisions, how organisational goals are translated into renovation quality, and why similar organisations can arrive at different renovation choices. I also wanted to improve my methodological and analytical research skills and learn how to translate empirical findings into a practical framework. Through this research, I have extended my knowledge of all learning goals, making it a valuable experience.

This research was not done in combination with a company. Which meant I had to connect with the participating housing associations on my own. I would like to thank everyone who helped me connect with the housing associations. I would also like to thank all participating housing associations for their openness, which made it possible to understand how renovation quality is operationalised. To validate my research, I received positive feedback from several experts in the field, which enabled me to make improvements to it. I would also like to thank them for their participation.

This graduation project has also helped me prepare for my future career. It strengthened my ability to work independently on executing a complex research question. It also showed me how important it is to understand the organisational side of sustainability transitions. This insight is highly relevant to my future work, where I hope to contribute to a sustainable built environment.

I would like to thank my supervisors for their guidance throughout the process. Their different perspectives helped me sharpen the research and stay focused on both scientific relevance and practical value. Finally, I am grateful to my family, friends and fellow students for their support during the graduation process.

Noortje Noort

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List of Abbreviations

Abbreviation	Full term
AW	Autoriteit Woningcorporaties
Bbl	Besluit bouwwerken leefomgeving
BKT	Bathroom Kitchen Toilet
CO ₂	Carbon dioxide
EFG-labels	Energy labels E, F and G
EP2	Energy Performance Indicator 2
EPBD	Energy Performance Building Directive
GDPR	General Data Protection Regulation
HNN	Het Nieuwe Normaal
ICR	Interest Coverage Ratio
KPI	Key Performance Indicators
KWH	Kennis en kwaliteitcentrum Woningcorporaties Huursector
LTV	Loan to Value
MJOP	MeerJaren Onderhouds Plan

NEN 2767	Norm Condition measurements
Non-SGEI	Not Service of General Economic Interest
NPA	Nationale Prestatie Afspraken
Rc-value	Resistance Construction value
RGS	Resultaatgericht Samenwerken
RQ	Research Questions
RVO	Rijksdienst Voor Ondernemen
SGEI	Service of General Economic Interest
TNO	Dutch Organisation for applied scientific research
TU Delft	Technical University Delft
U Value	Thermal transmittance value
VRDRS	Vidomes Rijswijk Wonen De goede woning Rondom Wonen Stedelink
WSW	National guarantee fund social housing
WWS	Housing Valuation system

H1 Introduction

1.1. Background

Housing associations provide affordable housing for vulnerable citizens, making them a crucial part of our society. In the Netherlands, housing associations own around 2.3 million properties, making them a vital part of efforts to upgrade the housing stock (Centraal Bureau voor de Statistiek, 2025). In the Nationale Prestatie Afspraken (NPA), housing associations set partial goals to achieve energy neutrality by 2050 (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2025). One of the first goals is to eliminate the EFG labels by 2029. However, they still have 97.350 properties with a lower label (Aedes, 2025b). After the 2029 goal, the housing associations must reduce their heat demand to 94 kWh/m² in 2030 and 87 kWh/m² in 2034, down from 106 kWh/m² (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2025). Housing associations can improve their stock by renovating it. However, renovation is very capital-intensive, and housing associations face severe financial constraints. Recent figures from Aedes indicate that housing associations lose 48 euros per property each month, making it difficult for them to invest in renovations (Aedes, 2025a). On top of that, renovation and maintenance costs are rising significantly; over the past 7 years, they have increased by 60%, while building costs have risen by only 30%, indicating inefficiency (Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport, 2026). The combination of limited financial capacity and ambitious policy climate targets makes accelerating the renovation process urgent and complex.

Despite significant efforts, housing associations are still not renovating to meet the goal of achieving energy neutrality by 2050. Although the Dutch government introduced several policy programs to stimulate large-scale property renovation, implementation has remained challenging to realise in practice (Straub et al., 2022). Housing associations have reported that renovating their housing stock is difficult because a project-based approach is time-consuming, the properties to be renovated are not clustered, and there is no capacity to make alterations to exceptional properties (Aedes, 2023). These factors increase transaction costs and slow down renovation processes. In response, the sector is increasingly exploring collaborative renovation approaches. Recently, Aedes published the *Renovatie-treintjes*, which analyses several projects in which the renovation process was optimised (Aedes et al., 2025). *Renovatie-treintjes* aims to accelerate renovation by bundling similar projects. The evaluation of these projects shows that collaboration between housing associations and the use of standardisation can reduce transaction costs and improve process efficiency. However, these approaches are mostly focused on procedural alignment rather than on integrating renovation projects.

The initiatives show that housing associations are willing to collaborate on renovation projects, thereby addressing the capacity, time, and location challenges identified by Aedes (2023a). However, collaboration in renovation projects still remains difficult. As organisational goals are defined individually by housing associations, they differ even though they all share the same objective of providing affordable housing. The different definitions of organisational goals lead housing associations to set different priorities. In renovation projects, the different organisational goals come together. Straub (2024) emphasises that a renovation is not just

about improving the energy performance of the properties; it also enhances liveability. In renovation projects, there is always a trade-off between sustainability, social value, and cost to ensure that housing associations make informed decisions. As Straub & Meijer (2025) have identified, creating cultural, organisational and procedural alignment is difficult. The lack of a shared standard for renovation quality becomes a structural constraint on collaboration. Housing associations create organisation-specific standards, which makes it difficult to conduct joint tenders with other housing associations or to collaborate on Renovatietreintjes (Piekhaar et al., 2021). This means that achieving a shared-renovation quality is not just a technical problem; it is embedded in the organisational structure and decision-making processes of housing associations.

In practice, there is a clear need for a shared standard for renovation quality to make collaboration easier (Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport, 2025). Housing associations lack capacity, the renovation task is becoming increasingly difficult, and building costs keep rising (Verbouwstromen, 2026). In the Netherlands, the baseline for quality is set through the Besluit bouwwerken leefomgeving. However, the agreements such as the Nationale Prestatie Afspraken work towards much higher goals. The road to those goals is unclear, as the standards guiding the housing associations to 2050 are too ambitious to realise (Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport, 2025). This causes housing associations to create their own 2050 guides in which they define renovation quality, even though this leads to inefficiencies and inconsistencies across housing associations. As renovation projects involve trade-offs among all organisational goals, the definition of renovation quality differs across housing associations. There is no clear understanding of how housing associations develop their own quality standards for renovation, or how different organisational goals shape the definitions.

1.2. Problem statement

Housing associations have to comply with high policy ambitions for sustainability, availability, affordability, liveability and quality (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2025). This is becoming increasingly difficult to realise as costs rise and housing associations lack the financial capacity to meet the current level of ambition (Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport, 2026). Under these circumstances, project-based renovation becomes increasingly difficult to sustain; bundling projects across housing associations could reduce inefficiencies. However, housing associations face difficulties scaling up their renovation projects and achieving efficiency through bundling, despite policy commitments and sector-wide efforts. The challenges are not purely technical or financial but also stem from organisational dynamics. While housing associations seem to share the same objectives derived from the Housing Act. They operationalise them differently, leading to misalignment in the prioritisation of housing associations' organisational goals. This results in a different understanding of renovation quality and the use of quality indicators. The difference makes it difficult to achieve alignment among housing associations in collaborative renovation projects.

EU policy literature (Hwang et al., 2025) suggests that harmonised renovation quality is essential for scaling renovations, while Dutch organisational research (Straub & Meijer, 2025) shows that such harmonisation is precisely what collaborative renovation initiatives struggle with. Given the urgency to accelerate renovations, the sector is moving toward program-based renovation models. However, the absence of a shared, organisationally derived renovation quality creates high transaction costs and inhibits the scalability of collaboration (Peters, 2025). Understanding how renovation quality indicators are used and adapted from an organisational perspective of housing associations is essential to enabling joint renovation initiatives.

1.3. Research Objective

This research aims to provide insight into how Dutch housing associations define renovation quality from an organisational perspective. Renovation quality is chosen as a focus of this research because it is a multidimensional concept in which technical, functional, and organisational dimensions converge (Garufi, 2015). The goal is to facilitate collaboration between housing associations by understanding how they define and operationalise renovation quality from an organisational perspective. The translation of housing associations' organisational goals into quality indicators will be used to understand similarities and differences among housing associations. The different interpretations will be analysed to assess whether there is potential to align the housing associations.

1.4. Main research question and sub-questions

This research investigates how Dutch housing associations translate broad institutional ambitions into renovation quality into operational project-level indicators, and how these differences affect collaboration among housing associations.

Renovation quality is chosen as the central concept of this research because renovation decisions in social housing are not solely defined by sustainability performance. Renovation is understood as a significant upgrade through changes to the building shell, installations, Bathroom Kitchen Toilet (BKT), or built-in elements (Verhulst et al., 2024). The quality of such a renovation is multidimensional because it encompasses functional, technical, and organisational dimensions (Garufi, 2015). Renovation decisions are not solely defined by sustainability quality. Therefore, the organisational translation strongly influences how organisational goals are translated into project requirements.

Main research question:

How do organisational goals shape the operationalisation of renovation quality indicators across Dutch housing associations, and what conditions enable alignment for inter-organisational collaboration?

To answer this question, five sub-questions are formulated. Together, they move from a broad institutional context to the organisational translation of organisational goals. Then the practical operationalisation of the quality indicators of four different housing associations. By examining the differences and similarities among those housing associations, the conditions for alignment for inter-organisational collaboration are examined through a shared quality framework.

RQ1. What institutional and regulatory factors shape renovation quality in Dutch housing associations?

The first question establishes the broad external context in which housing associations operate. It defines the institutional and regulatory factors that define renovation ambitions and quality requirements.

RQ2. How do organisational goals and decision-making processes influence the interpretation of renovation quality?

The second question shifts the focus from external context to internal organisational influences. The first two research questions establish the knowledge from the literature needed to execute the subsequent research questions.

RQ3. How are renovation quality indicators operationalised across organisational levels?

This question analyses how strategic ambitions are translated into project requirements across four housing associations. From the first two research questions, the institutional context and organisational translation establish the different organisational levels through which renovation quality indicators are operationalised.

RQ4. What similarities and differences in the operationalisation of renovation quality indicators exist between housing associations?

This question compares the different cases examined in question three.

RQ5. What elements support alignment in renovation quality indicators in a shared quality framework for inter-organisational collaboration?

This question summarises the research into a shared quality framework.

1.5. Scientific Relevance

From a scientific perspective, this research contributes to efforts to accelerate the renovation process. Current studies emphasise the importance of quality alignment for accelerating the renovation process; however, there is limited understanding of how quality indicators are interpreted and adopted within housing associations from an organisational perspective. This research builds on the study by Aedes and TU Delft. Research shows that program-based renovations can reduce transaction costs and increase renovation speeds (Straub et al., 2022; Straub & Meijer, 2025). At the same time, studies show that housing associations struggle to align their internal goals with policy quality indicators because these indicators are too far removed from their current practices. So, the literature clearly indicates a need for a harmonised quality framework. Still, there is little insight into how housing associations' organisational goals influence the implementation of such indicators.

1.6. Societal relevance

Housing associations provide homes for vulnerable citizens; their current housing stock plays a significant role in accelerating the energy transition. This research aims to help accelerate renovation processes for housing associations, enabling them to work together more easily. Through renovating their current stock, they provide better homes for their vulnerable target

group. This is needed because two-thirds of their tenants are experiencing energy poverty, meaning households are unable to heat or cool their homes due to high prices (Cairo, 2023). At the same time, housing associations are struggling financially due to the rising renovation and maintenance costs and must balance their internal goals, resulting in varying renovation quality. The lack of shared understanding of renovation quality hinders collaboration among housing associations and slows large-scale renovation initiatives. This research contributes to societal relevance by identifying how renovation quality is defined from an organisational perspective and by creating a shared quality framework through a bottom-up approach that enables housing associations to collaborate more easily.

1.7. Scope and Delimitations

This research focuses on Dutch housing associations and examines renovation quality from an organisational perspective. The study is situated within the Dutch social housing sector and focuses on how housing associations define and operationalise renovation quality indicators in relation to their organisational goals. The research focuses on translation within the real estate management function of the housing association and the actors involved in decision-making. The research aims to provide analytical insights into how renovation quality indicators are operationalised differently across housing associations.

H2 Research methods

2.1. Research Design

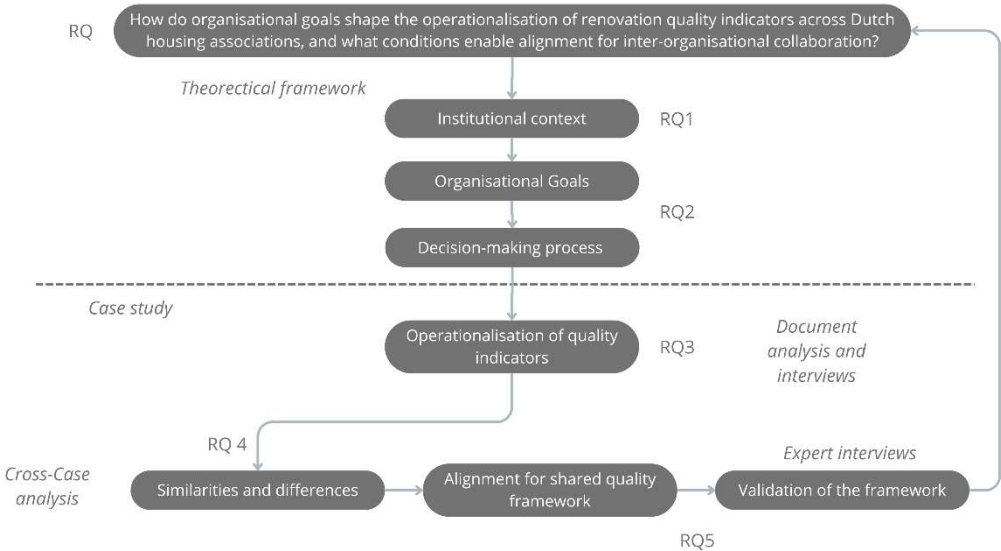


Figure 1: Research Design by Author

2.1.1. Research design and overall approach

This research adopts a qualitative comparative strategy, employing a multiple-case study design (Bryman, 2021). The goal of this study is to understand how Dutch housing associations define and operationalise renovation quality indicators and under what conditions these different interpretations can be aligned to support inter-organisational collaboration. A qualitative approach is most appropriate because renovation quality is not studied as a fixed technical outcome but as an organisational construct shaped through decision-making processes. The emphasis on processes and the importance of context require a qualitative approach, as this cannot be explained through a quantitative strategy (Bryman, 2021). The multiple case study design allows the elements that support alignment across different housing associations to be properly assessed, as the multiple case studies show different circumstances (Yin, 2014).

This research is grounded in an abductive research logic. Timmermans & Tavory (2012) describe abduction as a creative inferential process aimed at producing new hypotheses and theories based on surprising research evidence. The starting point is a practical and theoretical puzzle about Dutch housing associations that operate within the same institutional context yet define and operationalise quality in different ways. These differences become especially relevant when housing associations want to collaborate, because collaboration requires a level of alignment between quality requirements. The abductive logic is reflected in the iterative movement between the theoretical framework and the multiple-case study. The theoretical framework first provides the concepts that answer the first two research questions about the institutional context, organisational goals, and decision-making processes. These concepts also include the transaction costs which is used to interpret where alignment problems may occur within and

between housing associations. The concepts guide the initial structure of the research and help formulate the topics for document analysis and interviews. Then the case study analysis shows the different ways housing associations operationalise quality indicators. The cross-case analysis compares the cases to identify recurring similarities, differences and alignment problems. The patterns are grounded in the theoretical framework to explain under which conditions shared quality requirements can support collaboration. The final research output of this process is the shared quality framework, which remains the central deliverable of the research. Figure 2 shows the research design as a phased but iterative process.

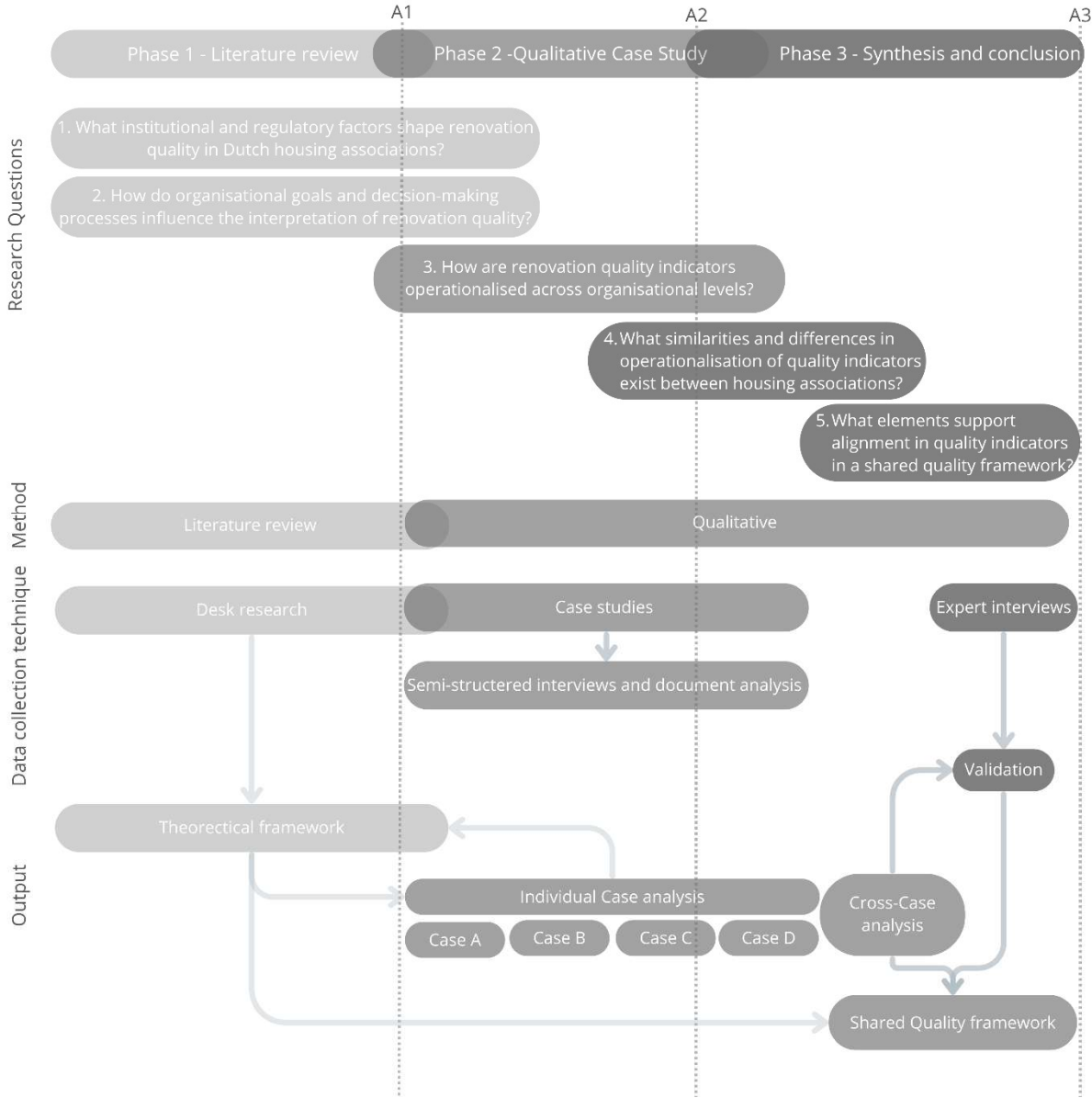


Figure 2: Research Methods by Author

Phase 1: Theoretical study

This phase includes the basis of this research, in which the theoretical background is researched through desk research. In this part, the first two research questions will be addressed regarding the institutional context, organisational goals and decision-making processes. The theoretical study also positions transaction costs as a lens for understanding why differences in quality definitions may hinder collaboration. The phase results in the theoretical framework, which provides the initial analytical concepts for the qualitative case study.

Phase 2: Qualitative case study

The empirical research focuses on the third research question: how housing associations use and operationalise renovation quality indicators. For this part, housing associations are used as a case study. The case study includes a document analysis and semi-structured interviews with housing association employees. The findings from the case study are used to refine the theoretical understanding of how the organisational goals shape the operationalisation of quality indicators.

Phase 3: Synthesis and conclusion

In the last part, the cross-case analysis identifies the differences and similarities between housing associations and translates these patterns into elements that support alignment. The shared quality framework is developed through this abductive movement between theory and empirical findings. The framework is then validated through expert interviews.

2.1.2. Literature review

The literature review is used to develop the theoretical foundation of this research and to define the initial analytical concepts for the multiple case study. The aim of the literature review is to structure the concepts needed to understand how renovation quality indicators are adopted and operationalised within Dutch housing associations. The literature review therefore supports the first phase of the research and contributes to the first two research questions.

The literature review combines the institutional context, hybrid organisations, real estate management for housing associations, and transaction costs. The institutional context is used to understand the shared pressure that housing associations experience. The hybrid organisations theory is used to explain why housing associations balance their objectives differently. The transaction cost theory is used as a supporting lens to understand why differences in quality definitions and decision-making routines may hinder collaboration. In this research, the transaction costs are not operationalised as measurable costs. Instead, they are used as a theoretical lens to interpret alignment problems.

The literature review results in a conceptual model that guides the case study analysis. Concepts from the literature are used to synthesise the document analysis and the interviews and to guide the initial structure of the analysis.

2.1.3. Case Study Design

The empirical part of this research is designed as a multiple-case study. In this study, the individual housing association functions as the unit of analysis. This is appropriate because the research aims to understand how renovation quality indicators are defined and operationalised within specific organisational contexts. A case study design allows these processes to be studied in relation to organisational goals and decision-making structures (Yin, 2014).

The case study builds on the theoretical framework developed through the literature review. The literature review identifies the main concepts relevant to the analysis of the operationalisation of renovation quality, including organisational goals, quality indicators, management layers, trade-offs, and transaction costs. Multiple housing associations are included to enable comparison across cases. This makes it possible to identify both case-specific interpretations of renovation quality and recurring patterns across organisations. The cases are used to develop a deeper understanding of how similar organisations respond differently to comparable institutional pressures (Yin, 2014).

The case study consists of document analysis and semi-structured interviews. The document analysis provides insight into the formal translation of organisational goals and quality indicators, while the interviews explain how these indicators are interpreted and operationalised in practice. The findings from the individual cases are first analysed separately and then compared in the cross-case analysis. This structure supports the abductive logic of the research, as the empirical findings are used to refine the theoretical understanding and to develop the shared quality framework.

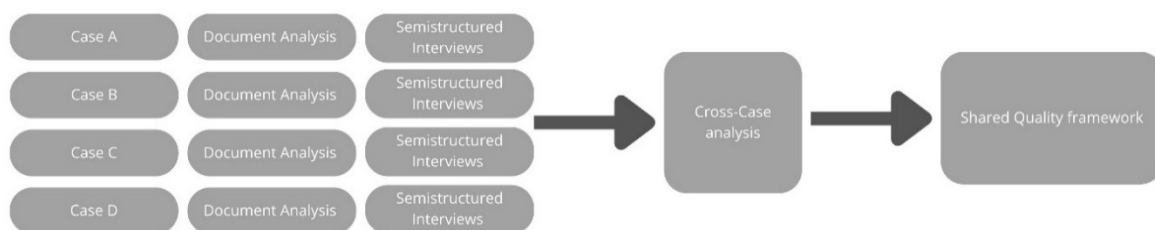


Figure 3: Case study logic (Author)

2.1.4. Expert Interviews for validation

Expert interviews are used in the final phase of the research to validate the shared quality framework. The purpose of these interviews is to assess whether the framework is recognisable and practically relevant for the Dutch housing association sector. The expert interviews take place after the case, and cross-case analyses have been completed, and a first version of the shared quality framework has been developed. Experts are selected based on their knowledge of renovation processes, housing associations, and inter-organisational collaboration. The interviews are semi-structured. The experts are asked to reflect on the structure, content and usability of the framework. The main topics include whether the identified quality indicators are complete, whether the distinction between shared and context-dependent indicators is useful, and whether the framework can support alignment between housing associations in practice. The feedback from the expert interviews is used to refine the final framework. If experts identify missing elements, unclear terminology or unrealistic assumptions, these points are incorporated into the final version of the framework.

2.2. Data collection

This research combines a literature review and a multiple-case study, including a document analysis and semi-structured interviews. Through the literature review, the concepts for the case study are identified: the institutional context and organisational goals, renovation quality indicators, management layers, and transaction costs. The outcomes guide the case study. The literature review therefore provides the basis for selecting the relevant documents and formulating interview topics. The case study then examines how these literature-based concepts are translated into practise within different housing associations.

2.2.1. Literature review

The data collection process begins with an extensive literature review. The aim of the literature is to develop the theoretical foundation for the case study. It defines which concepts are relevant for understanding how housing associations operationalise quality indicators. The literature review focuses on five main themes: renovation quality, quality indicators, organisational goals, real estate management layers and transaction costs.

For the literature review, sources include academic journals, policy documents, and other relevant, reputable online sources. These documents are searched in the TU Delft repository, Google Scholar, and the general Google engine. The general Google engine is only used for official policy documents, institutional reports and sectoral publications from organisations such as Aedes, Rijksoverheid and the European Commission. During this search, the following keywords will be used: Housing associations, Renovation, Quality indicators, Organisational goals, Collaboration, Real estate management, and Transaction costs.

2.2.2. Case study

The case study data collection is guided by the outcomes of the literature review. The literature review determines which organisational documents are relevant, who should be interviewed and which topics should guide the interview guide. The purpose of the case study is to examine how the concepts identified in the literature are translated into organisational practise. For each housing association, the organisational documents are collected. Not every housing association is expected to have the same documents; this will be further highlighted after the literature review. The semi-structured interviews are also guided by the literature review. The respondents are selected based on the management layers and decision-making roles defined in the literature.

2.3. Data analysis

The data analysis follows the abductive logic of the research design (Timmermans & Tavory, 2012). Where the research moves between the existing theory and the empirical data. The concepts from the literature review provide the initial structure for the case study. Where the case study findings are used to refine the understanding of how these concepts are

operationalised in practice. The analysis consists of four steps: literature review, case analysis, cross-case synthesis and framework development.

2.3.1. Literature review

The literature review is analysed to identify the main theoretical concepts relevant to the research. These include the institutional context, organisational goals, decision-making processes, management layers, renovation quality indicators and transaction costs. They provide an initial framework for understanding the empirical material. Where the empirical findings can refine the theoretical understanding.

2.3.2. Case analysis

The case study analysis consists of a document analysis and semi-structured interviews. For the document analysis, Atlas.ti was used to code the different strategic documents to identify recurring concepts and compare the strategic orientation of the housing associations. The documents formed the basis of the empirical data and allowed for the housing associations to be compared systematically. The semi-structured interviews were conducted to clarify how formal goals and indicators are understood and operationalised in practice.

Organisational Goals	Example Quote
Affordability	Meer betaalbare huurwoningen door DAEB voorraad te vergroten en niet-DAEB voorraad te verkleinen.
Availability	We realiseren een groei van het aantal woningen (sociale huur en middenhuur) in onze kerngemeenten en hebben een goed gevulde ontwikkelportefeuille.
Quality	Voor het sturen op de kwaliteit van ons vastgoed maken we onderscheid in technische kwaliteit en functionele kwaliteit. Technische kwaliteit gaat meer over de conditie van onze woningen. Functionele kwaliteit gaat meer over kwalitatieve kenmerken als oppervlakte, energielabel en toegankelijkheid van de woningen.
Sustainability	Woningen met een EFG energielabel zijn verleden tijd en steeds meer van onze woningen zijn comfortabel door goede isolatie of kunnen in de toekomst worden aangesloten op een alternatieve warmtebron.
Liveability	We benutten de kracht van stille huurders door hen te stimuleren en te faciliteren om hun talenten in te zetten in hun wooncomplex of buurt: de 'wijkcoöperatie light'.
Hybrid organisation objective	Example Quote
Social	Een glimlach op het gezicht van onze huurders. Daar is het ons allemaal om te doen.
Commercial	We realiseren een groei van het aantal woningen (sociale huur en middenhuur) in onze kerngemeenten en hebben een goed gevulde ontwikkelportefeuille.
Quality indicators	Example Quote
Quality indicator	Onze woningen zijn in 2050 aardgasvrij, energiezuinig en klimaatneutraal

Table 1: Codes for document analysis

2.3.3. Research quality

This research adopts a multi-case study design, which means the research process must be valid, reliable, and replicable (Yin, 2014). In this research, a phenomenon encountered in theory that housing associations define renovation quality differently, even though they share the same objectives and institutional context, is studied within the organisational context of Dutch housing associations.

The validity of this research is strengthened through triangulation. The literature review provides the theoretical concepts, the document analysis shows how these concepts are embedded in organisational strategies, and the interviews explain how they are interpreted and operationalised in practice. Internal validity is supported through abductive reasoning, in which the research moves between theory and findings. The similarities and differences among housing associations are interpreted through the theoretical concepts from the literature review to explain why these differences exist and how they create alignment problems. After the cross-case analysis, the first version of the shared quality framework will be developed. The expert interviews will assess whether the framework is complete and recognisable. This strengthens the validity of the final framework as it is tested by sector knowledge.

The reliability of the research concerns the consistency and transparency of the process. To ensure this, Yin's (2014) case study logic is used, which is linked to the processes of preparation, data collection and analysis. By coding the document analysis and using a structured interview guide, a strong foundation for the case study is ensured. The documentation of the method and literature study ensures that another researcher can follow the literature review, case selection criteria, and interview guide to conduct a similar cross-case analysis, making the research replicable.

2.3.4. Research ethics

This research includes human participation, which entails ethical obligations. This section reflects on how the participants of this research will be protected from harm. Minimising any potential ethical risks for participants will be the priority. The collected data will be safely stored at TU Delft OneDrive, and access will be restricted to the research team only. The HREC data security protocols will be followed to guarantee confidentiality, and the HREC application at the TU Delft has been approved. Participants in this research will be fully informed before they participate. They will be informed through an informed consent form and an interview protocol (Appendix 1 and 3). Participants will also be informed about the study goals, the voluntary nature of their participation, their rights, and potential risks.

This study contains information on the formulation of organisational strategies. Anonymity will be maintained to preserve any sensitivities that this may entail. If direct quotes or statements are used, they will not be traceable to the individuals. After the interview, the interviewees will have the opportunity to review their transcripts. Once the transcripts are approved, the audio recordings will be deleted, leaving only the anonymised transcripts.

2.3.5. Data management

This research will only collect the required data, ensuring no excessive data collection. The data will be stored on TU Delft OneDrive and will be accessible only by the research team. All collected data will be processed and stored in accordance with TU Delft's Research Data Management Policy and the General Data Protection Regulation (GDPR). All processed data will comply with the participants' signed consent. This ensures that it is legal and ethical. As mentioned before, only the anonymised interview transcripts will remain. The final research report will be stored in the TU Delft repository. Appendix 2 contains the Data Management Plan for further elaboration and the Data Management Checklist.

H3 Institutional context

This chapter presents a literature review to provide initial insights into the first research question: *What institutional and regulatory factors shape renovation quality in Dutch housing associations?*. The aim of this chapter is to examine the institutional factors that shape the context in which housing associations operate. Housing associations are highly influenced by political priorities and changing regulations. The chapter first highlights the nature of the institutional context through history, the influence of the Housing Act, and the compliance requirements that housing associations must meet. Then, the regulatory environment guiding renovation ambitions at the European, national, and regional levels is explained together with the accompanying quality indicators and frameworks. Together, these institutional and regulatory factors create the context in which housing associations have to make trade-offs.

3.1. Institutional governance and financial regulation

Housing associations have changed over the years as their institutional context has changed. Most housing associations emerged during the late 19th and early 20th centuries. Housing associations started as private initiatives to provide good housing for the workers. After the war, it was essential to build many houses, so the Dutch government initiated further development of social housing. Then, in 1995, the relationship with the government changed (Elsinga & Wassenberg, 2007). At first, the housing associations were supported through subsidies and loans. In 1995, the government decided that housing associations are individual businesses that should take care of themselves, creating the opportunity for them to pursue more commercial objectives. However, in 2010, the housing associations were losing their main social objective. The Dutch government decided to take back control. Housing associations are strongly influenced by the institutional context and directly by politics. Institutional theory explains that organisations react to institutional pressures in similar ways. The theory suggests that organisations seek to comply with norms and processes to increase their chances of survival, even when this does not improve efficiency (Cloudt, 2015). The concept is also referred to as institutional isomorphism, in which organisations in the same field become similar over time (DiMaggio & Powell, 1983).

3.1.1. Housing Act

In 1901, the Housing Act was enacted, which laid down the duties of housing associations. The most recent version of the act is the 2015 version, which was a response to the commercialisation of housing associations. With the Housing Act of 2015, the Dutch government took back control (Gruis, 2018). The aim of the renewed act was to compel housing associations to focus on their primary objective: providing affordable housing for vulnerable citizens. The distinction between what qualifies as Service of General Economic Interest (SGEI) and what does not was made more explicit. Housing associations also had to enter into an agreement (Prestatie Afspraken) with the municipalities and tenant associations regarding their

plans to provide good affordable housing in the area (Ministerie van Binnenlandse Zaken en Koninklijke relaties, 2015). The agreements needed to be periodically updated to ensure that housing associations continued to comply with the objectives. With the Housing Act 2015, the Autoriteit Woningcorporaties (AW) also came into effect.

3.1.2. Compliance

Housing associations must report to the AW and WSW to demonstrate financial responsibility and the ability to perform their tasks efficiently (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2025). As SGEI organisations, housing associations are secured by the state on their loans through the WSW (Kuipers, 2026). Because they are secured by the state, they can access more favourable loans (WSW, 2026). In exchange, they must comply with the WSW and AW evaluation framework (Autoriteit woningcorporaties & Waarborgfonds Sociale Woningbouw, 2024). In this framework, the WSW and AW assess financial continuity, the business model, and governance. To ensure financial continuity, the housing association's financial position is assessed using ratios.

The ratios are:

- The Interest Coverage Ratio (ICR), which shows if the operational cash flow is enough to pay the interest
- The Loan-to-Value (LTV), which states whether the housing associations will create enough value
- the Solvency, which gives insight into the equity capital

The ratios determine the housing association's investment capacity and are influenced by external factors, including changing regulations and rising costs. Housing associations are under financial pressure, which limits their ability to invest in renovation projects and forces them to continually make trade-offs between core organisational goals and financial continuity. The way renovation projects are financed further influences these trade-offs. Within the evaluation framework, a distinction is drawn between maintenance and investment. For a renovation to become an investment rather than maintenance, it must meet three of four criteria. The ministry defined the following criteria (Ministerie van Infrastructuur en Waterstaat, 2025):

- Improvement of the energetic performance;
- Façade- of roof renovation with the same quality as new buildings;
- Changes to the internal quality through bathrooms, toilets, and kitchens that meet the new built quality;
- New installations ensure that the property is future-proof and does not have to be improved for the coming 10 years.

As a result, housing associations are stimulated to bundle interventions into larger projects. Otherwise, the intervention is treated as maintenance, which is part of the operating expenses and directly impacts financial ratios and investment capacity constraints. The decision to

renovate becomes an extra financial burden for housing associations. Additionally, housing associations are no longer allowed to increase rents when they improve properties through insulation measures (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2025). Even though the property's quality has improved, the investment is less feasible. Housing associations are allowed to increase the rent when installations are changed and the change results in a significant energetic improvement to the property (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023). The financial constraints complicate investment in housing association renovations. As housing associations are already struggling financially and have to balance all organisational goals in these decisions, they make different trade-offs and operationalise renovation quality in different ways. The difference between housing associations causes them to further steer away from standardisation. Institutional isomorphism shows that organisations become similar over time. However, due to these financial constraints, housing associations create a form of decoupling between strategic ambition and operational implementation (Meyer & Rowan, 1977). Strategically, they align with the institutional context, but in practice, they are unable to make this feasible for their organisations (Boxenbaum & Jonsson, 2017).

3.2. The institutional quality context for renovation

Housing associations operate in a multi-layered institutional environment shaped by the European, national, and regional agreements. Together, these different layers set the ambitions of housing associations. The European context defines the long-term goals through sustainability ambitions. The ambitions are translated into national goals, which steer the portfolios of all housing associations in the Netherlands. The goals are then translated into regional plans (Woondeals) and further specified in the agreements with the municipality. From which the housing associations make their organisational plans. The national regulatory baseline underpins quality in the Netherlands.

3.2.1. European sustainability ambitions

The EU aims to be climate-neutral by 2050; to get there, it translates the goals set out in the European Green Deal into European climate law (European Union, 2021). The European ambitions include intermediate goals, such as reducing greenhouse gas emissions by at least 55% from 1990 levels by 2030. Buildings are the largest energy consumers; the Energy Performance of Buildings Directive was published in 2002. The EPBD has developed into a useful EU framework that sets the pathway to 2050 (European Union, 2024). The EPBD is one of the enablers of the renovation wave aimed at accelerating renovation (European Union, 2020). Within the renovation wave, there is an initiative for social housing that promotes partnerships between municipalities, housing associations, and businesses. This collaboration aims to double the pace of renovation through innovation and standardisation.

3.2.2. National performance agreements

In the Netherlands, housing associations have agreements with the government, municipalities and the tenant organisations through the Nationale Prestatie Afspraken (NPA). Together, they have agreements on four themes: availability, affordability, liveability, and sustainability. Housing associations use the NPA's goals to set their own. The NPA is an important basis for organisational goals and provides a perspective on the trade-offs housing associations must make among the different goals. Regarding availability, there is an ambition to add 30.000 dwellings each year through new construction and conversions of existing buildings. To realise the goals, housing associations have to make large investments. For affordability, housing associations have agreed to gradually raise rents over an average of three years. If properties have an A+ energy label or above, the appropriate assignment border can be 25% or higher. Liveability, which includes maintenance and quality, is agreed to require an approach from all stakeholders to improve the area and the properties. Housing associations receive additional state funding to improve their properties, and they are not allowed to have a condition score below 4 unless they have plans to change it. The condition score is based on the NEN 2767, where the outside of the property is measured based on three criteria: the severity, the size, and the intensity, and that is then translated into a score (NEN, 2025). This is also often used to determine whether a complex has to be renovated soon.

The most tangible goals are the sustainability goals. The clear end goal is to become energy neutral by 2050. The coming goal is to eliminate the EFG-labels by 2029 and to build more circular and climate-adaptive. By 2030, 450,000 properties must be gas-free, and 675,000 must be future-ready. However, future-ready is still hard to define. The goal is to insulate all properties to the Standaard, which is tied to the heat demand. The reduction of the heat demand is tied to goals set in 2030, 2034, and 2050 as seen in Figure 1.

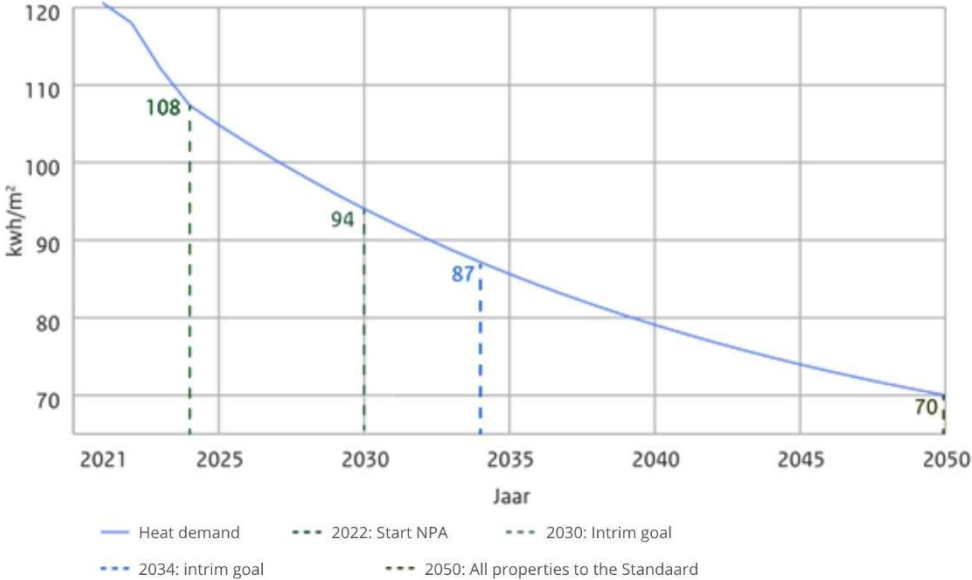


Figure 4: Reducing the heat demand to 2050 (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2025)

3.2.3. Regional performance agreements

The NPA is translated into Woondeals, which are agreements made at the regional level (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2025b). In the Woondeals, more explicit agreements are made between the municipalities, the province, the Ministry and the housing associations. In the Woondeals agreements, regarding availability, affordability, new-construction locations, and enabling infrastructure such as water and energy (College van Gedeputeerde Staten van de provincie Zuid-Holland et al., 2023). Infrastructure is becoming an increasingly important subject as the energy grid becomes a greater constraint on renovation projects. Municipalities develop heat transition plans to support the transition towards energy neutrality in 2050. The plans are also important for housing associations, as they determine whether their properties can connect to a heat grid or must be supplied with a heat pump. In this way, regional agreements and heat transition plans shape the feasibility and timing for renovations.

3.2.4. Municipal performance agreements

The Housing Act of 2015 obliged housing associations and municipalities to enter into regional agreements on social housing properties in the area. The agreements are based on the NPA and are specific to the area in which they operate. Municipalities have agreements with one another to add housing stock to Woondeals (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties et al., 2023). The agreements are also specified in the Prestatie Afspraken. The Prestatie Afspraken share the same themes as the NPA: availability, affordability, sustainability/quality, and liveability. However, interpretations and prioritisation can differ across regions. Within the performance agreements, multiple housing associations with properties in the area are involved, causing them to have agreements with one another as well. In some areas, housing associations have additional agreements among themselves in addition to agreements with the municipality. The agreements help housing associations support and stimulate one another. In the region of The Hague, the tasks of adding and renovating properties have become enormous; combined with limited financial resources, housing associations have to help each other to reach their ambitions (Sociale Verhuurders Haaglanden et al., 2021). Through the agreements, housing associations also created collaborations, such as the VRDRS collaboration. In this collaboration, 5 housing associations aligned their procurement documents to accelerate the initiation phase of the renovation process. The regional collaborations stimulate efficiency and help housing associations with their difficult task of reaching sustainability ambitions.

3.2.5. Tenant associations

The Housing Act also obliges housing associations to include tenant associations in the operationalisation of renovation plans. The Nationaal Sloop- en Renovatiestatuuat states that tenants must be involved in the process from early on (AEDES et al., 2024). The process starts when the housing association contact the tenant associations to say that a complex or location needs improvement. Then, a tenant research is conducted by the housing association to investigate the tenants' wishes. The housing associations assess the feasibility of the plans and relay the results back to the tenant association. When the housing association decides to continue with the renovation, the tenants are informed of the renovation plans. The tenants

must agree to this in a written statement. The renovation plan may be executed only if 70% of the tenants agree.

3.3. Sector Benchmarks and quality frameworks

The institutional environment establishes the ambitions and regulatory context for housing associations; the ambitions must be translated into operational indicators to assess whether the housing associations are on track. As mentioned earlier, the NPA establishes the ambitions for the housing associations. The ambitions are translated into regional performance agreements, after which housing associations must set their own goals. The sector has created several frameworks to measure the ambitions. The ambitions set through the NPA are too ambitious for housing associations to realise. Housing associations have to fall back on alternative measures to assess the quality of their portfolios and renovation plans. The quality environment is set with the regulatory baseline of the Netherlands, the Besluit bouwwerken leefomgeving (Bbl). The branch organisation Aedes serves as the link between national ambitions and the operationalisation of the housing associations; it also sets indicators to measure their performance. The results can be used on the strategic layer. To understand the quality indicators, housing associations use a framework for the tactical layer, and one for the operational layer will be examined. Het Nieuwe Normaal provides a framework for measuring circularity goals. Kwaliteit in Balans presents a framework that incorporates all aspects of a renovation. The frameworks shape how renovation quality is defined; as mentioned, the ambitions are too high for housing associations to apply them consistently. The mismatch leaves room for interpretation, and other quality frameworks are combined to set goals. In addition to the frameworks mentioned, many more exist, creating a fragmented quality environment. In this part, this is highlighted.

3.3.1. Besluit bouwwerken leefomgeving

In the Netherlands, housing associations must apply for a permit to renovate properties. The regulatory baseline for renovations, called the Besluit bouwwerken leefomgeving (Bbl), applies. The minimum energy performance requirements and technical requirements for renovation are set out in the Bbl (Overheid, 2025). The Bbl describes requirements for energy performance, insulation, and ventilation, as well as for safety, health, and usability. For example, the requirements for renewing or replacing insulation layers for the floor (minimum of 2,6 m² K/W), the façade (1,4 m² K/W), and the roof (2,1 m² K/W) (RVO, 2026). For changing windows, doors, and window frames, the U-value must be lower than 2.2 W/m² K (RVO, 2026). Bbl defines a significant renovation as one in which 25% of the building envelope area is changed. If a renovation is significant, a minimum renewable energy value is required; this depends on the roof and usable floor area (RVO, 2025). If changes are made to the installation in the building, they must comply with the system requirements indicators. The requirements are the basis for the renovations that housing associations undertake. The difference in renovation standards between housing associations stems from the additional steps they take to meet national and European goals.

3.3.2. Aedes

To help housing associations navigate through the complex institutional and regulatory environment, there is Aedes, the branch organisation for housing associations. Aedes translates the new regulations and ambitions from the European and national levels to practical documents that housing associations can implement easily. They also defend the interests of housing associations on different institutional levels. Furthermore, Aedes develops programs and projects, such as the Renovatietreintjes mentioned earlier, that help housing associations improve their operations. To ensure transparency of the performance of housing associations, Aedes has the Aedes Benchmark.

The Aedes Benchmark measures the performance of housing associations (Aedes, 2025a). In the benchmark, there are 5 performance categories: tenants' opinion, finance, maintenance and improvement, sustainability, availability and affordability, and liveability. For this research, the quality indicators for maintenance and improvement, as well as sustainability, will be highlighted.

Maintenance and improvement show the relationship between costs and the property's quality, as measured by functional, technical, and living quality. The functional quality is measured through the WWS-points, a system that translates a property's characteristics into points (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2023). The points linked to maintenance-related parts reflect the property's use-value. The technical quality is based on the condition score, which is used in the complex strategy. The condition score is based on the NEN 2767, which determines the state of a building (NEN, 2021). Lastly, the quality of life is measured through tenants' perceptions of quality.

Sustainability in the Aedes benchmark is measured through insulation performance, energy performance, and CO₂ emissions from gas. Insulation performance is measured through the use of insulation materials and the Standaard. The Standaard emerged from the Klimaat Akkoord, which determined that it was necessary to establish an insulation standard to accelerate the renovation of the Netherlands' existing housing stock (Rijksoverheid, 2019). The Standaard is based on technical possibilities, resulting in a net heat demand of kWh/m²/year for the entire property (RVO, 2022). The aim is that, by 2050, all housing associations comply with the Standaard, meaning they have a certain insulation level and a gas-free heating supply (TNO et al., 2020). Sustainability is also assessed through energy performance, as reflected in the EP2-value, which indicates energy use per m² per year. Properties with a low EP2 value have a higher energy label, which is still used to show the performance of the housing stock.

In the 2050 goals of the Klimaat Akkoord, the built environment must be net-zero, including circularity (Ministerie van Algemene Zaken, 2025). Net-zero is not yet included as a quality indicator by Aedes, but it is an important factor for renovation. In Het Nieuwe Normaal, quality indicators for circularity are stated. The state of the building is assessed through its layers.

3.3.3. Het Nieuwe Normaal

Under the EU agreement, the Dutch economy must be completely circular by 2050. This requirement is not yet incorporated in the Kwaliteit in Balans and the Aedes benchmark as indicators. However, it is becoming increasingly important as we approach 2050. Het Nieuwe

Normaal for existing buildings makes circular renovation measurable by creating quality indicators for the different components (Verhulst et al., 2026). In the framework, there are three themes: Environmental impact, Material use, and Value retention. The Layers of the brand are used to show the lifespan of the building's different components. The lifespan of the different components determines the level of detachability. In Figure 7, the brand components, by layer, are shown along with their importance.

Indicator	Layers of brand			
	Structure	Skin	Services	Space
Environmental Impact				
MPG	●●●	●●●	●●●	●●●
Material CO2 Emission	●●●	●●●	●●●	●●●
Material CO2 Storage	●●●	●●●	●●○	●●●
Material use				
Material Preservation	●●●	●●●	●●○	●●○
Origin of materials	●●●	●●●	●●○	●●●
Healthy materials	●●○	●●○	●●○	●●●
Handling of waste material	●●●	●●●	●●○	●●●
Value retention				
Adaptivity		●●○	●●●	●●●
Detachability	●○	●●●	●●●	●●●
Re-use Potential	●●○	●●○	●●○	●●○

Legenda
 ●●● Most relevant
 ●●○ Relevant
 ●○○ Can be relevant

Figure 5: Indicators per layer of brand (Verhulst et al., 2026; translated by Author)

3.3.4. Kwaliteit in Balans

In the Netherlands, a framework called Kwaliteit in Balans aimed to create a flexible yet explicit framework for renovation, initially intended for maintenance (Piekhaar et al., 2021). It is part of Resultaat Gericht Samenwerken, a new procurement approach focused on the desired outcome rather than prescribed measures. Kwaliteit in Balans distinguishes seven quality categories: Safety, Health, Energy performance, User quality, Sustainability, and Future value. The categories indicate that renovation quality is balanced across them, making this framework relevant to this research. There is no hierarchy among these categories; if one or more is more important, that is a context-based decision dependent on the housing association's strategic goals, which aligns with the assumption that housing associations approach their renovation strategy through organisational goals.

In this research, Kwaliteit in Balans is viewed as a conceptual framework for analysing how housing associations determine quality. Through the various quality indicators, connections to the organizational goals can be made more easily.

3.3.5. No-Regret Renovation

The various quality frameworks provide guidance for housing associations in evaluating their renovation decisions. In renovation decision-making, housing associations use the No-Regret

principle. As housing associations continually balance their social and commercial objectives, the No-Regret principle helps them make informed decisions that align with their primary objective of providing affordable housing. The No-Regret principle ensures that housing associations take the right sustainability measures at the right time (Van Eck, 2018). The principle includes three steps in becoming energy neutral. First, energy demand is reduced through measures such as insulation. The next step is to make the property ready for a gas-free installation. The last step is to include the installation to make the property energy-neutral. No-Regret reduces the risk of implementing sustainability measures.

3.3.6. Variation in implementation of (policy) quality frameworks

The literature review shows that quality for Dutch housing associations is not measured through one single indicator or framework. As the ambitious goals from the EU, national and regional contexts shape the horizon. The road towards becoming energy-neutral is not yet laid out, causing housing associations to find their own way using their own set of indicators. The quality landscape is shaped by the Bbl's regulatory baseline, which defines the legal minimum for a renovation. The Aedes Benchmark provides a sector-wide perspective and allows housing associations to compare, mostly at the strategic level, what is relevant. Het Nieuwe Normaal makes circularity, material use, environmental impact, and value retention more measurable, thereby enhancing the adoption of circularity at the tactical layer. Kwaliteit in Balans offers a broader framework for translating quality to the project-level, guiding the operational layer.

The frameworks provide a large set of indicators for measuring quality. The different indicators used reflect the many responsibilities of housing associations. As the frameworks have different purposes, the measurements also differ. The quality indicators from the Aedes Benchmark provide a shared reference for assessing quality across housing associations, but they focus on the building's current performance rather than strategic alignment. Policy indicators used in the benchmark, such as the Standaard, are not a one-size-fits-all prescription; rather, they are long-term targets for the Dutch housing stock (Roossien & EnergyGO, 2020). Emerging frameworks like Het Nieuwe Normaal highlight the growing importance of circularity and long-term value, yet these aspects are not yet structurally embedded in existing benchmarks. Frameworks such as Kwaliteit in Balans support housing associations in translating organisational goals into project-level quality requirements. However, the focus is on collaboration with the contractor rather than between housing associations. Next to these frameworks there is also an organisation which collects knowledge and quality for housing associations (KWH, 2024). The organisation is mostly focused on the tenant perspective and does not define the technical quality. A more commercialised organisation that also created a framework for renovation is the Natural Step, which looks at sustainability as a process (The Natural Step, 2025). Next to these organisations, there is also a certificate called WoonKeur that determines whether a property is lifetime-compatible based on functional quality (De Vree, 2026). The framework is based on four other frameworks; Seniorenlabel, Politiekeurmerkveilig Wonen, VAC-kwaliteitswijzer and the Handboek voor toegankelijkheid.

All the frameworks result in a fragmented landscape of quality indicators. The mutual policies' targets are not yet structurally embedded in the existing frameworks. As a result, housing associations have to translate the targets into practical decisions themselves. The translation process is influenced, for instance, by their portfolio and financial capacity. Therefore, even

when housing associations work towards the same goals, they may interpret quality differently. The adoption of these quality frameworks is not a technical issue but also a strategic one. The problem is not the lack of quality indicators but the interpretation of them, emphasising the need for a shared quality framework that helps structure the existing indicators.

3.3.7. Conclusion: What institutional and regulatory factors shape renovation quality in Dutch housing associations?

The institutional and regulatory factors that shape renovation quality for housing associations are the Housing Act, financial compliance, performance agreements, European and national sustainability ambitions, the Bbl and quality frameworks. Together, these factors create the context in which housing associations have to translate the broader ambitions into a workable standard for their own organisational and portfolio. The Housing Act defines the primary task of providing affordable housing for vulnerable citizens. Showing that quality for housing associations is not just the functional and technical aspects, but also affordability and liveability. Financial compliance through the WSW and AW shapes the financial aspects of a renovation and influences decision-making. The institutional context should cause housing associations to become similar, as the institutional isomorphism predicts convergence (Boxenbaum & Jonsson, 2017).

The institutional quality context, through European and national ambitions, further increases the complexity for housing associations. Ambitious goals are set to eliminate EFG-labels by 2029, reduce heat demand, and achieve circularity and energy neutrality by 2050. The goals are ambitious, and the indicators used to measure them are not feasible for housing associations. Therefore, housing associations must translate them into feasible indicators for their portfolios. This creates a form of decoupling between strategic ambition and operational implementation (Meyer & Rowan, 1977).

The Bbl establishes the regulatory baseline for housing associations and defines the technical requirements that all renovations must meet. The difference is that housing associations implement quality indicators above this baseline. The additional indicators are used to pave the way for housing associations towards the sustainability goals. However, many frameworks can be used to define quality for housing associations, leading to different interpretations. Housing associations all operate within the same institutional and regulatory environment, but because of their ambitious institutional goals, different trade-offs are made depending on organisational stances. This explains why renovation quality is interpreted differently across housing associations and why a shared quality framework is needed to structure the different interpretations.

H4 Organisational goals and decision-making

In this chapter, the second research question will be answered: *How do organisational goals and decision-making processes influence the interpretation of quality?*. Housing associations derive their organisational goals from the institutional context. In this chapter, it is explained how housing associations translate the institutional factors into their own organisational goals. First, the goals defined by Aedes and the Housing Act are highlighted, and then their operationalisation in theory is explained. This is then applied to the renovation decision-making process.

4.1. Organisational goals of housing associations

The primary task of housing associations is to provide affordable housing for vulnerable citizens, giving them a very social objective. However, in addition to their primary task, they also have to meet financial goals, giving them a more economic objective. As both objectives coexist in the same organisation, housing associations operate as hybrid organisations. The hybrid organisation theory explains how the coexistence of different value systems creates inherent tensions in decision-making (Pache & Santos, 2013). In the previous chapter, the institutional theory was highlighted, showing that organisations react the same to the institutional context. The hybrid organisation helps explain why housing associations diverge in practice as they continuously have to balance their competing objectives. Transaction costs are the hidden costs that arise when the organisation needs to negotiate and monitor. The competing objective can create a form of decoupling where housing associations formally adopt strategic ambitions but translate them differently into tactical requirements (Boxenbaum & Jonsson, 2017).

Hybrid organisations, therefore, have to continuously negotiate the competing goals. Negotiations lead to higher transaction costs for housing associations, as processes are adapted rather than standardised. The transaction costs are the hidden costs that arise when the organisation needs to negotiate, monitor or coordinate the adopted strategy (Rindfleisch, 2019). Housing associations continuously have to balance their organisational goals and decide on their priorities. Therefore, housing associations make different decisions as they have different priorities which creates inefficiencies and therefore higher transactions costs. This theory is supported by Gruis (2008), who shows that housing associations have different orientations, with some adopting a more business-like orientation alongside their social orientation. He identifies 4 archetypes within housing associations: defender/prospector and commercial/social. As a result, housing associations adopt diverging strategies, leading to varying approaches to, for instance, renovation and innovation. The varying approaches inhibit standardisation and increase the transaction costs when housing associations aim to collaborate. However, their core objectives, as defined by the Housing Act, as explained in the previous chapter, ensure that housing associations maintain their social objective (Rijksoverheid, 2026). It establishes clear directives on how a housing association should

function to serve the public interest by defining the regulations housing associations must comply with. Themes from the Housing Act are shown in figure 6.

Objective	Definition
Affordability	The properties of the housing association are affordable for the target group. It is measured through the living costs (rent, energy costs and service costs). At least 80% of the properties have to be allocated to households with incomes below the defined threshold.
Availability	Housing associations must have a strategy to improve and restructure their portfolio to match the target group. With the restructuring they have to contribute to the housing stock to meet the demand while maintaining affordability.
Livability	Housing associations have to improve the livability through collaborating with the tenants and partners, especially in the older neighbourhoods (1960-1980).
Sustainability	Housing associations have to invest to improve the quality and sustainability of their properties. Where the energy consumption is reduced, renewable heat sources are considering circularity and climate adaptation.
Quality	Properties are rented for the right price/quality ratio. The properties are measured through function and technical quality, sustainability and livability.

Figure 6: Objectives of housing associations (Rijksoverheid, 2026; translated by author)

The objectives are crucial when developing the strategy of housing associations. Housing associations develop their strategy through an entrepreneurial plan that defines their organisational goals. Housing associations are obliged to maintain their social objectives; all housing associations should have an entrepreneurial plan that aligns with the objectives of the Housing Act (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties et al., 2022). As mentioned before, Aedes is the Branch organisation of housing associations that provides direction. Housing associations regularly use their manuals to guide their own. Aedes also provides a roadmap that outlines what the entrepreneurial plan should entail and how it can be measured (Aedes, 2018). This shows the different goals set out by the Housing Act and the organisational obligations it entails.

Goals	Affordability (Betaalbaarheid)	Availability (Beschikbaarheid)	Quality (Kwaliteit)	Sustainability (Duurzaamheid)	Livability (Leefbaarheid)
Social Performance	M1. The size of the affordable housing stock matches the size of the corporation's target group within the working area, as included in the performance agreements.	M2. The flow-through (housing turnover) is at a sufficient level. M3. The size of the housing stock is sufficient to meet demand and is deployed appropriately.	M4. The quality of housing and living environment for the target group aligns with the corporation's ambition and societal task. M5. Necessary maintenance and corporate supervision are sufficient to keep the current condition of the housing stock at the desired level.	M6. The housing stock of the corporation meets the established energy performance requirements now and in the future.	M7. The quality of the living environment meets the requirements set by the corporation. M8. The corporation's commitment to the living environment (future proofing and performance agreements) is sufficient. M9. The corporation collaborates effectively with social organizations in the area.
	O1. The rental policy aligns with the objective of affordability. O2. The housing corporation's policy is aimed at preventing evictions and increasing housing opportunities. O3. The rent collection process is in order.	O4. The corporation has a current portfolio strategy that clearly indicates what transformation the housing stock must undergo in the coming years. O5. The organization is financially and organizationally capable of realizing the desired transformation, in both new construction, renovation, and demolition. O6. The rental mediation process is in order. O7. New construction and renovation plans align with the portfolio strategy.	O10. The organization is developing in ways that improve technological developments and work methods.	O11. The formation and quality of the supervisory board are tailored to the (future) task. O12. The corporation complies with relevant laws and regulations, now and in the future.	O13. The organization ensures trustworthy and timely data processing.
	G1. We engage with stakeholders regarding goals, considerations, opportunities, priorities, and results. G2. We have a good process for strategic planning, formulation of objectives, monitoring and reporting and coordination with stakeholders.	G3. Financial obligations that may hinder achievement of objectives are identified and managed.	G4. The organization has identified the risks that threaten the achievement of objectives.	G5. There is a well-functioning board and quality supervision.	
Financial	F1. The financial continuity of the corporation is safeguarded. The corporation can meet its obligations in the short and long term. F2. Equity corresponds to the risk profile.	F3. The extent of external financing is appropriate relative to the desired value of the real estate. F4. There is sufficient return on the real estate.	F5. Sales losses and operating costs are in proportion to the desired shrinkage of the housing stock. F6. The organization controls operational management costs.	F7. The organization's internal organization is sufficiently mature for financial derivatives.	

Figure 7: Organisational strategy of housing associations (Aedes, 2018; translated by author)

The organisational goals mentioned above are well known; sector-wide housing associations operationalise them differently, as their balance between social and economic objectives can vary. This results in variation in the way housing associations make trade-offs in decision-making.

4.2. From strategy to real estate choices

To understand how organisational goals are translated into clear targets and how quality indicators are interpreted, the process by which housing associations define their strategy will be highlighted. Housing associations translate these goals to clear targets; these goals are tied to social performance. For a housing association to reach these goals, the organisation, strategy, and internal policies must be aligned. In the Portfolio strategy, housing associations translate the entrepreneurial goals into a plan for their real estate (Aedes, 2024). In the portfolio strategy, housing associations must justify how they will maintain and improve the quality of their real estate and develop renovation plans. All housing associations have their own entrepreneurial plans with defined goals, even though they share the same objectives. Creating inefficiencies and higher transaction costs when negotiating these strategic goals. To gain further insight into how housing associations are organised, Nieboer's (2009) research is used. In real estate management for housing associations, a division between portfolio management, asset management, and property management is commonly used. The division goes from strategy to specific maintenance, as seen in Figure 4. In portfolio management, the policy is determined, including the entrepreneurial plan and the portfolio strategy. The portfolio management level is also where decisions are made about which regions to invest in and their priority, so that the renovations can take place. On the asset management scale, different projects or apartment complexes are assessed to determine the best approach. The decision on which properties will be renovated and how they will be renovated is made on this level. In property management level, the focus is on daily maintenance.

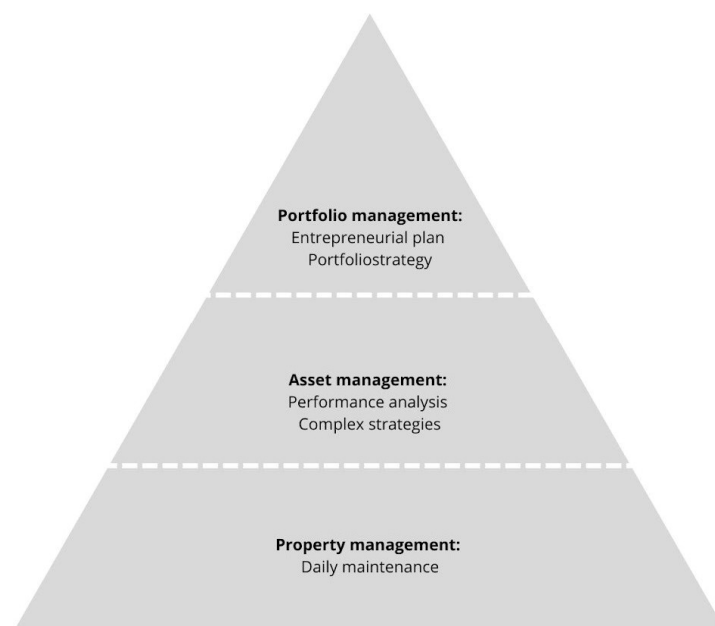


Figure 8: Levels of real estate management (Nieboer, 2009)

To connect how housing associations are structured with how organisational goals are translated into renovation projects, the Policy rollercoaster (Beleidsachtbaan) can be used (Aedes, 2023b; see Figure 4). In the Policyrollercoaster, the relations between the different management layers are shown. Seen that the organisational goals are translated into concrete plans for each apartment complex by asset management. The asset manager translates the plans into an actual project. In the project, the quality indicators become more specific as the scale becomes smaller. During translation across different layers, housing associations have to negotiate the prioritisation of organisational goals internally. If the layers do not align, this increases the transaction costs in the decision-making process.

4.2.1. Decision process operationalisation quality indicators

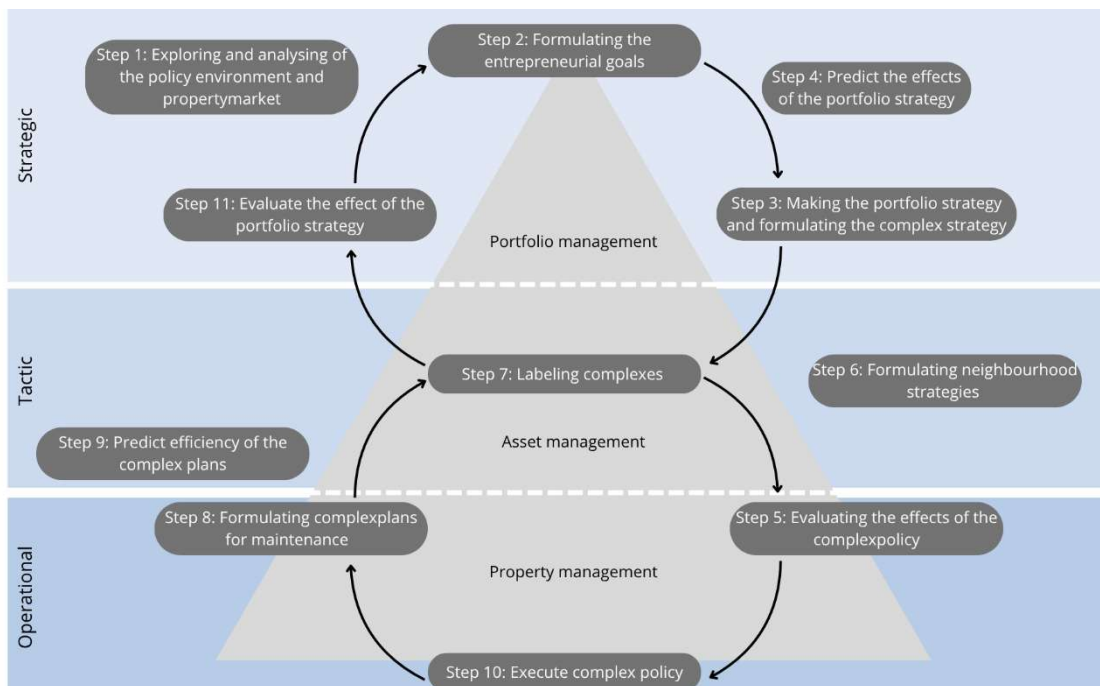


Figure 9: Policy rollercoaster (Aedes, 2023 b; translated by author)

Portfolio management:

On the portfolio management layer, the context of the housing associations' portfolios is analysed and translated into entrepreneurial goals. The goals are translated into a portfolio strategy, with concrete measures. Before the portfolio strategy is used and translated into complex strategies, the potential effects are tested, and the strategy is readjusted. Then, the portfolio strategy and complex strategy are evaluated in the asset management and property management layers.

Asset management:

The translation layer of asset management is crucial for translating the organisational goals into quality indicators. The asset management layer connects strategy, tactics, and operations

(Sharam, 2025). The trade-offs between the competing organisational goals are made on the asset management layer. It is a continuous process of defining what the organisation wants and what is needed to get there. To pave the way to where the housing associations wants to be, the asset manager must manage risks, operational planning, financial planning, and capital planning. Sharam (2025) also notes that each housing associations is different, and this is reflected in the strategy and tactical plans. Therefore, the asset management layer is important to understand the different trade-offs within the organisation. The asset manager translates the portfolio and complex strategy into neighbourhood strategies. Then the neighbourhood strategies can be translated into giving labels to the complexes. The criteria for the labels for the complexes come from the portfolio and complex strategy.

Property management:

Then the property management layer translates the complex with a critical label into plans for the complexes. In these plans, the strategy for the complex is formulated and linked to its maintenance and rentability. The multi-year maintenance plan is created and executed at the operational layer and evaluated back to the strategic layer.

4.3. Implementation of quality indicators through management layers

The implementation of quality indicators is done through the policy rollercoaster of housing associations. This is not a purely technical process but also an organisational translation process. The quality is primarily determined during the decision-making process, in which the building's existing characteristics are linked to organisational goals and technical constraints (Visscher, 2008). This results in quality being shaped by strategic choices. Garufi (2015) shows that a sustainable renovation requires an integrated perspective that considers technical, functional, and organisational dimensions together during decision-making. Functional quality refers to the extent to which a property continues to meet current and future user needs. Technical renovation quality refers to the building's performance, including construction quality, installation performance, and building physics. The organisational dimension is the last to be incorporated into the renovation decision-making process. Housing associations use quality indicators to translate organisational goals into accessible, measurable criteria (Swan, 2014). These indicators help housing associations steer through the different layers. As housing associations are hybrid organisations and quality is multidimensional, they still find it challenging to integrate these two to develop meaningful methodological approaches (Leichter et al., 2025). In this part of the research, the decision-making process is highlighted through the different management layers.

4.3.1. Transaction cost theory

The hybrid nature of housing associations requires them to continuously balance their objectives in a changing context. Causing them to steer away from the standardisation opportunities offered by programmatically combining projects. The transaction cost theory provides a useful lens for explaining why housing associations make different quality decisions despite having the same institutional context. The transaction cost theory examines the costs

associated with market transactions, focusing on those of coordinating, negotiating, and monitoring (Rindfleisch, 2019). The costs not only derive from market transactions but also from (inter-)organisational processes. Such as organising a renovation project involving multiple actors. As explained earlier, housing associations use the policy rollercoaster to translate projects from the strategic layer into practice. This is where transaction costs become relevant, as the process requires coordination among various internal departments. The way housing associations balance transaction costs leads them to make different decisions despite sharing the same institutional context. As Gruis (2008) shows, some organisations are more driven to become more commercial by reducing costs, while others prioritise social outcomes. Implementing the quality indicators requires trade-offs across layers, leading housing associations to implement them differently. For this research, the transaction cost theory will be used to define the alignment problems between housing associations.

4.3.3. Barriers in the decision process of implementing quality indicators

As mentioned in the previous part of this chapter, housing associations translate their organisational goals through the different management layers. The asset management layer is the most crucial for decision-making. In this part, the management layers are connected to the implementation of quality indicators. On the portfolio management layer, the quality indicators are used to define long-term ambitions for the entire portfolio. This is where the institutional context has the most influence. The indicators used on the portfolio level are shaped by the Housing Act, compliance and the institutional quality context. This encompasses steps 1-3 from the policy rollercoaster. When, in steps 4 and 5, the effects on the portfolio are predicted, the functional, technical, and organisational dimensions affect implementation (Garufi, 2005). The technical, social, market, financial, and political factors also affect decision-making and are continuously changing, making the timing of strategic documents crucial to the outcome (Nieboer, 2009). In steps 4 and 5, the translation is made to the asset management layer. This is the translation between the strategic and operational layers, making the implementation of quality indicators a crucial task. This is the layer where the trade-offs are made, and the asset manager assesses which complexes require intervention, which quality ambitions are feasible and how the different organisational goals are balanced. This is where the indicators become decision criteria. In step 7, the complexes are labelled through the criteria. In step 8, these criteria are translated into execution plans that reflect indicators from the portfolio strategy.



Figure 10: Crucial translating steps Policy rollercoaster (Aedes, 2023 b; translated by author)

The crucial steps in the policy rollercoaster directly affect how the quality indicators are implemented. The steps involve making trade-offs and setting the quality indicators in the context in which they operate. The translation between the different layers can cause higher transaction costs

4.3.4. Conclusion Organisational goals How do organisational goals and decision-making processes influence the interpretation of renovation quality?

The chapter has shown that organisational goals and decision-making processes strongly influence how housing associations interpret quality. Even though housing associations operate within the same institutional context, the interpretation of renovation quality is strongly influenced by social, financial, technical, and organisational aspects. As housing associations are hybrid organisations, they must continually balance their different objectives; this creates tension during the decision-making process. Causing quality to be shaped by the trade-offs housing associations have to make during the implementation. If the different organisational layers are not aligned, the negotiation costs might be high.

The decision-making process across portfolio, asset and property management shows where these trade-offs are made. At the strategic level, broad organisational goals are formulated. At the tactical layer, these are translated into complex strategies. At the operational layer, quality is further specified in the projects. The translation between the different layers and the hybrid organisation theory explains why quality indicators can have different meanings within and between housing associations. The transaction cost theory helps explain why these differences become problematic in collaboration. When housing associations use different definitions, have different ambitions, and follow different procedures, more time is needed for alignment. The hidden process costs of negotiating, monitoring and coordinating form a barrier to collaboration

between housing associations. Therefore, the challenge is not only to identify which quality indicators are used but also to understand how they are translated and negotiated in practice.

4.4. Theoretical synthesis and empirical focus

The literature shows that renovation quality for Dutch housing associations is not a fixed technical concept but is shaped by organisational decision-making (Visscher, 2008; Garufi, 2015; Vilutiene et al., 2018). Based on the literature review, renovation quality is defined in this research as the extent to which a renovation intervention contributes to the property's technical, functional, social, environmental, and future-oriented performance within the organisational context of housing associations. This definition positions renovation quality as a multidimensional and organisation-specific concept. Housing associations are hybrid organisations, meaning they must continuously balance their social and economic objectives, creating tensions (Pache & Santos, 2013). These tensions explain why housing associations make different choices even though they share the same institutional context. Gruis (2008) further supports this by showing the different strategic orientations housing associations have.

Existing quality frameworks partly structure renovation quality. The Bbl defines the legal minimum, Aedes measures the sector-wide performance, het Nieuwe Normaal introduces circularity indicators, and Kwaliteit in Balans provides a broader project-level quality framework. However, these frameworks do not sufficiently explain how housing associations prioritise and adapt quality indicators when the financial capacity is limited. This is the gap that this research wants to fill. The existing quality indicators describe what quality can and should include, but they do not align well with the hybrid orientation and financial constraints under which housing associations make their decisions. As the institutional context shows, the sector faces ambitious sustainability targets. Therefore, the problem is not the absence of indicators but the lack of insight into how to translate these indicators into feasible renovation projects.

The gap becomes more explicit when the management layers are considered. The literature explains that housing associations translate the institutional goals through portfolio, asset and property management (Nieboer, 2009; Aedes, 2023b). Yet it remains unclear how quality indicators change meaning during this translation. The transaction cost theory helps explain why it is important to understand the translation of the quality indicators, as transaction costs arise when actors have to negotiate, coordinate or monitor to align their decisions (Rindfleisch, 2019). When housing associations define and prioritise renovation quality differently, collaboration requires additional alignment before projects can be bundled or standardised.

Therefore, the research gap lies at the intersection of existing quality frameworks, the theory of hybrid organisations, the translation across management layers, and the theory of transaction costs as sources of the alignment problems. Existing frameworks define renovation quality but do not sufficiently account for the organisational translation. This research addresses the gap by analysing how renovation quality indicators are interpreted across the management layers in different housing associations. The first part of this research was more descriptive, aimed at understanding how organisational goals shape the operationalisation of quality indicators, providing the necessary foundation for the second part. The second part of the research examines the conditions that enable alignment between housing associations, with a more

prescriptive focus. Through which the differences and similarities between housing associations can be analysed to create a shared quality framework that helps align the interpretation of quality indicators across housing associations.

4.5. Conceptual model

The conceptual model translates the theoretical synthesis into the analytical structure of this study. It positions the housing associations as hybrid organisations shaped by the institutional context, yet internally balancing social and commercial objectives. The housing associations are strongly influenced by their institutional context, but interpret it differently as they continuously have to balance their social and commercial objectives. This influences how they translate the institutional context into their strategic goals. The existing quality frameworks also inform the strategic goals, as they are often derived from the institutional context. The quality frameworks are implemented at the strategic level, but are adapted as the strategy is translated into the different management layers. The model's vertical structure illustrates this translation process. First, the strategic goals are formulated at the portfolio level, then translated into complex tactical-level choices. At the tactical layer, trade-offs are made, and the financial constraints of the strategic goals become apparent. This influences how the quality indicators are finally specified as operational project requirements. Each translation step requires negotiation, coordination, and monitoring; this is where transaction cost theory will serve as an explanatory lens for the alignment problems. If goals, indicators or financial constraints are unclear, these transaction costs increase. Through empirical research, the translation between the different layers will be examined to understand how quality indicators are operationalised through the different management layers and what differences and similarities enable alignment.

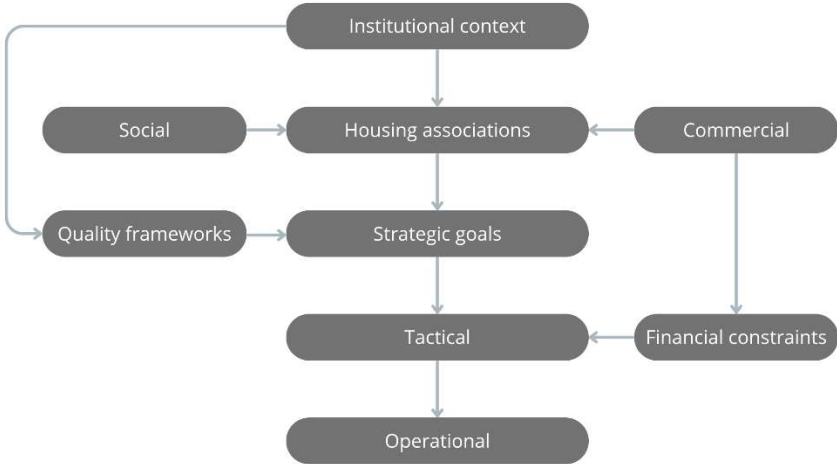


Figure 11: Conceptual model (author)

H5 Findings

In this chapter, the third research question will be answered: *How are renovation quality indicators operationalised across organisational levels?*. It analysed how four housing associations translate their strategic ambitions into operational project requirements. The focus is on translating quality indicators across the organisation. The analysis builds on the literature review, which showed that housing associations interpret renovation quality differently because they are hybrid organisations, and that renovation quality is shaped by the organisation, even though they share the same institutional context. The institutional context shapes the organisational goals, which are then translated through the different layers in the organisation. Therefore, each case is analysed through the strategic, tactical and operational layers. All four cases share the same institutional context but differ in size, ambition level, and the maturity of the organisational documents. This chapter forms the basis for the cross-case analysis.

5.1. Case study analysis

The research uses a multiple-case study design to analyse how Dutch housing associations operationalise renovation quality indicators across different organisational levels. Housing associations are used as the case for the analysis, as the literature review highlighted that renovation quality is a multidimensional concept involving functional, technical, and organisational dimensions (Garufi, 2015). Renovation quality within the organisational structure of housing associations is translated from strategy to operational through the different organisational layers. The case study is closely connected to the conceptual model, as it identifies the main concepts from the literature review used in the analysis: organisational goals, quality indicators, implementation across the strategic, tactical, and operational layers, transaction-cost-related alignment problems, and trade-offs. These concepts guide both the case selection logic and analysis. The case study analysis implements the data gathered from the document analysis and the semi-structured interviews. The document analysis shows how organisational goals and quality indicators are formally defined. The interviews are used to understand the context of the translation between the different layers.

For the document analysis, the strategic documents are gathered from the housing associations. The literature review showed that all housing associations need to have an entrepreneurial plan and a form of a portfolio strategy to comply with the Housing Act. To understand how the quality indicators are operationalised from the strategic documents to the operational project, the basic quality document and program of requirements are useful if available. The interviews are used to understand the context through which the indicators are operationalised. The literature review showed the different organisational layers and the accompanying roles: portfolio manager, asset manager and project manager. These roles will be interviewed; if they are not available, the roles involved in the processes will be interviewed to understand the context in which the indicators are operationalised. The interview guide is attached in Appendix 3. In Figure 12, the different documents and interviewees are shown in the

contexts of the different organisational layers.

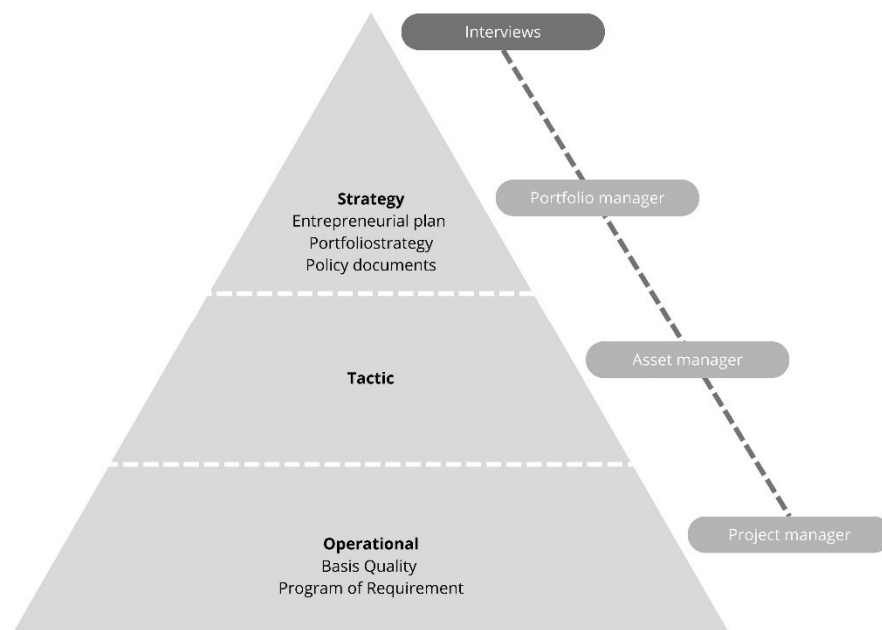


Figure 12: Case Study by Author

5.1.1. Case selection criteria

The housing associations are the unit of the analysis, and the cases are selected to compare how renovation quality indicators are translated under similar institutional conditions but within different organisations. The aim is therefore not statistical representativeness but analytical variation. The cases must be sufficiently similar to enable comparison, yet different enough to reveal how organisational characteristics shape the operationalisation of quality indicators. To ensure there is a sufficient number to compare but also a manageable number given the time available for this research, four housing associations are selected as cases.

All four housing associations operate in the same region and are also part of a regional collective. The regional similarity keeps the external institutional context relatively constant. The housing associations share familiar national regulations, regional performance agreements, market conditions, and renovation pressures. The similar context strengthens the comparison because observed differences can be more directly related to internal organisational factors. At the same time, the shared regional context is a boundary condition, as some cases participate in the same renovation collaboration and may influence each other's practices. Therefore, the fourth housing association is not part of this collaboration to determine whether there is a correlation.

Within the shared context, the housing associations differ in organisational size, ambition level, and the maturity of their organisational documents. As housing associations are hybrid organisations, the way they balance their different objectives causes differences in the operationalisation of their organisational goals. Through the differences in organisational size, the short connections in smaller organisations and the more standardised decision-making in larger housing associations are represented. Differences in ambition levels reveal how quality indicators can be adopted in different ways. The maturity of the organisational documents will

show the difference between more and less standardised housing associations and the transaction costs that come with it. To ensure the privacy of all housing associations and employees interviewed, the housing associations are identified by a letter. In Table 2, the housing associations and the selection criteria are represented.

Housing association	A	B	C	D
Same institutional context	Same region	Same region	Same region	Same region
Active renovation task	Yes	Yes	Yes	Yes
Variation in organisational size	Large	Large	Small	Small
Variation in ambition level	Targeted: Eliminate EFG labels	High: Become energy neutral	Medium: Improve quality	Medium: Renovate to the Standaard
Potential relevance for collaboration	Involved in collaboration	Involved in collaboration	Involved in collaboration	Recently merged
Availability of organisational documents	Available	Available	Available	Available from previous housing associations'
Access to relevant employees	All interviewed	Capacity was limited	All interviewed	All interviewed

Table 2: Case selection criteria

5.2. Structure of the case study analysis

The case study analysis follows the analytical logic developed in the literature review. The literature review showed that renovation quality is a multidimensional concept shaped through organisational decision-making. Housing associations translate institutional goals into organisational goals through balancing their different objectives. The goals are then translated into the strategic, tactical, and operational layers. Each case is analysed across these layers to make visible how quality indicators change meaning between strategy and operationalisation. The concepts from the literature review are implemented in the structure used to analyse all housing associations. For each housing association, the same structure is used to ensure comparable findings in the cross-case analysis.

The analysis begins with an introduction to the case, including its size, portfolio, context, and level of ambition. The indicators show the size of the renovation task, organisational capacity, and the relevance of the case. The organisational structure is then analysed, showing the decision-making structure, the distinctions between organisational layers, and how quality indicators move through the organisation. Then the different levels defined in the theoretical framework are examined.

The strategic level is defined through the objectives from the Housing Act and how they are represented in the organisational documents. This links back to the hybrid organisations theory, as the definition of these goals reflects the balance among the organisation's different objectives. The indicators from the strategic documents are shown. In the analysis, the translation of the strategic goals into the tactical layer is shown. The translation is based on the interviews with the asset managers. On the tactical layer, the translation of the indicators for a renovation is highlighted to show the difference between the layers. The operational level shows how the indicators are translated into project-specific requirements.

The final step in the case analysis combines the changes across levels, trade-offs, and transaction costs. The hybrid organisations theory, along with trade-offs, is used to explain why indicators change across different levels. The transaction cost theory provides a theoretical lens for explaining what these changes mean for internal alignment and inter-organisational collaboration. The explanatory lens enables the connection of the findings to the theoretical framework and explains why collaboration between housing associations is difficult when renovation quality is defined differently.

Analytical step	Focus of the analysis
Introduction	<ul style="list-style-type: none"> - Size - Portfolio - Context - Ambition
Organisational structure	<ul style="list-style-type: none"> - Organisational structure - Decision-making - Representation of the layers
Strategic level	<ul style="list-style-type: none"> - Organisational priorities - Definitions for organisational goals - Indicators used for strategy
Tactical translation	<ul style="list-style-type: none"> - Translation of strategic indicators into renovation choices - Complex selection indicators
Operational level	<ul style="list-style-type: none"> - Project-level indicators - Quality requirements
Trade-offs and transaction costs	<ul style="list-style-type: none"> - Changes in indicators - Trade-offs - Transaction costs

Table 3: Case analysis structure

The four selected housing associations are analysed using the structure presented above. Before presenting the individual cases, Table 4 summarises the empirical data for each case without revealing the housing association's origin. The document analysis provides insight into the formal definition of the organisational goals and quality indicators. The interview clarifies how the indicators are operationalised in practice.

The empirical data is sufficient for comparison but not fully comparable, due to limited capacity and differing organisational structures. Cases A, C, and D include interviews with actors from each organisational layer within that organisation. In case D, the housing association's employee capacity limited the ability to interview all the different layers. The most crucial one of the asset manager is included. The professionalisation of this housing association also provided

sufficient information. Case D differs in the organisational documents provided because this housing association recently merged, so the documents originate from the previous two housing associations. The separate strategic documents yield a less stable document analysis, but they do provide insight into how housing associations can align their organisations for a merger.

Housing association	A	B	C	D
Documents	Entrepreneurial plan	Entrepreneurial plan	Entrepreneurial plan	Entrepreneurial plan 1
	Portfolio strategy	Portfolio strategy	Portfolio strategy	Entrepreneurial plan 2
	Sustainability policy	Sustainability policy	Circular policies	Portfolio strategy 1
	Minimum quality policy	Scenario planning renovation	Program of requirements	Portfolio strategy 2
	Program of requirements	Program of requirements		Program of requirements
Interviews	Portfolio manager	Manager Real Estate	Manager Real Estate	Manager Real Estate
	Asset manager	Asset manager	Asset manager	Project manager
	Project manager		Project manager	

Table 4: Case analysis structure

5.3. Case A

5.3.1. Case introduction



Figure 13: Interpretive case profile Case A based on document analysis and interviews

Housing association A is a large housing association with approximately 15000 properties operating in an urban area. Figure 13 shows an interpretive case profile based on the document analysis and interviews. Case A is a relatively young organisation that originated from a recent restructuring in the Dutch Social Housing Sector. The strategic documents, such as the portfolio strategy and the entrepreneurial plan, were developed simultaneously. The housing stock is characterised by a significant share of multi-family homes, including a relatively large share of mid-rent homes. The housing association they took over the properties from was commercially oriented, hence the large number of mid-rent properties. Housing association A is now reclaiming its social position by focusing on affordability and liveability. The renovation ambitions of this housing association are aligned with the

Nationale Prestatie Afspraken. Realising the ambitions is something that this housing association struggles with due to their limited financial capacity. Reclaiming their social position while struggling with financial feasibility makes this case interesting for research.

5.3.2. Organisational structure



Figure 14: Organisational translation structure Case A

Housing association A has a classic organisational structure in which the different management layers of Nieboer (2009) are clearly visible. At the strategic level, the organisation's long-term strategy is defined by the entrepreneurial plan. The portfolio manager develops the portfolio strategy in line with the properties' long-term strategy. Because the organisation is relatively young and the entrepreneurial plan and portfolio strategy were written simultaneously, the prioritisation of organisational goals remains more fluid. The effects on the translation of quality indicators, as strategic ambitions are not yet fully embedded in the decision-making routines.

The asset manager is the key translation actor in the operationalisation of the quality indicators. The asset manager then translates this into neighbourhood and complex strategies. During the complex session with the departments' liveability, maintenance and finance, the complexes are selected for large maintenance and renovation. Once the complex is selected, the project managers then operationalise the strategy into project plans and quality requirements.

5.3.3. Strategic level

The strategic layer defines the long-term strategy through the entrepreneurial plan and portfolio strategy. The documents translate the institutional context into the organisation-specific priorities and were written simultaneously. The Nationale Prestatie Afspraken have been leading the development of the portfolio strategy. In the portfolio strategy, the organisational goals of housing association A are structured around four main themes: availability, affordability, sustainability, and quality. Liveability is missing from the portfolio strategy because the time available to develop it was limited. In their entrepreneurial plan, they emphasise their social mission to provide affordable housing and good service for their tenants. The document was composed a year later. In Figure 15, the distribution of importance of the different objectives in the strategic documents is shown.

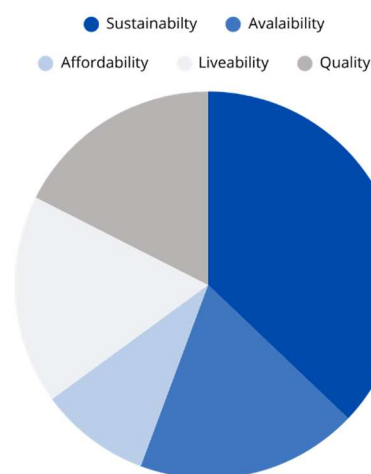


Figure 15: Objectives represented in the strategic documents Case A

The sustainability focus is shaped by the NPA; in the portfolio strategy, NPA indicators are implemented, such as EFG labels, reducing CO2, becoming future-ready, and becoming gas-free. At the same time, the entrepreneurial plan places greater emphasis on the organisation's social mission, including affordability, tenant service and liveability. This reflects the hybrid nature of housing associations, where sustainability ambitions must be balanced against their primary objective of providing affordable housing for vulnerable citizens.

The strategic position of Case A is influenced by the recent organisational restructuring. The portfolio strategy was finished before the entrepreneurial plan, while the strategic orientation was still developing. During this period, the objectives changed slightly due to the revised regulation of the Wet betaalbare huur, which includes mid-rent, which includes a large part of their portfolio (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2026). In the portfolio

strategy case, A aims to sell its mid-rent properties; however, following the regulatory change, mid-rent properties now have a more social objective. So, in the entrepreneurial plan, they now aim to keep the mid-rent properties. This shows how regulation can change the objectives of housing associations.

Organisational Goal	Definition	Strategic indicators
Sustainability	Every tenant has a well-insulated, ready-for-the-future, comfortable home.	Eliminate EFG labels by 2029; 34% insulated to the Standaard by 2033; 58% CO2 reduction by 2033; Circular in 2050
Availability	Tenant should have a home that fits their needs; the housing associations wants to expand in their main regions and reduce the number of non-SGEI properties.	Add properties; focus on core areas
Liveability	Creating a good neighbourhood by being visible and improving communication and accessibility for tenants.	Improve Service
Quality	Be proactive in maintenance, yearly condition measurements, and steer on technical and functional quality.	No condition score lower than 3; yearly condition measurements; technical and functional quality
Affordability	Reduce energy costs through renovations and align the portfolio with the target group.	Allocate 70% to the primary target group; reduce energy costs

Table 5: Strategic definition of the objectives and indicators of Case A

Strategically, renovation quality in Case A is primarily defined by sustainability indicators and sets the long-term direction for the renovation task. Technical quality is included through the condition scores, and functional quality through area and accessibility. Liveability is present in the entrepreneurial plan but is less directly translated into measurable renovation indicators. The strategic level defines renovation quality mainly through the combination of energy performance, technical quality and affordability. In table 6, the most relevant strategic indicators for Case A are shown.

Strategic indicator	Function in strategy
EFG labels	Short-term policy priority and renovation trigger
Standaard	Long-term sustainability ambition
Gas-free	Direction for the 2050 transition
CO₂ reduction	Performance indicator for sustainability
Circularity	Long-term ambition, not yet dominant in project selection
Condition score	Minimum technical quality requirement
Area and accessibility	Functional quality indicators
Energy costs	Link between sustainability and affordability

Table 6: Strategic indicators Case A

5.3.4. Tactical translation

The tactical level translates the strategic sustainability ambitions into feasible, complex-level renovation choices. The portfolio strategy includes ambitions such as eliminating EFG labels, becoming future-ready, and moving towards the Standaard. However, in practice these goals are constrained by rising construction costs and limited investment capacity. The tactical layer serves as the point at which strategic ambition is redefined in terms of financial and technical feasibility.

The main trade-off is between renovating a smaller number of complexes to a high standard and improving a larger part of the portfolio through lighter interventions. Case A prioritises the second option. This choice reflects the organisation’s social objective: to improve the basic quality and energy performance of more homes. This results in a Maintenance+ strategy, in which planned maintenance moments are used to incorporate sustainability measures.

In this strategy, insulation is the starting point. Instead of renovating directly to the Standaard or implementing gas-free solutions, Case A works with intervention values. The intervention value complies with the Bbl for the existing built defined in the theoretical section. These values define the minimum insulation level at which a building element becomes suitable for future improvement, such as connection to a heat pump. A heat pump is therefore not implemented immediately, because it is considered too expensive and technically uncertain at this stage. It remains a future option, which could be sooner if subsidies are enforced.

The tactical translation shows that several strategic indicators are not abandoned, but reformulated into more feasible intermediate steps, shown in Table 7.

Strategic indicator	Tactical translation
EFG-labels	Renovation priority
Reducing CO2 emissions	Not the priority
Insulation to the Standaard	Reduced to the Intervention value
Gas-free	Too expensive
Circular	Options are examined, but they are mostly more expensive than traditional
Minimum condition score of 3	Feasible

Table 7: Tactical translation of strategic indicators Case A

This translation shows a clear shift from long-term policy ambition to short-term feasibility. As a result, the dominant tactical logic is not full sustainability optimisation, but portfolio-wide improvement through feasible maintenance-based interventions. In Table 8, the renovation incentives identified in the interview with the asset manager are presented.

Tactical indicator	Definition
Moisture and mould complaints	Signals from tenants that renovation is needed due to technical constraints
Repair and mutation costs	High repair costs indicate maintenance is needed. If maintenance costs are high in the coming years, renovation is logical.
Condition measurements	Objective view of technical quality

Maintenance +	If there is a possibility to elaborate the maintenance activities with insulation
Energy label	If it is EFG-label properties have priority

Table 8: Renovation incentives Case A

Incentives indicate that the priority is to improve the property's quality. As maintenance is the most prominent initiator, there has been a shift in prioritisation from the strategic to the tactical layer.

5.3.5. Operational level

At the operational level, the tactical Maintenance+ strategy is translated into project-specific requirements. Once the asset manager has selected a complex for renovation, the project manager develops an initiation document that defines the project scope. The construction partner then assesses the complex's technical condition and develops renovation scenarios. These scenarios are compared with the multi-year investment budget. Because financial capacity is limited, the preferred scenario is often scaled down and follows the intervention value.

Operational quality is defined through a combination of basic quality requirements and intervention values. The basic quality document defines the minimum functional and technical standards for repairs and mutations. For Maintenance+ projects, this baseline is supplemented by insulation requirements for each building element. This means that the quality of operational renovation is now defined by feasible sustainability improvements that can be combined during large maintenance.

Building age is used as an initial indicator for insulation feasibility. Case A uses the following assumptions:

- properties built before 1965 usually do not have a standard cavity wall;
- properties from around 1965 often have a cavity suitable for insulation;
- properties from around 1975 may already contain some insulation;
- properties built before 1988 may have insulation that has deteriorated or collapsed.

These assumptions guide the technical assessment. The construction partner verifies the actual condition before selecting the final renovation scenario.

The central operational indicator is the intervention value per building element. These values determine when insulation measures are required and what performance level should be achieved. This is not an official indicator and was not yet defined in the literature review.

Building part	Intervention value	Rc / U framework
Flat roof	$R_c < 2,50$	$3,00 \geq R_c \leq 6,30$
Slanted roof	$R_c < 2,50$	$2,50 \geq R_c \leq 6,30$
Facade (cavity)	$R_c < 1,30$	$1,30 \geq R_c \leq 4,70$
Facade panels	$R_c < 1,30$	$1,30 \geq R_c \leq 4,70$
Glas	$U \geq 2,00$	HR ++

Doors	$U \geq 2,00$	HR ++
Floor	$R_c < 2,50$	$2,50 \geq R_c \leq 3,70$

Table 9: Intervention value defined by Case A

These minimum requirements are based on the 1992 building legislation, which means they assume that all properties built later already comply with them. They use building age to estimate the feasibility of insulating.

Through these interventions, the property does improve, but they minimise the scope for further improvement, making them financially feasible. The bathroom, kitchen, and toilet used to be included, but are now replaced only if technically necessary due to the financial constraints.

Operational Indicator	Function
Intervention values per building element	Determines insulation level (Rc and U)
Airtight	Prevents mould
Ventilation of 0,7 dm³ per m²	Minimum ventilation
Basic quality	Clean, whole and safe
Energy label	Scenarios for different label steps
Functional quality	Accessibility

Table 10: Operational indicators Case A

5.3.6. Trade-offs and transaction costs

For Case A, the translation dynamics show that strategic ambitions become less ambitious in practice. At the strategic level, renovation quality is primarily defined by sustainability indicators, such as eliminating EFG labels, becoming future-ready, reducing CO₂ emissions, becoming gas-free, and achieving circularity. On the tactical level, these ambitions are translated into a Maintenance+ strategy. This means that large maintenance moments are used to add feasible insulation measures. At the operational level, this translates into concrete project requirements, such as intervention values per building element, airtightness, ventilation, and basic quality.

For this housing association, the main trade-off is between sustainability ambition and financial feasibility. This trade-off reflects the hybrid nature of housing associations, as they must balance improving properties for their tenants with remaining financially healthy. For these housing associations, this results in the Standaard being translated into intervention values that reduce the insulation level. The goals towards 2050 are postponed until after the EFG-labels are eliminated, as it is too capital-intensive. These translations also create transaction costs. The project scope has to be negotiated to fit the available budget. The asset manager has to coordinate between the strategic goals, the technical condition, the maintenance planning, the investment capacity and the project execution. The reduced project scope also needs to be monitored to ensure that minimum quality standards are still met.

Case A is also part of a regional renovation collaboration. This lowers transaction costs primarily during the procurement process because housing associations use a shared procurement document and work sequentially with construction partners. However, this does not fully align, so Case A will still need to adapt this document during the project procurement.

Trade-off	Level	Explanation	Transaction cost effect
Sustainability vs financial feasibility	Strategic and tactical	The long-term ambitions are too ambitious, so the projects have to be scaled back to be feasible.	Negotiation costs increase because the project scope has to be adjusted.
Full renovation vs Maintenance+	Tactical	The investment is usually too high, so the projects are scaled down to maintenance+	Coordination costs increase because maintenance planning, sustainability, and feasibility must be aligned.
Standaard vs intervention values	Tactical and operational	Standaard is translated into intervention values for feasibility	Monitoring costs increase because the reduced insulation has to be compatible with the long-term goals
Maintenance vs investment	Strategic and tactical	Whether it is classified as maintenance or investment is important for the ratios	Negotiation and coordination increases as the financial classification influences the project scope and decision-making process
Resident comfort vs project scope	Operational	Renovating the inside requires tenants to change accommodation temporarily, which is difficult and expensive	Coordination costs increase as the organisation has to decide whether interior changes are needed

Table 11: Trade-offs and transaction costs Case A

5.4. Case B

5.4.1. Case introduction

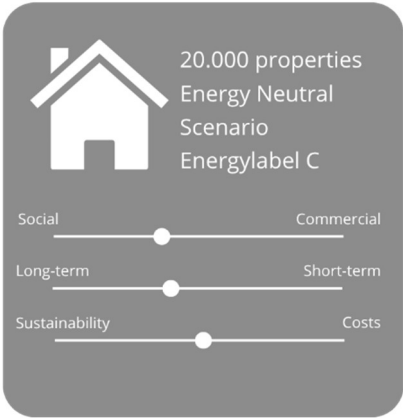


Figure 16: Interpretive case profile Case B based on document analysis and interviews

Case B is a large housing association with around 20,000 properties in several municipalities. The organisation was formed through different mergers and has a relatively professionalised governance structure and a developed real estate department. This makes Case B relevant to understanding how a large, professionalised housing association translates strategic sustainability ambitions into renovation quality. Case B has a high strategic ambition to become energy-neutral by 2050. This case also explicitly connects this ambition to the financial continuity and affordability for tenants. The strategic documents present the sustainability targets in the financial and organisational conditions under which these targets can be realised. The organisation has approximately 60-70 renovation and new-build projects currently underway, which presents a significant task. This case is also part of a

regional collaboration initiative with other housing associations and builders, in which the procurement process is optimised. This makes the case especially relevant for understanding how a professionalised housing association translates the strategic goals into renovation quality.

5.4.2. Organisational Structure



Figure 17: Organisational translation structure Case B

Housing association B has a developed real estate management structure in which the strategic, tactical and operational layers are clearly separated. The portfolio manager is responsible for the long-term portfolio strategy. This strategy is evaluated annually, which allows the organisation to continuously balance sustainability ambitions, investment capacity and financial continuity. Because the trade-offs are already made explicit in the portfolio strategy, the translation to the tactical layer is structured. The asset manager is the key translation actor. They translate the portfolio strategy into complex-level strategies and determine which complexes are suitable for renovation, maintenance or future redevelopment. These choices are based on energy performance, heat demand, technical quality, future plans, maintenance moments and financial feasibility. Once a project is defined, it is transferred to the operational layer, where project managers prepare and execute it using standardised decision documents and scenario planning. In every decision document, all departments are included: living, maintenance, finance, and control. This structured division among portfolio, asset, and project management reduces uncertainty in translating quality indicators.

5.4.3. Strategic level

The strategic layer of Case B is defined by the entrepreneurial plan, portfolio strategy and sustainability policy. Case B has a strong focus on sustainability and remaining financially healthy, which is shown in Figure 18. The objectives are continuously connected with maintaining affordability for the tenant through the documents. The NPA shapes its long-term goal of achieving energy neutrality by 2050. In the strategic documents, these goals are explicitly evaluated against the organisation's financial continuity.

In their entrepreneurial plan, they already show the trade-offs that must be made to realise their ambitions. This provides a clear roadmap and reduces the need for compromises. There is a strong focus on sustainability, expressing that their properties should not be a burden to the planet. However, the sustainable measure may not affect the tenant's financial stability. The focus during renovation is on reducing the energy costs. In addition to their sustainability goals, they also aim to expand their housing stock through new builds. So this housing association has a strong focus on sustainability, financial continuity and tenant well-being.

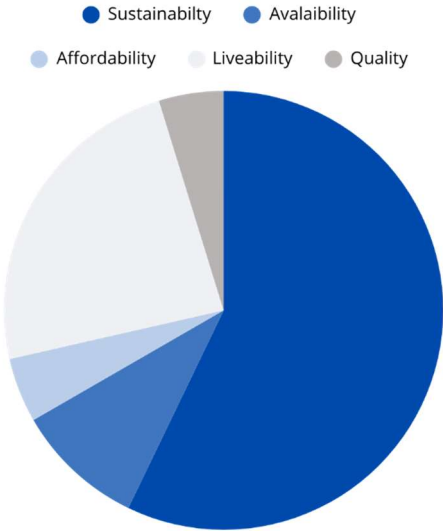


Figure 18: Objectives represented in the strategic documents Case B

Organisational Goal	Definition	Strategic indicators
Sustainability	We want to build and maintain properties that do not harm the planet	Energy neutral by 2050; average energy label A++, Heat demand 50-70 kWh/m2; circular; climate adaptive
Availability	We need to balance our duty to provide new build and improve the sustainability of our properties	New built; portfolio development
Liveability	Reliable, personal, close and together	Tenant-oriented service and neighbourhood quality
Quality	Our properties have an adequate quality	Technical quality; comfort; future value
Affordability	The rent is affordable for our target group	Affordable rent; reduce energy costs

Table 12: Strategic definition of the objectives and indicators of Case B

The organisational goals are further specified through quality indicators, which are primarily structured around the sustainability goals. The main objective is to become energy neutral by 2050. The indicators shown in Table 13 help steer the organisation and are reflected across various departments to ensure it has a shared goal.

Strategic Indicator	Function
EPC/EI = 0	This means the building is supplied with green energy and has 0 emissions
Average label A+++	Goal to become energy neutral by 2050
Average heat demand of 50-70 kWh/m2	Complies with the NPA
Standaard as an insulation goal	Insulation measures to become energy neutral
Average label A by 2029	Goals comply with NPA
Eliminate EFG	Short-term renovation priority
CO2 reduction	Goal towards 2050
Financial Health	Stay a financially healthy organisation for compliance with WSW and AW
Circularity	Fully circular the 2050
Climate adaptivity	Tenants still have a good home in extreme weather cricustances

Table 13: Strategic indicators of Case B

5.4.4. Tactical translation

On the tactical layer, this housing association translates the tactical documents into complex strategies. Where natural maintenance moments are used to implement renovation measures, as defined by the Natural Step. This is combined with a No-Regret strategy, meaning that the

organisation avoids radical or uncertain investments and focuses on measures that remain useful under different future scenarios.

This tactical approach reflects the organisation’s financial logic. Case B has high sustainability ambitions, but does not position itself as a frontrunner in technological innovation. Instead, it gradually improves the housing stock by combining maintenance, insulation, comfort, and future heat readiness. EFG-label elimination is an important short-term priority, while heat demand, maintenance timing and the possibility of future heat infrastructure influence the selection of complexes.

Strategic Indicator	Tactical translation
EPC/EI = 0	Goal for 2050, now working towards eliminating the EFG and using the Natural Step
Average label A+++	Improving the label as much as financially possible
Average heat demand of 50-70 kWh/m2	Using the heat demand as a renovation incentive and optimising during renovation
Standaard as an insulation goal	The goal is to have a suitable insulation level for the gas-free heat source, usually lower than the Standaard
Average label A by 2029	Uncertain if the goal is feasible
Eliminate EFG	Renovation incentive
CO2 reduction	Not yet used as an incentive, but are looking for a good way to measure
Financial Healthy	Important trade-off during decision-making
Circularity	Circular materials are chosen when equally costly
Climate adaptivity	Used as an incentive to renovate properties sooner

Table 14: Tactical translation of the strategic indicator Case B

The asset manager makes complex strategies based on the following criteria:

Tactic Indicator	Function
Technical quality	Is the property adapted to the extreme weather circumstances
Natural Step	Is large maintenance planned
Heat demand	Is the current heat demand compliant to the NPA
Comfort	Good insulated for extreme temperatures
Possibility for a heat grid	If a heat grid is in the area the properties are insulated faster
Future plans	Is the property listed to be demolished and rebuilt
Possibility to work together with other housing associations	When there is a heat grid in the area for example

Table 15: Tactical indicators Case B

Per neighbourhood and complex, the asset manager evaluates the feasibility of renovation to meet future heat demand and temperature requirements for the gas-free heat source. These

plans are implemented in the maintenance planning and implementation with the Natural Step. During this implementation, the different organisational stakeholders are involved. Then the projects are divided into the operational layer.

5.4.5. Operational level

The project is prepared through scenario planning. They start with a baseline scenario in which the required actions are determined. Then the tenants' complaints, sustainability goals and maintenance plans are taken into account, and the ambition can be further developed. With each phase, the project's financial aspects are tested. During the project's development, the builders are involved early on to minimise risks. So the strategy is mostly built around natural renovation moments, where much of the large-scale maintenance can be combined with sustainability measures.

In renovation scenario planning, the quality profiles for the renovation projects are determined. First, the current quality is determined, then the desired quality is examined. This is done using the real estate matrix, which divides properties by building age, energy labels, property interior, and building complexity. Then, based on the state of the property, the accompanying measures are taken:

Operational indicator	Function in the project
Repairing defects	Restores technical quality before additional improvements are added
Glass improvement	Improves insulation and comfort
Airtight	Supports energy performance and prevents comfort problems
Ventilation complying with Bbl	Ensures indoor air quality after insulation
Fire-safe doors/resistance 2	Improves safety quality
Minimum electrical capacity	Ensures the property can support current and future installations
CO₂ reduction	Supports long-term sustainability performance
Ventilation system D with heat recovery	Improves energy performance and indoor climate where feasible
Quality profile	Defines the desired quality level per renovation scenario

Table 16: Operational indicators Case B

At the operational level, Case B therefore does not apply one fixed renovation standard. Instead, quality is operationalised through scenario planning, in which the desired quality level is adjusted to the complex's technical condition, future plans, financial feasibility, and sustainability potential. This makes the operational process more flexible yet more structured than in Case A, as the scenarios are embedded within a standardised decision-making process.

5.4.6. Trade-offs and transaction costs

Case B faces the same trade-off as Case A: balancing sustainability measures with financial health. However, this housing association manages it differently. By balancing the different objectives at the strategic level and revising the portfolio strategy annually, the asset manager establishes a set of feasible targets. Another trade-off mentioned is between sustainability and tenant affordability. This results in measures that must lower the tenant's energy costs and

demonstrate the housing association's social priority. Another important trade-off is between new builds and renovations; both are large investments, but renovations are less feasible. This results in renovation projects being scaled down. The different trade-offs show the hybrid orientation of this housing association.

The process of translating the strategic goals into projects is most aligned in this housing association. This allows the quality indicators to be systematically translated into each layer, thereby lowering transaction costs within this housing association. From a strategic perspective, this enables innovations such as collaboration, as the organisation is internally aligned. This housing association is the initiator of the renovation collaboration. Where the aligned procurement is integrated in this organisation as a standardised document. The organisational alignment enables this level of standardisation and demonstrates its benefits for interorganisational collaboration.

Trade-off	Level	Explanation	Transaction costs
Sustainability vs tenant affordability	Strategic and tactical	The rent has to remain affordable	Monitoring to assess whether measures improve energy performance and affordability
Sustainability ambition vs financial feasibility	Strategic and tactical	During the Natural Step, not everything can be included due to financial constraints	Lower negotiation costs because feasibility is already integrated on the strategic level
New construction vs renovation	Strategic and tactical	Both objectives are expensive so choices have to be made	Coordination between different projects
Resident complaints vs strategic priorities	tactical	The complaints are important, but renovating heat grid properties as well	Coordination because the complaints and strategy have to be balanced in priority

Table 17: Trade-offs and transaction costs Case B

5.5. Case C

5.5.1. Case introduction



Figure 19: Interpretive case profile Case C based on document analysis and interviews

Housing association C is a small housing association with approximately 3,000 properties. The organisation is strongly embedded in the local community and operates mainly within one municipality. This local position shapes its strategic orientation, as the focus is on providing more suitable and affordable homes for the local target group. The housing association has existed for more than 100 years, which gives it organisational maturity, but its small size means processes are less standardised than in larger organisations.

Case C has a relatively good starting position in terms of energy performance. The portfolio strategy shows that the average energy label of the housing stock is B, and the number of EFG-label dwellings is limited compared with other cases. Sustainability improvement is therefore not

the main strategic priority. Case C prioritises availability, local connection, tenant service and future-proof portfolio development. Renovation is mainly relevant for a limited number of dilemma complexes, EFG-label dwellings and projects where maintenance moments can be combined with sustainability measures. This makes Case C relevant because it shows how renovation quality is operationalised in a small organisation, where the renovation task is more selective, and quality is often based on professional knowledge rather than on fully standardised documents.

5.5.2. Organisational structure

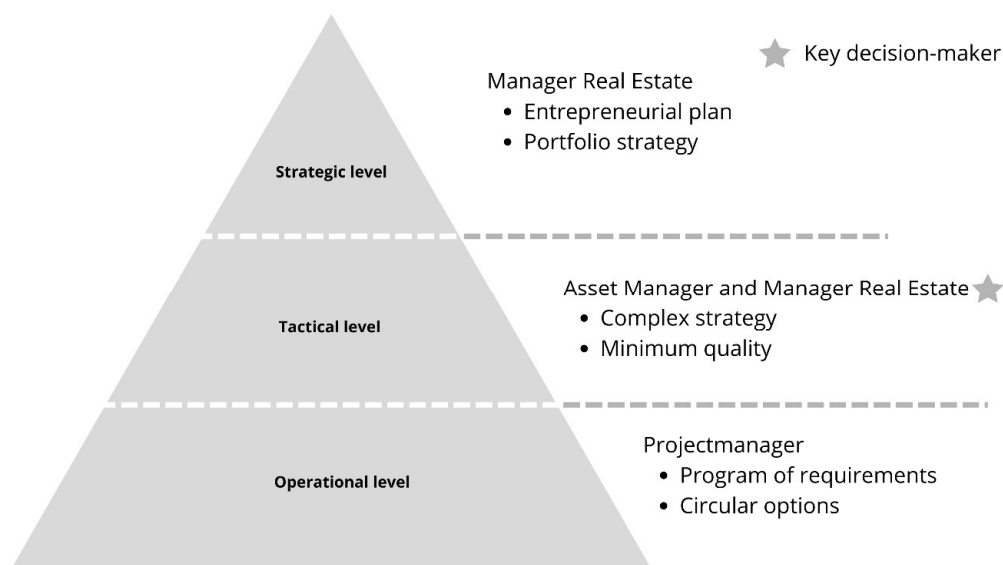


Figure 20: Organisational translation structure Case C

This housing association has a compact organisational structure. The formal decisions between the different layers are visible, but the roles are less separated than in the larger organisations. The strategic level is defined through the entrepreneurial plan and portfolio strategy. The organisation is too small for a portfolio manager, so the strategy is written by the real estate manager. They only recently hired an asset manager to make decisions on the tactical layer, where the strategy is translated into the operational layer. This function is relatively new and not yet fully embedded in the standardised routines.

The organisation is focused on close connections and craftsmanship, allowing employees to fulfil multiple roles and to maintain close relationships with tenants. In the strategy layer, the portfolio strategy serves as the framework for the asset management layer. The asset manager and the real estate manager are the key translation actors. Case B is a relatively small organisation, which allows the decisions to be made through close internal collaboration. When a project is selected. The project manager is responsible for the project from A to Z. They oversee the project, negotiate with the builder, and conduct checks on the construction site. The initiation is a collaboration between the asset manager and the project manager; the project manager oversees the project, negotiates with the builder, and conducts site checks. Because the housing association is less hierarchical, the employees work closely together, allowing them to share knowledge. The size of the portfolio also ensures that they are connected to their real estate and know what assets need more attention. This also means that quality indicators are not always fully embedded in standardised documents, but perceived as common knowledge.

5.5.3. Strategic level

The strategic level is defined through the entrepreneurial plan and the portfolio strategy. The main strategic orientation is local and social. Case C wants to enable their target group to find a suitable home within its target area. As they are a local organisation, their aim is not to expand their area but to increase their portfolio within their target area. It is a locally connected organisation with close connections with the tenants and other local partners. The strategic documents show that availability is the dominant priority, as shown in Figure 21. Their main objectives are: local and connected, customer-oriented, to house more people, and to invest in the future. Where the Local and connected relate to the relationship with the tenants and the partners. Customer-oriented means knowing who their tenants are. This also makes the housing association more complaint-driven. This housing association has the means to invest in new buildings.

This involves providing a better home for their current tenants through sustainability. Investing in the future includes providing more homes in the area and being smart about using innovations. Because they are a small organisation and the project manager is in charge of the entire project, it is easier to use innovations. If the innovation has proven itself, such as circular materials, the option is adopted when suitable.

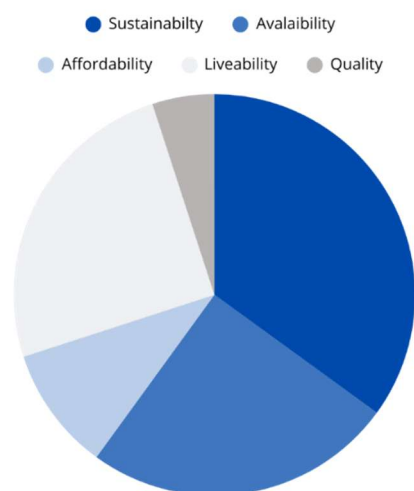


Figure 21: Objectives represented in the strategic documents Case C

Organisational Goal	Definition	Strategic indicator
Sustainability	Improve the properties phased and wait for innovations to accelerate	Minimum label A for 70% of portfolio; CO2 neutral by 2050; Circularity
Availability	House more people	Grow to 3500 homes in 2035
Liveability	Be locally bound and connect with tenants	Locally bound; tenant participation
Quality	Keep a basic quality to be safe and technically adequate	Technical quality; Clean/whole/safe
Affordability	Remain affordable	76% of the portfolio is affordable for the target group

Table 18: Strategic definition of the objectives and indicators of Case C

The current energy performance of Case C's portfolio is relatively good. The strategic emphasis is therefore on transforming the portfolio to house more people. The renovation strategy is mostly centred on major maintenance periods.

Strategic Indicator	Function
Eliminate EFG labels	Renovation incentive, the goal is almost reached, so less prominent
Minimum energy label A	Sustainability indicator for 2050
Add properties	Prioritise newly built projects
Energy neutral by 2050	Complies with the NPA
Circularity	Fully circular by 2050

Table 19: Strategic quality indicators of case C

The strategy goals are denser and less specific than those of larger housing associations. As the portfolio is of manageable size and all properties requiring attention are in scope, not many indicators are needed. This makes the approach more project-based and less standardised.

5.5.4. Tactical translation

At the tactical level, the strategic goals are translated into complex-level decisions. The portfolio strategy is the main framework for this translation. Complex strategies are used to determine whether a complex should be maintained, renovated, demolished, sold or included in new development logic. The manager real estate describes this as an assessment of a complex's performance: its technical state, heat demand, suitability for the target group, future value, and financial feasibility.

Because Case C has a relatively good-quality portfolio, renovation is not automatically the dominant route. The organisation has only a limited number of dilemma complexes in which technical condition or energy performance requires intervention. In these cases, the decision is made early in the process: the organisation explores whether the complex should be improved, renovated, or replaced through demolition and new construction. The tactical translation is shaped by a phased logic of renovation. The entrepreneurial plan and portfolio strategy refer to phased sustainability improvement, but in practice, this mainly means using natural maintenance moments and quick wins. When a roof, installation or facade element needs

replacement, the organisation assesses whether it can be improved at the same time. Maintenance is therefore the starting point, but the project can become more sustainable when the technical and financial conditions allow.

Strategic Indicator	Tactical translation
Eliminate EFG labels	Feasible goal, there are plans for the EFG complexes
Add properties	New built chances are used when the opportunity arises
Energy neutral by 2050	Measures for a gas-free energy solution are taken when it is proven financially feasible
Circularity	The option is chosen when it is equally expensive

Table 20: Tactical translation of the strategic quality indicators of case C

The tactical indicators show that Case C works with a combination of technical quality and knowledge of the properties. Energy labels are an incentive for renovation, while EFG labels remain in the portfolio. The property's complaints, high maintenance costs and technical issues are an incentive to renovate.

Tactic Indicator	Function
Condition score	Lower than 3, maintenance is needed
Functional quality	Quality has to comply with the current use and the target group needs
Technical quality	The technical state of the property as an incentive
Complaints	Complaints are an incentive to renovate
Maintenance costs	If the maintenance costs are becoming high it is a renovation incentive
Energy label	Below, an EFG label, the properties have to be renovated
Heat demand	Heat demand has to be improved during the renovation

Table 21: Tactical indicators of case C

The tactical level, therefore, shifts the strategic focus from broad portfolio transformation to specific complex decisions. In Case C, the main incentive is the building's technical state, which makes the tactical translation more project-based. This is possible because the housing association has a small portfolio.

5.5.5. Operational level

At the operational level, the selected complex strategy is translated into project-specific requirements. Case C is a small organisation, so the project manager plays a broad role. The project manager is involved from initiation through execution, works with the asset manager on the initial project definition, discusses technical choices with the contractor, and oversees project execution. This creates continuity between tactical decision-making and operational execution.

Operational quality is first defined through basic quality. In the documents and interviews, this is described as a sober standard: homes must be safe, technically sound and functional. The

entrepreneurial plan states that maintenance is based on the actual technical condition and that repairs and replacements are performed when technically necessary or when there is a concrete tenant request. The basic quality is partly embedded in the knowledge of the project manager and the maintenance organisation, as it is such a small organisation, the need to write it down in a formal quality document is lower.

In renovation projects, quality becomes more specific through the requirements program. There is no standardised document for this. The project manager makes a project-specific program of requirements for the building for the builder. This includes scenarios for energy performance and project requirements as shown in Table 22. It also includes options for CO2 reduction, sustainability and climate adaptation.

Operational indicator	Function in the project
Energy label	Compare minimum, medium and high-quality sustainability options
Heat demand	Leads choices for insulation, windows and future heating readiness
Medium-temperature heating readiness	Prepares the homes for future heat infrastructure
Airtight	Improves energy performance and comfort
Ventilation	Ensures indoor air quality after insulation
Electrical installation / NEN 1010	Ensures technical safety and future installation capacity
Fire safety	Addresses safety risks during renovation
Moist and Mould prevention	Solves technical defects and prevents mould
Flora and fauna measures	Adds ecological requirements to the project
Circular and biobased materials	Explored in scenarios where feasible
Resident inconvenience	Limits disruption and supports renovation in occupied homes
Investment vs maintenance distinction	Determines how project costs are financially classified

Table 22: Operational indicators of case C

Circularity is mainly operationalised through exploration. The project manager indicates that circular or biobased options are included as alternative scenarios and then compared with traditional options. The operational layer shows a different quality logic than the strategic layer. Strategically, sustainability is not the highest priority because the portfolio is already relatively good. Operationally, once a project starts, quality becomes very broad and concrete. It includes energy performance, safety, comfort, circularity, resident disruption, technical defects and future heat readiness. This shows that Case C has a limited number of renovation projects, but the projects themselves contain a wide set of quality requirements.

5.5.6. Trade-offs and transaction costs

For case C, the most important trade-off is between ambition and affordability. Not everything is financially feasible, but the ambitions are high. As financial ratios are the starting point for decision-making, they play a significant role, and projects are cancelled if they are not feasible.

However, sustainability ambitions are high, and renovation costs are rising amid macroeconomic uncertainties. With that, rents are also rising, reducing housing associations' loan capacity. Making the trade-off between housing more people and providing better housing is more complicated. In this housing association, it is more important to house more people in the area where they operate.

An interesting trade-off highlighted by this housing association concerns how to measure CO2 circularity. CO2 emissions are not yet incorporated into the program of requirements. Not allowing for the finiteness of materials to determine what material is used. Causing housing associations to revert to standard materials rather than the circular option. The last trade-off mentioned is the one between the tenant's wishes and feasibility. The quality of the project goes hand in hand with its feasibility.

Case C is a small organisation which shapes the transaction costs. Internal transaction costs are limited because employees work closely together. The projects are usually project-based, and the processes are less standardised. This makes the quality commonly known rather than well described. Causing higher transaction costs in realising the projects, as adapting is often necessary. The renovation strategy should be more defined to improve efficiency throughout the process.

Trade-off	Level	Explanation	Transaction costs
Ambition vs affordability	Strategic and tactical	The ambitions are too high for the financial capacity	Negotiation costs for adjusting the ambitions
New construction vs renovation	Strategic and tactical	Both objectives are expensive, so choices have to be made	Coordination costs between new built and renovation budget
Energy labels vs tenant well-being	tactical	The energy labels are not always the best indicator of the state of a property	Monitoring costs because of complaints and technical condition
CO2 value capture vs short-term investment	Operational	The CO2 value capture is not yet implemented in the valuation of the projects, making it hard to choose that	Monitoring and negotiation costs where the sustainability value is difficult to compare with the monetary value

Table 23: Trade-offs and transaction costs of case C

5.6. Case D

5.6.1. Case introduction



Figure 22: Interpretive case profile Case D based on document analysis and interviews

Case D is a recently merged housing association formed by two small, locally embedded housing associations. Together, the organisation owns approximately 5,000 properties. At the moment of this research, the organisation did not yet have one combined entrepreneurial plan or portfolio strategy. The former strategic documents are still used on a temporary basis while the new organisation develops a shared strategic direction.

This makes Case D analytically relevant because it shows how renovation quality is operationalised during an organisational transition. This shows how housing associations can align their organisational goals to collaborate. The former housing associations are broadly aligned in their main goals, but differ in their emphasis.

One organisation had a stronger focus on maintenance, quality and internal organisation, while the other had a more explicit portfolio-strategic orientation. Both operate in a similar regional context, where availability, affordability, sustainability and quality are central themes. However, the merger creates an intermediate phase in which formal strategy is not yet fully integrated, while projects still need to continue. Case D is therefore different from the other cases. The strategic layer is less stable, but the operational layer is already being standardised. The combined technical Program of Requirements for existing buildings is an important step in this process. It gives the organisation a shared operational quality baseline, even though the new strategic documents are still under development. This makes case D an example of the alignment challenge in this research. From both previous organisations, someone was interviewed to understand the differences between the two merged organisations.

5.6.2. Organisational structure



Figure 23: Organisational translation structure Case D

Case D has a relatively flat organisational structure. The recent merger combined the two smaller organisations, in which the distinction between the portfolio, asset, and property management layers was not visible. The manager real estate has a central role in both the strategic and tactical decisions. They are responsible for translating the former portfolio strategies into current complex decisions and developing complex strategies. The translation from the portfolio strategy is still done pragmatically. Decisions on which complexes to renovate are primarily made by the real estate manager and discussed by the management team, which includes the manager of liveability, the manager of finance, and the director. This enables faster connections between employees and shows that the process is less formally embedded.

The merger has changed the division of roles in the projects. Previously, project managers often worked on projects from initiation through execution. In the merged organisation, the roles are separated into project development and project execution. This organisation benefits from short connections between the employees. The manager real estate is the key translation actor between the temporary strategic situation and the translation into projects. The project manager then operationalises it into project requirements.

5.6.3. Strategic level

The strategic level of case D is defined through the documents of the former housing associations. At the moment of this research, the merged housing association does not yet have a shared entrepreneurial plan or portfolio strategy. For the analysis of the organisational goals, all strategic documents are used together to define the strategic orientation shown in Figure 24. The documents are combined for the analysis to make it comparable in the cross-case analysis, as the housing association aligned the documents for the other layers. This does make the strategic level less stable than in the other cases.

The two former housing associations are broadly aligned in their main goals. Both strategies focus on availability, affordability, sustainability, quality and tenant-oriented service. The prioritisation differs between the housing associations: one is more maintenance-oriented, while the other is more focused on improving availability. During the interviews, the real estate manager mentioned that, in principle, the housing associations do not differ much and that alignment comes naturally in daily practise. Therefore, the need for a shared strategy is not that high. The definitions of the organisational goals, shown in Table 24, are drawn from the overlap between the strategy documents of the two housing associations and the interviews with the manager real estate.

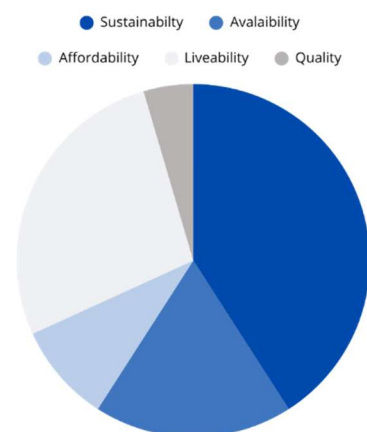


Figure 24: Objectives represented in the strategic documents Case D

Organisational Goal	Definition	Strategic indicators
Sustainability	Eliminate EFG by 2028, use maintenance moments	Eliminate EFG labels; energy neutral by 2050
Availability	House more people if possible	Add homes when the opportunities arise
Liveability	Tenant satisfaction is important and something we measure	Tenant satisfaction
Quality	Maintain quality to be safe and technically adequate	Condition score; technical quality
Affordability	Remain affordable	Focus on affordability for the target group

Table 24: Strategic definition of the objectives and indicators of Case D

The strategic level is mostly defined through energy performance and technical quality. The NPA shapes the long and short-term goals for the housing association.

Strategic Indicator	Function
Eliminate EFG labels	Renovation incentive
Add properties	If new projects arise, the opportunity is taken, but there is not a lot of space in the area
Energy neutral by 2050	Complies with the NPA
Suitable housing for the changing demographic	Prioritise single-household homes
Overall score housing association	Has to be above B
Condition score	Above 3
Tenant satisfaction	The Aedes tenant satisfaction score is used

Table 25: Strategic indicators of Case D

5.6.4. Tactical translation

The tactical and strategic layers are closely aligned, as they are both managed by the real estate manager. The renovation strategy is primarily driven by maintenance considerations, with condition scores guiding it. The guiding principle is to keep the properties in good technical and functional condition. Maintenance is defined as replacing the materials with the exact same materials. Only when it is possible are improved materials used.

For renovation ambitions, the elimination of EFG properties is used to determine which properties should be renovated, with the goal of working towards gas-free in 2050. Within these projects, fire safety, asbestos, legionella and lead piping are also improved. The guiding principle for renovation is to improve energy labels and, with that, reduce heat demand, so that the properties are ready for a gas-free option. As there is not enough money to do everything, only no-regret measures are taken.

Strategic Indicator	Tactical translation
Eliminate EFG labels	Used to prioritise complexes, when the EFG's are done, the condition score will be primary
Add properties	If new projects arise, the opportunity is taken, but there is not a lot of space in the area
Energy neutral by 2050	These will be the goals after the EFG's are gone

Suitable housing for the changing demographic	If the properties are not suitable for the changing demographic, the possibility of demolition is considered
Overall score housing association	All decisions are a balance between the different objectives to ensure an overall good score
Condition score	Is a renovation incentive for properties that score poorly.
Tenant satisfaction	The tenant is actively included in the decision-making processes

Table 26: Tactical translation of strategic indicators of Case D

The tactical layer is mostly determined through the maintenance plans. The existing properties are updated if maintenance is required. When the property receives an EFG label, maintenance is enhanced with sustainability measures.

Tactic Indicator	Function
EFG labels	Have priority
Condition score	Lower than 3, maintenance is needed
Maintenance cycle	When there is a natural maintenance moment, it is used to elaborate the project
Technical quality	When asbestos/legionella/ lead-piping is detected
Tenant complaints	If tenants complain, the complexes are evaluated

Table 27: Tactical indicators of Case D

5.6.5. Operational level

At the operational level, renovation quality becomes more explicit and standardised. While the strategic documents for the housing association are still being developed, the shared program of requirements for both existing and new buildings has already been developed. The program of requirements functions as a common technical baseline. This allowed the projects to continue on the operational level while the strategic level was still under construction.

The program of requirements for existing buildings defined the project-level requirements. This includes all parts of the property and ensures that the renovation complies with Bbl. From the interviews, it was concluded that in all renovation projects, this housing association renovated to the Standaard. They do this to prepare their properties for any gas-free heat supply. If possible Politie Keurmerk Veilig Wonen is included for safety measures and if the changing demographic requires it the accessibility is changed through Woonkeur.

Operational indicator	Function in the project
Energy label	Measures energy performance improvement
Standaard	Insulation level used
Airtight	Improves energy performance and comfort
Ventilation	Ensures indoor air quality after insulation

Woonkeur	Defines accessibility
Politie Keurmerk Veilig Wonen	Defines the safety and quality of the doors and windows
Asbestos/ legionella/ lead-piping	Removed when detected
Fire safety	Safety requirement Bbl
Tenant communication	Early tenant involvement

Table 28: Operational indicators of Case D

5.6.6. Trade-offs and transaction costs

Case D is defined through the recent merger. The strategic level is not yet defined, which leads to more trade-offs at the tactical level. However, the operational level is more clearly defined through the shared program of requirements, in which the Standaard is adopted for renovation projects. This housing association shares the trade-off between sustainability and affordability with the other housing association. To optimise this, the large maintenance moments are used to incorporate sustainability measures and improve feasibility. Another trade-off is between flexibility and standardisation. Before the merger, both organisations were small, which allowed for short connections and no need for standardisation. With the merger, the organisation has become larger; standardisation is needed to align documents and improve clarity across the organisation. However, this work ethic does not necessarily fit with the locally bound nature of both organisations.

The transaction costs for Case D are primarily at the strategic and tactical levels. Negotiation costs arise as it is still a new organisation that has to align its internal goals. Where coordination is also needed in the organisation to align the internal processes. The daily coordination costs are relatively low as it remains a small organisation. Through the shared quality framework, negotiation costs are reduced by making project choices more efficient and limiting discussion.

Trade-off	Level	Explanation	Transaction costs
Sustainability vs affordability	Strategic and tactical	The ambitions are too high for the financial capacity	Negotiation costs arise when sustainability ambitions have to be adjusted
Flexibility vs standardisation	Strategic and tactical	The organisation can now adapt the projects if processes are standardised, there is less room	Coordination costs could decrease through standardisation
Tenant comfort vs tenant disruption	Operational	If more sustainability measures are taken, the chance is high that the tenants have to be relocated	Coordination costs around tenant communication

Table 29: Trade-offs and transaction costs of Case D

5.7. Conclusion

This chapter answered the third research question: *How are quality indicators operationalised through the organisational layers?*. To answer this question, four housing associations are analysed using their organisational documents and interviews with employees at different levels. The quality indicators are broadly defined at the strategic level, and most housing associations use the NPA indicators to guide their strategic goals. Between the strategic and tactical layers, differences arise from differing priorities, leading to different outcomes. On the operational layer, it becomes more practical, and the functional and technical qualities become more prominent. Overall, the indicators are operationalised from a broad strategy, to tactical prioritisation, to specific project requirements. This shows that renovation quality is not implemented directly from policy but is reshaped through organisational decisions.

H6 Cross case analysis

In this chapter, the fourth research question will be answered: *What similarities and differences in operationalisation of quality indicators exist between housing associations?*. The same structure as the last chapter will be used to analyse the similarities and differences between the housing associations: overview cases, organisational structure, strategic layer, tactical layer, operational layer and trade-offs and transaction costs.

Housing associations vary in size, so their organisational structures also differ. Smaller housing associations have a flat organisational structure, whereas larger housing associations are structured more hierarchically and aligned with the real estate model (Nieboer, 2009). The renovation logic of the housing associations is similar, with natural maintenance moments used as opportunities to advance sustainability. The dominant quality indicator is where the housing associations differ, thereby raising transaction costs. All of this will be highlighted in this chapter.

	A	B	C	D
Portfolio size	15.000	20.000	3.000	5.000
Organisational structure	Hierarchical	Hierarchical	Flat	Flat
Strategic maturity	Medium	High	High	Low-medium
Renovation logic	Maintenance+	Natural Step	Quick wins	Maintenance + and eliminating EFG-labels
Dominant quality indicator	Intervention value	Heat demand and Energy label	Condition score	Energy labels
Transaction costs	Negotiating	Relatively low	Coordinating	Coordinating
Main trade-off	Sustainability vs affordability	Sustainability vs affordability (tenant)	New Build vs Sustainability	Sustainability vs affordability
Part of a collaborative initiative	Yes	Yes	Yes	No

Table 30: Overview of cross-case analyses

6.1. Organisational structure

6.1.1. Similarities

All housing associations have their own interpretation of the real estate management model described by Nieboer (2009). In each case, the asset management layer is the central translation layer between the strategic ambitions and the operational project execution. This confirms the theoretical expectation that the asset management layer serves as the translation layer for operationalising the quality indicators. In different cases, the policy rollercoaster's decision logic (Aedes, 2023b) is used operationally, but adapted to organisational size. In all cases, the entrepreneurial plan and portfolio strategy are formulated at the strategic level, then translated into complex strategies on the tactical level and executed on the operational level.

6.1.2. Differences

From the organisational structure, the differences between the organisations' sizes are clearly shown. The larger housing associations are structured more traditionally with a clear separation between the different layers: portfolio, asset and property management. This gives them a more formal decision-making process. The differences among the larger housing associations lie in their levels of maturity and financial resources. The clear goals and standardised processes of housing association B result in more efficient decision-making. Housing association A has overly ambitious goals relative to its financial resources, leading to inefficiencies in translation across layers.

The smaller housing associations C & D have a flat organisational structure with fewer visible layers. The size of the portfolio and the team gives them shorter communication lines, where knowledge sharing is more informal. Especially for housing association C, this works because of the strong connection with tenants and the employees' practical knowledge. The short connections create more efficient coordination, but also result in less formalised quality documentation. Housing association D still has to align its strategic documents following the merger, creating a transitional phase in which decision-making is more context-driven than structured.

The biggest differences between the organisations lie in the maturity of their organisational documents and roles. When the organisational documents and roles are well aligned on the basis, there is more room for extra effort. The human capital of housing associations also plays a large role in the efforts they are willing to take. For example, housing association B has aligned its internal processes, and the role division is clear, which leaves room to take initiative if they want to. This shows that organisational maturity is strongly dependent on whether the knowledge is sufficiently embedded in the right roles.

	A	B	C	D
Clear layer separation	Yes	Yes	Limited	Limited
Central decision actor	Asset manager	Asset manager	Real Estate Manager	Real Estate Manager
Strategic document coherence	Inconsistency of strategic feasibility	Coherent	Coherent in goals, inconsistent in strategy	Under development

Table 31: Organisational structures

6.1.3. Case D: operational standardisation

Case D is a recent merger in which the first operational alignment was established before strategic alignment was realised. As project decisions could not be postponed, the operational alignment was prioritised. The interviews showed that the organisations were not that different as they work on the same themes and share the same context. The major difference was in the organisational maturity and documentation. Where one housing association had a strong policy basis, the other was less stable due to staff turnover. The interviews also showed that the program of requirements was not difficult to formulate; there was only disagreement over which structure to follow. This shows that housing associations can align their operational project requirements, as they all share the same institutional context, and the most important step is to set aside the organisation-specific differences.

6.2. Strategic level

6.2.1. Similarities

The strategic layer shows that all housing associations use the organisational goals defined by the Housing Act, Aedes and the Nationale Presetatie Afspraken. As a result, all four share the same five broad categories from the Housing Act: sustainability, availability, affordability, liveability and quality; in their entrepreneurial plan and portfolio strategy. As the Nationale Prestatie Afspraken are the start of defining their strategic goals all four housing associations identify eliminating EFG-labels by 2029 and becoming energy neutral by 2050 as their strategic targets for sustainability.

6.2.2. Differences

However, the housing associations differ in the prioritisation and definitions. In Figure 25 and Table 32 the differences in prioritisation is shown.

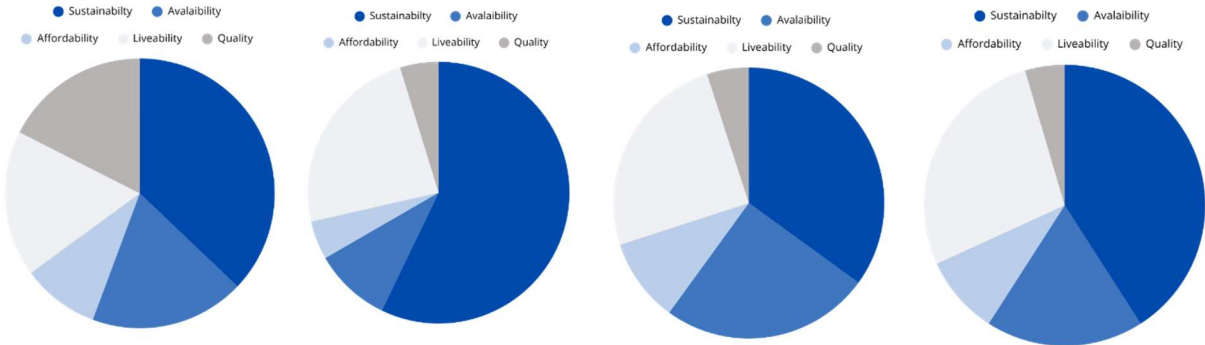


Figure 25: Strategic prioritisations housing associations

Goal	A	B	C	D
Sustainability	Well-insulated, future-ready, comfortable home for every tenant	Properties must not harm the planet; reduce energy burden for tenants	Phased improvement; wait for proven innovations	Eliminate EFG by 2028; use maintenance moments
Availability	Homes that fit tenant needs; expand in core areas; reduce non-SGEI	Balance new build duty with sustainability	House more people; prioritise local area	House more people if opportunities arise
Liveability	Visible presence; improve communication and accessibility	Reliable, personal, close, and together	Locally bound; strong tenant relationships	Tenant satisfaction explicitly measured
Quality	Proactive maintenance; steer on technical and functional quality	Adequate quality; no further specification	Basic quality: safe and technically adequate	Safe and technically adequate
Affordability	Reduce energy costs through renovation; align portfolio with target group	Rent affordable for target group; sustainability must not harm tenant finances	Remain affordable	Remain affordable

Table 32: Definitions of organisational goals

The differences in definitions reflect distinct strategic orientations. Where housing association A combines sustainability in the affordability definition, showing their primary objectives. Housing association B places the strongest emphasis on sustainability, as it is reflected in the availability definition as well. The sustainability definition also emphasises the environmental impact of their properties and organisation. This aligns with their more professionalised governance structure and their ambition to become energy neutral by 2050. Housing associations C and D

are more maintenance-driven, with quality defined more technically and focused on a close relationship with the tenant rather than on the pathway to 2050.

The main reasons for the different prioritisation are the size of the portfolio, the technical state of the properties and financial means. Housing associations with large portfolios are more focused on sustainability, as they have many properties to maintain. Smaller housing associations know which properties need updating, as the number is manageable. The technical state of the properties is also an important factor, as they are required to improve their portfolios to eliminate the EFG labels by 2029. If a large part of their portfolio does not comply, they have to invest heavily in sustainability because the other goals become less of a priority. The organisational goals form the basis for operationalising the indicators from the entrepreneurial and portfolio strategy into the projects. As all housing associations are similar, stemming from their institutional and regulatory contexts, they define organisational goals differently because of differing priorities arising from differences in portfolios and financial means.

Strategy indicator	A	B	C	D
Eliminating EFG labels	Short-term renovation incentive	Short-term renovation incentive	Short-term renovation incentive	Short-term renovation incentive
Energy neutral by 2050	Long-term strategic direction	Main strategic sustainability goal; Linked to EPC=0 and A++ average energy label	Long-term goal	Long-term strategic direction
Gas-free by 2050	Long-term strategic direction	Long-term goal translated into future heat readiness	Long-term goal, waiting on innovation to operationalise	Long-term goal; translated into applying the Standaard
Average heat demand of 50-70 kWh		50-70 kWh/m2 from NPA and used as a renovation incentive		
CO2 reduction	58% CO2 reduction	Goal towards 2050	CO2 neutral by 2050	
Average Label A by 2029		Average label A by 2029		
Insulation to the Standaard	34% insulated to Standaard by 2033, operationally not feasible	Insulation goal for energy neutrality, tactically translated		Used operationally
Circularity	Circular by 2050	Circular by 2050	Circular by 2050	
Climate adaptivity		Used to adapt properties to extreme		

	weather circumstances			
Financially healthy	Strategic condition for the other goals			
Add properties	Expand core areas	Balanced with the sustainability task	Grow to 3500 by 2035	Add homes when the opportunity arises
Focus on the main area	Expand core areas		Remain locally bound	
Technically good homes	No condition score lower than 3; yearly checks	Adequate technical quality	Clean/whole/safe	Safe and technically adequate

Table 33: Strategic indicators

Table 33 shows the shared quality indicators on the strategic level. The goals derived from the NPA are the same and are represented in all strategic documents from the housing associations: Eliminating EFG, Energy-neutral by 2050, Gas-free by 2050, and adding properties. This confirms that the housing associations are heavily influenced by the institutional quality context. However, the more specific goals from the NPA, such as heat demand targets, the Standaard, climate adaptivity and circularity, are less commonly used. This fragmentation confirms the theoretical observation that an ambitious institutional context leads housing associations to develop their own indicator sets rather than apply shared quality indicators (Autoriteit Woningcorporaties & ILT, 2025). For the translation to the tactical layer, it is also interesting that only one housing association has financially healthy as a strategic goal, even though they are all obliged to comply with the financial ratios.

6.3. Tactical layer

6.3.1. Similarities

For all four housing associations, the tactical layer is where strategic goals are tested against financial and technical feasibility. The natural maintenance moment is used as the primary incentive to include sustainability measures and make it a renovation project. Using this strategy, rather than a renovation strategy, is driven by the financial constraints of all housing associations. In addition to the natural maintenance moment, the EFG-labels and condition scores are also used by all housing associations to prioritise renovation projects. These indicators are derived from the NPA. All housing associations apply a no-regret principle, using only interventions that are financially feasible. This stems from their primary task of providing affordable housing for vulnerable citizens.

6.3.2. Differences

The most important difference on the tactical level is the renovation logic applied. As shown in Table 34, all housing associations use the natural maintenance moment, but the way this is elaborated is different

	A	B	C	D
Renovation approach	Maintenance +	Natural Step and scenario planning	Quick wins	Maintenance +
Insulation ambition	Intervention value (scaled down from the Standaard)	Below Standaard; depends on the complex	Maintenance; insulation when possible	Standaard
Heat source strategy	Insulate first; heat pump not yet feasible	Prepare for gas-free; wait for feasibility, heat grid as incentive	Wait for innovation with proven feasibility	After EFG-labels are solved
CO2 as a renovation incentive	Not prioritised	Used as incentive; measurement being developed	Looking for measurement tool; not yet in use	Not used

Table 34: Renovation strategy

The most significant difference is in the insulation ambition. Housing association D still confirms to the Standaard where the other housing associations are scaling down their insulation. Where housing association B is not far from the Standaard but uses the technical feasibility of complexes as the determining factor for the level of insulation. Housing association A is specifically scaled down to the Intervention value which is a substantially lower threshold. Where housing association C is waiting for feasible solutions to become gas-free before focusing on insulating everything to the Standard. From all the interviews, it became clear that the gas-free heat source is an important factor in decisions about insulation levels.

Another important difference is the use of CO2 as a measurement on the tactical layer. While all housing associations aim to become energy-neutral by 2050, CO2 has yet to become an incentive at the tactical layer. Housing association B is the furthest along and is exploring ways to make CO2 measurable so it can become a decision criterion. Case C recognises the measurement gap. Now, circular materials are chosen only when they cost the same as traditional materials; if the CO2 value were monetised, the choice between them would become easier. This confirms that the ambitions set by the institutional context are not yet feasible to implement, complicating the operationalisation of the organisational goals.

Tactical indicator	A	B	C	D
EFG labels	X	X	X	X
Condition score	X	X	X	X
Natural maintenance moment	X	X	X	X

No-regret measures	X		X	X
Technical quality	X	X	X	X
Functional quality	X	X	X	X
Repair and maintenance costs	X		X	
Moisture and mould complaints	X	X	X	
Heat demand		X		
Possibility for a heat grid		X		
Possibility to collaborate with housing associations		X		
CO2 reduction		X		

Table 35: Tactical indicators

Table 35 shows the shared tactical indicators. Where the goals derived from the NPA are the shared indicators. The more advanced indicators are used by housing association B. This suggests that a shared quality framework should build on the shared core and provide a voluntary extension for more advanced housing associations.

6.4. Operational layer

6.4.1. Similarities

On the operational level, all four housing associations translate the tactical indicators to physical requirements for the building envelope. All four housing associations use RC and U values to measure the insulation and the exterior of the property. As well as the requirement that the properties be airtight, with a ventilation rate of 0,7 dm³/m². These measurements comply with the techniques from the Bbl. When assessing the building for renovation, the focus is on the façade, roof, floors, and glazing to improve energy performance. At the operational level, energy labels are most often used as targets for renovation. This aligns with the EFG's elimination of the obligation. The similarities show that the Bbl is the basis for renovations, and the sector-wide obligation to improve energy labels is centred on the building shell.

6.4.2. Differences

While they share a regulatory baseline, the quality standards diverge in their ambition and specifications. At the tactical and operational levels, the insulation level also plays a large role in differentiation. Housing association A uses the intervention-worth as the insulation threshold. Where the threshold is triggered when it falls under a defined Rc or U value. Here housing association A has established its own renovation quality as their financial capacity does not allow for compliance with the Standaard. Housing association B uses scenario planning to determine the appropriate scope for each complex. Housing association C uses a more maintenance-oriented approach, in which all building shell components are assessed. Housing association D sets the Standaard as a fixed operational target to comply with the NPA and ensure their properties are fit for it.

What is interesting to see is that housing association A, in response to the limited financial capacity, uses the intervention value as a new form of the Standaard. Thereby creating its own quality standard as the policy ambition of insulating to the Standaard is not feasible. The intervention value is shaped through the Bbl existing build from 1992 as a minimum. This confirms that housing associations set their own standards when policy ambitions do not provide adequate guidance.

Another difference is the use of health and safety indicators. Housing associations C and D explicitly include fire safety checks in their operational scope. Where housing associations A and B treat these as more project-specific conditions rather than standard operational indicators. Housing association D also explicitly mentions Woonkeur and Politie Keurmerk Veilig Wonen as quality certificates to be obtained, indicating a more formalised approach to implementing functional quality.

Operational indicator	A	B	C	D
EFG labels	X	X	X	X
Building shell	X	X	X	X
Rc-values	X	X	X	X
U-values	X	X	X	X
Airtight	X	X	X	X
Ventilation (0,7 dm ³ / m ²)	X	X	X	X
Technical quality	X	X	X	X
Intervention value	X			
Standaard				X
CO ₂ reduction		X	X	
Gas-free ready		X	X	X
Comfort tenant		X	X	
Repairing defects		X		
Glass replacement		X		
Safe doors (resistance 2)		X		
Minimum electrical groups		X		
Fire safety			X	X
Asbestos			X	X
Lead piping			X	X
Woonkeur			X	X
Politiekeurmerk Veilig Wonen				X
Circular materials			X	
Climate adaptation measures		X		
Flora and Fauna				

Table 36: Operational indicators

6.5. Trade-offs and transaction costs

All four housing associations face a central trade-off between sustainability ambition and financial feasibility. This confirms the hybrid organisation theory (Pache & Santos, 2013). Housing associations must continually balance their social and commercial objectives. Their social mission is to provide good, sustainable homes, but due to financial constraints, this is not feasible. Across all housing associations, the trade-offs are most pronounced at the tactical layer, where the asset manager translates strategic goals into feasible project scopes.

Trade-offs	A	B	C	D	Transaction-cost effect
Sustainability vs financial feasibility	X	X	X	X	Increases negotiation costs; ambition levels have to be adjusted
Sustainability vs affordability for tenants	X	X	X	X	Increases monitoring costs; housing associations must measure the energy costs reduction
Innovation vs traditional	X	X	X		Increases negotiation costs; the innovations must be justified
New construction vs renovation		X	X		Increases coordination costs; the new construction plans and renovation plans have to be aligned
Resident complaints vs strategic priorities		X			Increases coordination costs; tenant complaints may require project reprioritisation
CO2 value capture vs short-term investment			X		Increases monitoring and negotiation costs; CO2 benefits are not yet structurally incorporated
Flexibility vs standardisation				X	Coordination; standardisation increased efficiency, but must allow for project-specific conditions
Tenant comfort vs tenant disruption				X	Increases coordination costs; whether the tenant can stay in their property

Table 37: Trade-offs and transaction costs effect

Beyond sustainability vs feasibility, housing associations also struggle to adopt innovations, such as gas-free heat pumps. As their budgets are limited, the housing associations want to spend every penny wisely. Making investing in innovations a decision they cannot yet make, causing them to steer away from the 2050 objective of becoming energy-neutral. From the NPA, housing associations also have the objective of building more homes for their target group, which is a capital-intensive investment. As renovation and new build are both in the investment budget, this is also a recurring trade-off for housing associations. Another trade-off noted by one housing association concerns CO2 value capture versus short-term investment, revealing an emerging gap. Without a clear way to monetise value capture, it will not be the priority, as the short-term investment will dominate. Another interesting trade-off is the one between flexibility and standardisation. This housing association uses the Standard as the project's insulation level, which improves project speed. However, they also note that renovation is highly context-dependent and requires a certain level of flexibility.

The transaction costs for this research have been used as an explanatory lens to understand the alignment problems. For the trade-offs identified across the different cases, transaction costs have been defined to illustrate their effects on the process and the organisation. The case analysis showed that process-related transaction costs are closely related to organisational maturity. Case B showed that internal coherence can reduce alignment problems. Where strategic ambitions and financial feasibility are already integrated into organisational documents and routines. The trade-offs are already made in the strategic layer and do not need to be renegotiated in the operational layer. Case A shows the opposite mechanism, where the strategic ambitions are aligned with the NPA, but the tactical translation is not incorporated into it. As a result, the tactical layer has to renegotiate extensively to make the projects feasible, leading to intervention values.

Case C also shows that transaction costs can arise from limited formalisation. As they are a small organisation, the communication lines are short. Quality becomes more commonly known than formally written down. Case D shows that operational standardisation can precede strategic alignment. As housing associations share the same objectives and adopt the same themes on the basis. This shows that operational alignment is not strongly dependent on strategic alignment, as all housing associations, at their core, want to provide affordable housing for vulnerable citizens.

6.6. Conclusion

What similarities and differences in operationalisation of quality indicators exist between housing associations?

The cross-case analysis reveals interesting similarities that could serve as the basis for a shared quality framework. The housing associations all operate under the same institutional context of the Housing Act, Bbl and the NPA. They all share the same goal of eliminating the EFG labels and becoming energy-neutral by 2050. Causing them to use the energy labels and condition scores as indicators. They all face financial constraints, leading to a shared renovation strategy of using natural maintenance windows to enhance sustainability measures. Where the biggest barriers are in the level of ambition. Housing association D adopts the Standaard in a project, where housing association A uses the Intervention value. Showing that a shared quality framework should adopt different levels of ambition for housing associations to agree on. As quality also depends on the maturity of housing associations, housing association B has a formalised process that enables more structured collaboration, whereas housing association C has greater shared knowledge on quality. As all housing associations aim to become energy-neutral by 2050, the implementation of indicators such as CO2 reduction, circularity, and climate adaptation remains limited. As there is no clear way to operationalise and implement this. The transaction-costs perspective shows that efficiency in collaboration depends not only on shared quality indicators but also on the alignment of internal processes.

H7 Development of shared quality framework

In this chapter, the fifth and last research question will be answered: *What elements support alignment of quality indicators within a shared quality framework?* From the cross-case analysis, it became clear that a shared quality framework would require different quality levels, given that housing associations differ in their levels of ambition. It showed that the housing associations share the same institutional context but differ in how they operationalise it. From the literature review, the quality baseline is defined by the Besluit bouwwerken leefomgeving. This was also recognised with the cross-case analysis as being a shared quality base. The next level of ambition is shaped by the NPA. Eliminating the EFG labels is another shared quality indicator used by all housing associations, which represents the standard quality level. Where the housing associations diverge is in the roadmap to becoming energy-neutral by 2050. This is where the shared quality framework should address the identified gap in the implementation of CO2 value capture and circularity. This framework is intended for the initiation phase of collaborative renovation projects, where housing associations need to determine whether their renovation task can be bundled. The “shared” element of the framework is that it holds the shared indicators of the housing associations and aims to serve as a decision-making tool to align their renovation quality. Three of the four analysed housing associations are part of the collaboration initiative that created a shared procurement document for renovations. This framework can allow them to actually bundle the project, rather than just procedural alignment. The shared quality framework will therefore complement the existing collaboration, enabling housing associations to work together before procurement.

The shared quality framework is intended for the asset management layer, which, as shown in all the case studies, plays the dominant role in translating strategic goals into projects. The asset manager also determines whether a project is selected for renovation. The framework should enable housing associations to align their quality indicators to work together in renovation projects. The framework will consist of three management layers. First, the strategic level, which sets the boundaries for the collaboration. The tactical level identifies the renovation incentives that allow for collaboration. The operational level translates the agreed ambition level into concrete quality indicators for a shared programme of requirements.

7.1. Strategic level

The strategic level serves as the starting point for the shared quality framework. The housing associations first need to agree on the project's organisational boundaries. These boundaries are shaped by the organisational goals defined by the Housing Act, which are shared among all housing associations, but where the prioritisation differs per housing association. The strategic boundaries align the housing associations in specifying the project requirements. Defining these before the start of the project will further reduce transaction costs throughout the process.

Organisational goal	Alignment
Affordability	The property has to remain affordable for the tenant. If rent increases are allowed when installations are added, energy costs should decrease.
Availability	The renovation should extend the building's lifespan, ensuring long-term availability.
Quality	The property should have a minimum technical property which will further be defined on the operational level
Sustainability	The scope of the project is one of the three levels: Eliminate EFG, The Standard, or Gas-free
Liveability	The tenants remain in the property during the renovation and are involved early on in the process. Depending on the level, the tenants' wishes are included.

Table 38: Strategic alignment for collaboration

7.2. Tactical level

As shown in the cross-case analysis, the tactical level is largely defined by the renovation incentives of housing associations. When the renovation incentives align, there is a possibility for collaboration. In this section, the renovation incentives that enable collaboration are defined.

Renovation incentive	Definition	Collaboration potential
Natural maintenance moment	Large maintenance projects can be elaborated with sustainability measures	The chances that large maintenance moments align for housing associations are slim.
EFG-labels	Policy urgency for energy performance improvement	Good renovation incentive to collaborate, as similar complexes from the same build year are likely to have the same energy label.
Condition score	The technical urgency that renovation is needed	Housing associations use the condition assessments (NEN 2767), so similar complexes could have the same condition score.
Heat demand	The heat demand has to be reduced	Not all housing associations use this indicator, but if they do it could be a good incentive.
Future heat option	The properties have to be made ready for a gas-free option	If housing associations have properties in the same area where a heat grid is installed, it is a good incentive to collaborate.
Building typology	The housing associations have to compare whether the complexes have similar building types	Quality indicators such as the Rc value of the building shell can only be standardised if the typologies are the same.

Table 39: Renovation incentives for collaboration

As shown above, EFG-labels and future heat options are the best renovation incentives for housing associations to collaborate in renovation projects.

7.3. Different layers

From the cross-case analyses, it can be concluded that a shared quality framework needs to incorporate multiple levels, as housing associations differ in their levels of ambition. If the housing associations want to collaborate, they need to agree to a certain level. The first level is the baseline, derived from the Bbl, and includes eliminating the EFG labels, which housing associations are obliged to comply with. The second level will include label improvement and No-Regret measures shared by housing associations; this serves as the main collaborative level. The third layer will include the identified gap toward the goal of becoming energy neutral by 2050 and the ability to measure CO2 value capture.

	Level 1 – regulatory baseline	Level 2 – Shared ambitions	Level 3 – Next Step
Goal	Comply with the regulation	Comply with the NPA	Work towards becoming energy-neutral
Origin	Bbl and Housing Act	NPA short-term goals	NPA long-term goals
Use	Non-negotiable minimum	Main collaborative level	Used when financial and technical feasibility allow it

Table 40: Level for the shared framework

7.4. Use of existing quality frameworks

From the literature review, the identified quality frameworks were: Besluit bouwwerken leefomgeving, Aedes benchmark, Het Nieuwe Normaal and Kwaliteit in Balans. Where the Bbl provides the regulatory baseline for the first level of the shared quality framework. The Aedes benchmark provides sector-wide quality indicators, and Het Nieuwe Normaal provides indicators for measuring circularity. Kwaliteit in Balans lists the different categories relevant to the building.

These frameworks will be combined into the shared quality framework to make it recognisable and complete. The Bbl will be used for the first level, the KiB for the different categories. The indicators identified for Aedes and HNN will be combined with those found in the cross-case analysis.

Themes	Definition	Indicators
Safety and Health	This theme ensures the property is safe and healthy. The indicators make sure the renovation complies with the safety regulations and allow for extra measures if financially possible	Fire safety; Asbestos; mould and moist prevention; PKVW; Woonkeur
Technical Quality	This includes the measures taken to improve the building shell.	Insulation; Glass; Airtight; Repair

Energy Performance	The levels to which the property complies with long-term or short-term sustainability ambitions after renovation.	Energy label; Heat demand; CO2 reduction; Gas-free options
User quality	The quality experienced by tenants before, during and after renovation.	Comfort; affordability; functional quality; BKT
Future value	Renovation decisions that prepare the property for future requirements	Circular; Climate adaptive; future proof

Table 41: Themes for the shared framework

7.5. Use of the framework

From the case studies, it became clear that renovation incentives are driven primarily by the need for major maintenance, tenant complaints, poor technical condition, and energy labels. This framework can be used for the asset management layer. The framework serves as a tool to align quality indicators across housing associations, using different levels to show where they already align and where they still need to negotiate trade-offs. Through this framework, the negotiation costs could be reduced. As the tenant also has a significant influence on the process, the Nationaal sloop- en renovatiestatuu is incorporated into it. The framework should be used as a decision-making tool through the collaboration and renovation process. The steps to use the framework when collaboration is initiated are:

Step 1 – Define strategic boundaries

Step 2 – Compare tactical renovation incentives and complex strategies

Step 3 – The multi-year plans are compared to define the timing of the project

Step 4 – The building typologies and similarities between the different complexes are compared; if aligned, the shared quality framework can be meaningful

Step 5 – Notify tenant associations

Step 6 – Select the shared ambition level

Step 7 – Organise tenant information meetings

Step 8 – Translate the ambition level and tenant input to a shared program of requirements

Step 9 – The contractor is procured

Step 10 – Tenants are informed of the plans, and 70% of written consent is collected

Step 11 – Financial Feasibility is tested

Step 12 – If financially feasible, the project is executed

Step 13 – The realisation of the project is monitored and reflected back to the strategic layer

The steps in this framework assume that collaboration is possible for housing associations. However, each step of the framework can lead to the conclusion that the housing associations are not fit to work together. The framework intends to improve efficiency. If the timing of the maintenance cycles does not align, or the housing associations do not share the same building

typology in the same area, the effort required to collaborate can be too high for the project to succeed. At each step, the housing associations involved should evaluate whether the collaboration could succeed.

In the coming years, levels 1 and 2 will likely be used most frequently, as housing associations are struggling financially and do not yet have the means to implement level 3. Level 3 mostly focuses on the period after 2030, when the focus can shift from energy labels to measuring CO2 and pursuing circularity. Hopefully, the technology for achieving energy neutrality will also be proven financially viable and classified as a No-Regret measure rather than a risk.

7.6. Shared Quality Framework

Quality indicator	Level 1	Level 2	Level 3	Explanation
Safety and Health				
Fire safety	X	X	X	Conform Bbl
Asbestos/ Leadplumbing/ Legionella	X	X	X	Inventory and disposal conform regulation
Mould and Moist prevention	X	X	X	Make property airtight and include ventilation conform Bbl
Politie Keurmerk Veilig Wonen (PKVW)		X	X	Entrance and door comply with safety measures from PKVW (No yearly checks mandatory)
WoonKeur			X	Lifespan proof
Technical Quality				
Condition score	X	X	X	Level 1: Has to be better than a condition score 3. Level 2 & 3: all building parts score 1
Roof Insulation	X	X	X	Level 1 (Bbl): Level 2& 3: Standaard
Façade Insulation	X	X	X	Level 1 (Bbl) Level 2&3: Standaard
Floor insulation	X	X	X	Level 1 (Bbl) Level 2 & 3: Standaard
Glass (U-value)	X	X	X	HR++

Airtight	X	X	X	Qv10: 0,7 dm ³ /m ²
Ventilation	X	X	X	CO2 steered ventilation
Repair	X	X	X	Damage will be fixed
Energy Performance				
EFG-label elimination	X	X	X	Energy label must be improved to at least label D
Energylabel improvement (Investment)		X	X	Level 2: minimum of 2 label steps; Level 3: at least to Label A
Heat demand		X	X	Level 2: 87 kWh/m2/year; Level 3: 70 kWh/m2/year
Gas-free heat supply			X	The no-regret principle is used to implement a gas-free installation
CO2 neutral			X	CO2 reduction as a measurable goal
User quality				
Tenants stay in the property	X	X		Tenants stay in the property to reduce costs; Level 3: installations are changed
Incorporate tenant complaints	X	X	X	Tenant complaints are incorporated in the project requirements
Rent increase			X	Rent increase is only possible when installations are changed
Reduce energy costs		X	X	The renovation should reduce the energy costs for the tenant
Tenant comfort		X	X	Thermal and acoustic

				comfort is improved
BKT			X	Replace with new built quality
Future value				
Circular materials		X	X	Preference for circular materials
Climate adaptive measures		X	X	Apply measures to prevent heat distress and flooding
Detachability			X	Use the layer model from HNN
Measure CO2 for the entire process			X	CO2 will be measured in materials, execution and property

Table 42: The shared framework for the operational level

Reflection theoretical framework

Based on the theory, a theoretical framework was constructed that identifies regulation and the institutional context as drivers of the housing associations' strategy. From the cross-case analysis, this was confirmed and used as a baseline for the shared quality framework. The theory also showed the policy rollercoaster used to operationalise the quality indicators. Housing associations are structured around this policy rollercoaster and use it to navigate the different layers. From the cases, it became clear that when the layers are misaligned, the negotiation costs are high. Showing that the shared quality framework should not just align between housing associations but also between the different departments within the housing association. The existing quality frameworks are mostly created using a top-down approach, in which organisational factors are not incorporated into the framework itself. Through looking at quality from an organisational perspective, a framework can be created that aligns with the housing associations' ambitions. The shared quality framework created is a decision-making tool for housing associations to collaborate on renovation projects. It is not a one-size-fits-all solution.

7.7. Conclusion

What elements support alignment of quality indicators within a shared quality framework?

The shared quality framework shows that alignment of quality indicators is supported by three elements shaped through the institutional context. The first is the regulatory baseline that provides a common minimum. Second, there is the NPA's shared ambition to eliminate EFG-labels, which can serve as a common standard. The third is the framework's flexibility to incorporate higher ambitions when housing associations have more financial means to work towards 2050. The framework is therefore not a fixed quality standard, but it structures the

indicators into different levels. This makes it possible to see where housing associations align and where trade-offs still have to be negotiated. The asset management layer plays the most prominent role in adapting and adopting this quality framework.

H8 Validation

For the validation, expert interviews are conducted. These are conducted with four organisations that have an interest and expertise in quality indicators for housing associations. First is the Regional collaboration initiative, which brings together the housing associations in the same region into a collective. This also includes close bonds with the municipalities and tenant organisations. Next is the contractor involved in the collaboration, of which three of the four housing associations are part. The third, Verbouwstromen, is an organisation that helps housing associations collaborate on renovation projects. Then the renovation expert from Aedes, the branch organisation for the housing associations and a sustainability advisor for housing associations. These interviews provide a broad perspective on the shared framework and a national perspective rather than just a regional one.

Regional collaboration initiative

The regional collaboration initiative confirmed that the shared quality framework is useful for collaboration between housing associations. The housing associations in the region are willing to collaborate, but collaboration is difficult because each organisation still defines its own requirements and processes. This creates uncertainty towards the contractor.

“Market players, that is, the major developers and builders, basically said that they find the housing association sector very complicated, because housing associations all decide for themselves what they actually want.”

The interviewee also mentioned that the housing associations have a lot of market power if they combine their task. Now, additional sustainability measures, such as circular materials, are more expensive, but if combined, they could become more feasible. The shared framework can help make the main quality themes explicit for housing associations. However, the interviewee mentioned that the purchasing policy can be a constraint to the realisation of the project, which is now not incorporated, as the research was conducted from a real estate management perspective.

The interview also sharpened how the framework should be used. It identified its main value in structuring conversations among housing associations. While the strategic boundaries are a good starting point, comparing renovation triggers and ambition levels will help align on the project requirements. The operational level should be less defined, as it will steer housing associations away from collaboration and towards conflict over specific requirements, thereby inhibiting collaboration. The framework process can be refined by incorporating tenant involvement between the levels of ambition and project requirements, as tenants have a better understanding of the building. Also, the distinction between decisions that must be made in

collaboration and project-specific decisions, such as tenant communication, should be made more explicit.

Contractor

The contractor recognised that housing associations often share the same broad goals but differ markedly in how they translate them into project-level requirements. From the contractor's perspective, the quality framework would help facilitate conversations among housing associations. The interviewee is also involved in collaboration among the three of the four housing associations, and he recognised that financial pressure has drastically changed the housing associations' ambition levels over the past two years. Their initial ambition was to renovate to the Standaard, and now they have shifted to minimal interventions to eliminate the EFG labels.

On the tactical side of the framework, the contractor confirmed that the main renovation triggers are addressed. He added area-based renewal as a trigger for housing associations to work together. He also mentioned that foundation problems and social impact can be important triggers for housing associations. The operational side of the framework was sharpened during the interview. The technical quality can also be refined by redefining airtightness, as it is very hard to achieve in existing buildings. The ventilation should also include different levels. The tenant's comfort should be divided into different themes, as the levels also differ. In the future, bio-based materials should be made more explicit, and social impact should be added. This interview gave a more practical perspective on the framework.

Verbouwstromen

The Verbouwstromen made it explicit that the framework should be used as a tool to create a level playing field between housing associations. Where its value lies in making explicit which housing associations have comparable ambitions so they can identify when collaboration is realistic. They mentioned that the renovation triggers can be elaborated through planned maintenance, which could allow for a component-based approach to collaboration. Also, energy label D should be included as a trigger, since it is presumably the next step. Level 2 for insulation should be described more practically as optimising within the existing shell. From their experience, they also showed that tenant participation, allocation and rent increase are better presented as organisation-specific indicators. As these can be boundaries for housing associations to work together, even though they do not have to agree on these points to collaborate.

“Not everything has to be an exact match.”

With this quote, they meant that the quality level can be less defined to allow collaboration. That tenant participation can be shown as a separate process within the organisation instead of being combined. For the difference between the levels, it suffices to specify the minimum level at which they can collaborate, but the housing associations should be free to fill in the other levels as they see fit.

Aedes

The interview confirmed the cause of the research;

Resources are becoming increasingly scarce, while challenges are growing, putting pressure on both the tasks at hand and spending on maintenance improvements and sustainability initiatives. This makes things increasingly difficult. To explain why one housing association does things one way and another does them another way.

Where shared quality can be created through three steps:

1. Identifying what quality is and what indicators are needed
2. Determine the language we use and how it is measured.
3. Create a shared quality level

The framework for this research provides a useful tool for defining quality and identifying the indicators needed. It should be a structured decision-support tool in which the framework establishes a common language for quality. The framework can clarify what quality means for the different housing associations and what measures they want to use. The interview also showed that the different levels should be defined through the minimum baseline and a performance range. The performance range should be based on the level-two policy regulation and the housing associations' strategic policy for level three. This is more representative of housing associations developing their own scenarios in the Netherlands. The interview highlighted that the research method makes the framework especially relevant because it is developed from practice instead of being top-down. Existing frameworks often start from policy ambitions rather than from housing associations as organisations.

Sustainability advisor

The validation interview with the sustainability advisor for housing associations confirmed the need for a shared quality framework to enable collaboration among housing associations. During the interview, it became clear that he believes that housing associations should move past energy labels as the dominant steering mechanism. The energy label measurements do not include the CO₂ footprint left by the interventions. He argued that CO₂ reduction should become the leading indicator in renovation decision-making. As an example, he gave the following: insulation may reduce energy demand but also increase embodied CO₂. Interventions such as heat pumps can lead to greater CO₂ reductions with lower embodied CO₂. This shows that level 3 of the shared quality framework should focus on steering towards embodied carbon rather than energy labels, to show housing associations the next step towards becoming energy neutral.

Conclusion and framework adaptation

The validation interviews confirm that the shared quality framework is relevant; however, it should be presented more as a decision-support tool to help housing associations identify where collaboration is feasible. The interviews showed that the framework's main value lies in providing a comprehensive set of indicators for renovation projects. As it includes the different layers, it makes it easier for housing associations to decide how to collaborate. This reduces negotiation effort and lowers transaction costs in collaboration. The interviews showed that tenant communication and rent increase may differ among the housing associations. These organisation-specific indicators should not be included as they increase the negotiation costs.

The shared framework is a good step toward developing a common quality language, but the interviews also showed that aligning housing associations remains difficult.

The validation sharpened the framework's different layers. The strategic layer was mentioned as a good starting point, but it should not include a strict definition; it should allow housing associations to define their organisational boundaries themselves.

Organisational goal	Alignment
Affordability	
Availability	
Quality	
Sustainability	
Liveability	

Table 43: Revised strategic level framework

On the tactical layer, the renovation incentives were elaborated, including area-based renewal, foundation problems, social impact and energy label D. The additional incentives are added in purple.

Renovation incentive	Definition	Collaboration potential
Natural maintenance moment	Large maintenance projects can be elaborated with sustainability measures	The chances that large maintenance moments align for housing associations are slim.
EFG-labels	Policy urgency for energy performance improvement	Good renovation incentive to collaborate, as similar complexes from the same build year are likely to have the same energy label.
Condition score	The technical urgency that renovation is needed	Housing associations use the condition assessments (NEN 2767), so similar complexes could have the same condition score
Heat demand	The heat demand has to be reduced	Not all housing associations use this indicator, but if they do it could be a good incentive
Future heat option	The properties have to be made ready for a gas-free option	If housing associations have properties in the same area where a heat grid is installed, it is a good incentive to collaborate
Area-based renewal	If areas are selected by the municipality for improvement	Good incentive if housing associations have properties in the same area
Foundation problems	Foundation problems are becoming increasingly important, this is also mapped by the state	Repairing foundation problems could be a good incentive to also include renovation
Social impact	Troubled neighbourhoods could be an incentive to collaborate on improving the neighbourhood	Housing associations operate in challenging neighbourhoods

Energy label D	This could be the next step in the renovation task of the housing associations	A lot of housing associations have labelled D properties that are going to be improved
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Table 44: Revised tactical level framework

Use of the framework

The validation showed that the use of the framework should not be limited to a specific set of indicators that housing associations must use, but rather a guide to which indicators they should discuss. The framework should allow for the involved housing associations to decide where alignment is needed and where flexibility is allowed. Where the process with the tenants should remain organisation-specific, as it can cause unnecessary conflict for the project.

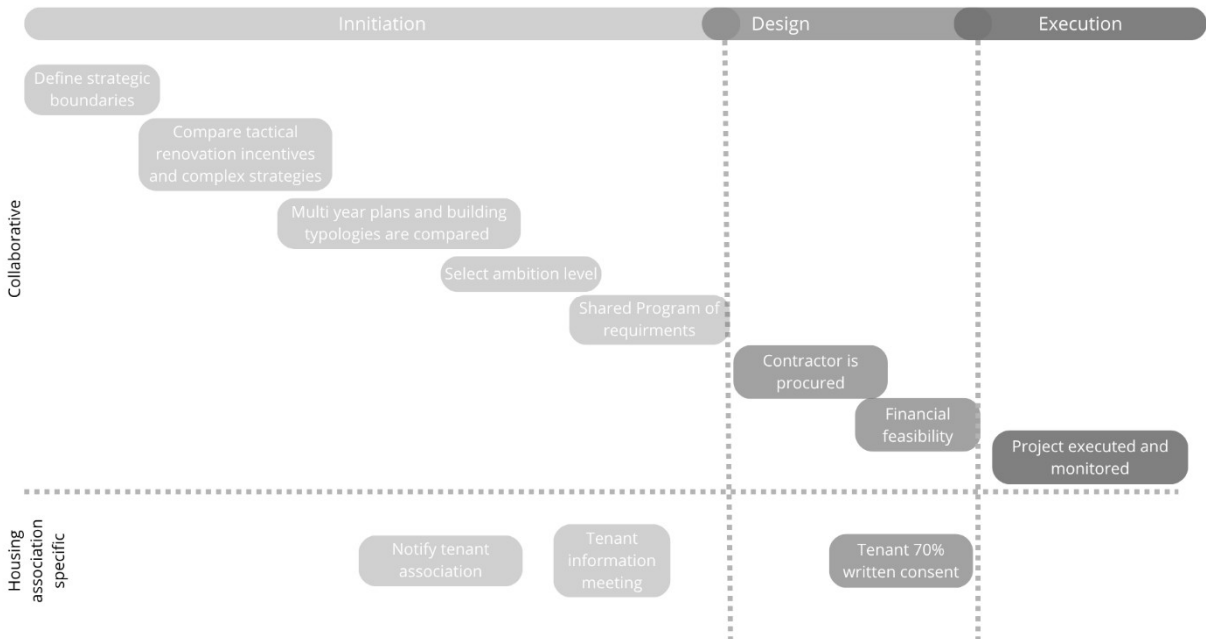


Figure 26: Collaboration process

The interviews showed that the shared quality framework should be less defined than it was constructed. The different levels should be left to housing associations to decide rather than being defined in advance. Therefore, the explanation is erased from the operational framework. The levels are also defined a bit differently, and indicators are added when proven relevant through validation. The most relevant validation came from the sustainability advisor, who showed that embodied carbon will be a dominant indicator, rather than energy labels, to achieve energy neutrality and circularity by 2050. This is implemented in level 3.

Quality indicator	Level 1 Legal minimum (Bbl)	Level 2 Bbl + policy regulation	Level 3 Strategic policy
Safety and Health			
Fire safety	X	X	X
Asbestos/ Leadplumbing/ Legionella/ Chrom 6	X	X	X

Mould and Moist prevention	X	X	X
Politie Keurmerk Veilig Wonen (PKVW)		X	X
WoonKeur			X
Technical Quality			
Condition score	X	X	X
Roof Insulation	X	X	X
Façade Insulation	X	X	X
Floor insulation	X	X	X
Glass (U-value)	X	X	X
Drought proofing	X	X	X
Ventilation	X	X	X
Repair	X	X	X
Energy Performance			
EFG-label elimination	X	X	✗
Energylabel improvement (Investment)		X	✗
Heat demand		X	X
Gas-free heat supply			X
CO2 neutral			X
User quality			
Tenants stay in the property	X	X	
Incorporate tenant complaints	X	X	X
Rent increase			✗
Reduce energy costs		X	X
Tenant comfort		X	X
BKT			X
Future value			
Circular materials		X	X
Climate adaptive measures		X	X
Detachability			X
Measure CO2 for the entire process			X
Bio-based materials			✗
Biodiversity			✗
Social impact			✗
Net congestion	X	X	X

Table 45: Revised shared framework for the operational level

The validation confirmed the research's overall assumption that housing associations share the same goals, but they translate those goals differently across organisational layers. The shared quality framework can reduce this translation gap by structuring the conversation and providing a set of indicators that allow housing associations to create the same quality language for collaboration.

H9 Discussion

This chapter reflects critically on the findings of this research. The result will be reflected on the theoretical framework developed in chapters 2 and 3. The discussion is structured around the theoretical interpretation of the findings, the practical implications of the shared quality framework, and the research's limitations and validity. The finding shows that renovation quality is defined not only by technical standards but also by how the organisation influences the operationalisation of the quality indicators. The strategic goals are largely similar across the different housing associations. On the asset management layer, the translation to project-specific indicators causes the differences. This confirms the relevance of analysing renovation quality in terms of organisational goals, management layers, and transaction-cost-related alignment problems. In the discussion, the main themes from the theoretical framework will be examined. The discussion also answers the main research question by examining how housing associations define and use renovation quality in practice, and how these approaches can be brought together into a shared quality framework. The research question has both a descriptive and prescriptive dimension. The first part of the research explains how organisational goals shape the operationalisation of renovation quality indicators. The second part translates these findings into conditions for alignment between housing associations through a shared framework.

9.1. Interpretation of the main findings

The findings show that the main alignment problem between housing associations concerns how quality indicators are operationalised within the organisational structure. At the strategic level, the four housing associations all respond to the same institutional context and refer to the same ambitions. However, when ambitions are translated into the tactical layer, they are reflected in the technical, financial and organisational constraints. This causes housing associations to operationalise the organisational goals differently and steer away from a standardised renovation approach. As costs are rising sharply, the need to standardise and improve efficiency is growing as well. The way housing associations handle the trade-offs between financial feasibility and organisational goals on the tactical level creates a barrier for collaboration. Therefore, alignment on the tactical level is needed for housing associations to collaborate. The shared quality framework can help create that alignment as a decision-making tool, providing a set of quality indicators that housing associations can discuss to develop a shared quality language.

9.2. Renovation quality as an organisational construct

The central finding of this research confirms that renovation quality is not just a technical concept but a multidimensional one shaped by institutional pressure and internal decision-making processes. This aligns with Garufi's (2015) argument that renovation requires an integrative approach that combines functional, technical, and organisational dimensions. The empirical results extend this insight by showing that the organisational dimensions are not a

background condition. The operationalisation of the quality indicators determines which indicators are selected and what level of ambition is applied.

The cases consistently show that the strategic layer is shaped by the institutional context. The differences between the housing associations primarily emerge at the tactical layer. This is where the asset manager must translate the strategic ambitions into complex strategies that address financial and technical constraints. This confirms Sharam's (2025) argument that asset management is the central translation layer in housing associations' real estate management.

9.3. Strategic alignment and tactical divergence

The lens of institutional isomorphism holds that similar organisations respond similarly to institutional changes, thereby becoming more alike (DiMaggio & Powell, 1983). During this study, this was recognised on the strategic level of housing associations, where all housing associations adopt the NPA and set their strategic goals similarly. However, on the tactical level, housing associations start to diverge as they balance their organisational goals differently. This indicates decoupling, where the housing associations formally align on the strategic level but operationalise that differently (Meyer & Rowan, 1977). Decoupling helps explain why housing associations appear aligned at the strategic level but differ once goals are translated into tactical choices and project requirements. The hybrid organisation theory of Pache and Santos (2013) further supports this. Balancing social and commercial objectives is evident across all housing associations. On the one hand, they must provide affordable housing for vulnerable citizens; on the other hand, they must maintain financial ratios and have limited investment capacity. The differences between the cases come from how this is balanced through the organisation. The hybrid organisation theory helps explain why different choices are made within the organisation. The hybrid orientation of the housing associations causes them to steer away from the strategic alignment. The explanatory lens of transaction cost theory helped in understanding the alignment problems within the organisations (Rindfleisch, 2019). This showed that coordinating and negotiating costs arose when the different layers were misaligned, highlighting an internal barrier to collaboration. The housing association most aligned had already incorporated the possibility of collaboration into its strategic documents, whereas the other housing associations focused on their own strategies and did not recognise the opportunity.

9.4. Organisational translation of the quality landscape

The literature review identified a fragmented quality landscape as a structural constraint in the Dutch social housing sector (Autoriteit woningcorporaties & ILT, 2025). The research's empirical findings confirm this. None of the recognised quality frameworks was directly adopted by housing associations. The indicators they used were extracted from the institutional contexts. During the validation, it was recognised that existing quality frameworks often arise from a top-down approach, making it difficult for housing associations to implement them within their organisations. In this research, the approach began with the organisational perspective of the housing associations, using management layers and the policy rollercoaster to understand them. The policy rollercoaster was a useful tool to understand how housing associations translate their strategic goals into operational project requirements (Aedes, 2023b). It represents the standardised process applicable to all housing associations. The empirical findings show

that all housing associations recognise the various stages of the policy rollercoaster. However, the way it is translated across the organisation's different layers varies. The way the strategic layer is organised influences how the other layers work. As shown in the theoretical framework, all levels are interdependent. If the levels do not align, translating organisational goals into project requirements is difficult.

9.5. Practical implications of the quality framework

The shared quality framework developed in Chapter 5 is designed to serve as a decision-making tool during the initiation phase of collaboration among housing associations on renovation projects. The empirical findings showed that housing associations operationalise quality indicators differently due to the hybrid nature and the financial constraints. The framework can support alignment by creating a structured conversation. The housing associations do not have to agree on all elements of the framework; elements such as tenant participation can still remain organisation-specific. The goal of the framework is to allow housing associations to create a common quality language.

The framework guides housing associations to first agree on strategy, then determine tactical renovation incentives, and, once projects are selected, negotiate project requirements. As the housing associations differ in portfolio composition and financial capacity, complete standardisation remains difficult. The way quality is defined strongly depends on the organisational structure, with the organisation's human capital also playing a large role. Where an organisation's capacity is limited, quality is more likely to be defined by minimum requirements. This research focused on the organisational translation of quality indicators from a real estate perspective, rather than on the role of the tenant. The process is included in the framework, but the potential risks of tenant resistance have not been quantified.

The identified gap in measuring CO₂ in renovation projects was addressed by adding the accompanying quality indicators and changing the measurement in level three. However, as policy ambitions still steer on energy labels, housing associations do too; therefore, to enable a shared quality language, the energy labels remain in the framework. The restriction of net congestion is also present in level three, where the installations are changed. When properties transition to all-electric, net congestion becomes a barrier. The housing associations assessed for this framework mostly operate at levels 1 and 2, so the net congestion barrier was not addressed during the interviews. For other housing associations that do implement installations, this problem will be more prominent.

9.6. Validation of the research

The expert interviews strengthened the research's validation by testing whether the findings were recognisable beyond the four case studies. The expert interviews confirm the main finding that housing associations share the same strategic goals but operationalise them differently, and recognise that the shared quality framework can be used as a tool to structure conversations among housing associations and create a shared quality language. The case studies focused on a single region to ensure a similar institutional context and enable comparison of the housing associations. The expert interviews provided an external and national perspective. This supported the research's transferability, as they confirmed the identified problems. The framework was developed from the literature review, document analysis,

interviews, and cross-case comparison, and was refined through expert feedback. This made the process of developing the shared quality framework traceable.

9.7. Practical limitations of the research

Limitation	Implication	Mitigation
Four cases from 1 single region	Findings may reflect regional dynamics rather than the full Dutch sector	Cases do vary in size and ambition, the findings are also compared to the National obligations and validation is done with national organisations such as Verbuwstroomen and Aedes
Not all roles are interviewed in every case	In case B, the portfolio and project manager are not interviewed due to a capacity issue at the housing association	This housing association compensated in a structured way, organised the documents, and the manager of Real Estate provided insight into the project manager's perspective.
Strategic documents written in different years under different regulatory contexts	Documents from case A were written simultaneously, where the Wet Betaalbare Huur was implemented during the process	The documents are all written after the NPA, which is the most significant institutional factor for this research
Renovation projects are unique	Standardisation for renovation is difficult, and the shared framework may not fit the complex and atypical projects	The three-layer structure leaves room for interpretation
Organisational perspective of housing associations	This takes the organisational perspective of housing associations and does not include other actors in the renovation process	Through the validation, a contractor's perspective is included, and the regional collaboration is the bridge between the tenant associations, the municipality, and the housing associations.
Transaction costs theory	The theory is used conceptually but does not measure the costs in time, money or process delays, which limits the claim that the framework can reduce costs	The transaction cost-related alignment problems are identified, and also how they may be reduced
Real estate management perspective	The documents and interview were centred around the real estate management perspective which limited the input of liveability in the research	In the validation, the regional collaboration was interviewed, who is also involved with the tenant associations for the region

9.8. Recommendations for further research

- Test the shared quality framework in practice
- Specify a framework for building a typology
- Include housing associations from other regions
- Quantify Buying benefits
- Look at collaboration from a tenant's perspective

H10 Conclusion

Dutch housing associations operate within the same institutional context and work towards the same ambitions, but they operationalise quality differently. The main differences among housing associations become visible at the tactical layer, where strategic goals are translated into complex plans. The conclusion first addresses the sub-research questions, then presents the main research question and recommendations for housing associations.

10.1. What institutional and regulatory factors shape renovation quality in Dutch housing associations

The institutional and regulatory factors that shape renovation quality for housing associations are the Housing Act, financial compliance, performance agreements, European and national sustainability ambitions, the Bbl and quality frameworks. Together, these factors create the context in which housing associations have to translate the broader ambitions into a workable standard for their own organisation and portfolio. The theory of institutional isomorphism suggests that organisations should become more alike when sharing the same institutional context. Where the Housing Act defines the primary task of providing affordable housing for vulnerable citizens. The institutional quality context, through European and national ambitions, further increases the complexity for housing associations. Goals are set to eliminate EFG-labels by 2029, reduce heat demand, and achieve circularity and energy neutrality by 2050. These goals are ambitious, and the indicators used to measure them are not feasible for housing associations. Therefore, housing associations must translate them into feasible indicators for their portfolios and organisations. Housing associations all operate within the same institutional and regulatory environment, but because of their ambitious institutional goals, different trade-offs are made depending on organisational stances. This can be understood through the decoupling theory as housing associations adopt the same strategic goals but operationalise them differently.

10.2. How do organisational goals and decision-making processes influence the interpretation of renovation quality?

The organisational goals and decision-making processes of housing associations strongly influence how housing associations interpret quality. Even though housing associations operate

within the same institutional context, the interpretation of renovation quality is strongly influenced by social, financial, technical, and organisational aspects. As housing associations are hybrid organisations, they must continually balance their different objectives, which can create tension during the decision-making process. Quality is shaped through the trade-offs housing associations must make during implementation. If the different organisational layers are misaligned, negotiation costs may be high.

The decision-making process across portfolio, asset and property management shows where these trade-offs are made. At the strategic level, broad organisational goals are formulated. At the tactical layer, these are translated into complex strategies. At the operational layer, quality is further specified in the projects. The translation between the different layers and the hybrid organisation theory explains why quality indicators can have different meanings within and between housing associations. The transaction cost theory helps explain why these differences become problematic in collaboration. When housing associations use different definitions, have different ambitions, and follow different procedures, alignment takes more time. The hidden process costs of negotiating, monitoring, and coordinating pose a barrier to collaboration among housing associations. Therefore, the challenge is not only to identify which quality indicators are used but also to understand how they are translated and negotiated in practice.

10.3. How are renovation quality indicators operationalised across organisational levels?

The quality indicators are broadly defined at the strategic level, and most housing associations use the NPA indicators to guide their strategic goals. Between the strategic and tactical layers, differences arise from differing priorities, leading to different outcomes. On the operational layer, it becomes more practical, and the functional and technical qualities become more prominent. Overall, the indicators are operationalised from a broad strategy, to tactical prioritisation, to specific project requirements. This shows that renovation quality is not implemented directly from policy but is reshaped through organisational decisions.

10.4. What similarities and differences in operationalisation of quality indicators exist between housing associations?

The cross-case analysis reveals interesting similarities that could serve as the basis for a shared quality framework. The housing associations all operate under the same institutional context of the Housing Act, Bbl and the NPA. They all share the same goal of eliminating EFG labels and achieving energy neutrality by 2050. Causing them to use the energy labels and condition scores as indicators. They all face financial constraints, leading to a shared renovation strategy that uses natural maintenance windows to enhance sustainability. Where the biggest barriers are in the level of ambition. Housing association D adopts the Standaard in a project, where housing association A uses the Intervention value, creating its own standard. Showing that a shared quality framework should adopt different levels of ambition for housing associations to agree on. As quality also depends on the maturity of housing associations, housing association B has a formalised process that enables more structured collaboration, whereas housing association C has greater shared knowledge on quality. As all housing associations aim to become energy-

neutral by 2050, the implementation of indicators such as CO2 reduction, circularity, and climate adaptation remains limited. As there is no clear way to operationalise and implement this. The transaction-costs perspective shows that efficiency in collaboration depends not only on shared quality indicators but also on the alignment of internal processes.

10.5. What elements support alignment in quality indicators in a shared quality framework?

The shared quality framework shows that alignment of quality indicators is supported by three elements shaped through the institutional context. The first is the regulatory baseline that provides a common minimum. Second, there is the NPA's shared ambition to eliminate EFG-labels, which can serve as a common standard. The third is the framework's flexibility to incorporate higher ambitions when housing associations have more financial means to work towards 2050. The framework is therefore not a fixed quality standard, but it structures the indicators into different levels. This makes it possible to see where housing associations align and where trade-offs still have to be negotiated. The asset management layer plays the most prominent role in adapting and adopting this quality framework. In the validation chapter, the final shared framework is shown.

10.6. Main research question: How do organisational goals shape the operationalisation of renovation quality indicators across Dutch housing associations, and what conditions enable alignment for inter-organisational collaboration?

Organisational goals shape the operationalisation of renovation quality indicators by determining how the institutional context is translated into feasible project requirements. Housing associations share the same institutional context, but they differ in how they balance their organisational goals. The differences become evident in the translation from the strategic to the tactical and operational levels.

At the strategic level, housing associations are very similar. Housing associations refer to the same institutional ambitions and use comparable quality indicators. However, strategic similarity does not automatically lead to operational alignment. The main differences arise at the tactical level, where housing associations decide what is financially feasible. The tactical translation shows that renovation quality is an organisational construct. Renovation quality is shaped through decision-making, trade-offs and internal negotiation. The hybrid nature of housing associations explains why the trade-offs are unavoidable. Housing associations must improve the sustainability and quality of their homes while also protecting tenant affordability and maintaining financial continuity. The tensions explain why housing associations make different choices, even when they operate under the same institutional context.

The conditions that enable alignment for inter-organisational collaboration are both technical and organisational. First, housing associations need a shared baseline that defines the minimum quality requirements. Second, they need shared ambition indicators that connect collaboration to sector-wide goals, such as EFG-label elimination and long-term energy neutrality. Third, they need a flexible structure that accommodates different levels of ambition, because not every housing association can implement the same quality level in the same way.

Fourth, they need internal alignment across the strategic, tactical, and operational layers before external collaboration can be efficient.

The shared quality framework developed in this research supports these conditions. It does not replace existing quality frameworks but structures the indicators to support collaboration among housing associations. The value lies in making explicit which indicators are shared, which are context-dependent and which require negotiation. In doing so, the framework can reduce transaction-cost-related barriers by structuring negotiations, improving coordination, and clarifying monitoring requirements.

10.7. Recommendations for housing associations

Housing associations are advised to use the shared quality framework during the initiation phase of collaborative renovation projects. The framework can help create a shared language for quality. By first defining the strategic and tactical boundaries, it adopts the organisational structure of the housing associations, making implementation easier within the organisation. The collaboration is most promising if the housing associations share a similar renovation trigger in the same area and at the same time. By aligning indicators and pursuing joint procurement, housing associations can achieve efficiency, which would help accelerate the energy transition.

10.8. Personal reflection

Through this research, I have elaborated my academic abilities. Developing the research taught me how to systematically approach an interesting gap in the literature and practice. At the start of the process, I was most intrigued by why collaboration between housing associations is difficult, even though they appear to be the same. This inspired me to create a shared quality framework for my research, through which I would contribute to the sector.

The research process was iterative, allowing me to develop a better understanding of housing associations and the renovation process. At the start of the research, I developed personal learning goals:

- Understand the organisational decision-making within housing associations
- Analyse the translation of organisational goals into renovation quality
- Explaining the variation between housing associations
- Develop methodological and analytical research skills

Through the literature review, case study analysis and cross-case analysis, I developed a better understanding of the organisational decision-making within housing associations. It taught me about the different layers and how they interact. It also taught me how housing associations are similar, where they differ, and why. The case analysis confirmed that there is a meaningful basis for the operationalisation of renovation quality. By explaining the variations and similarities, the shared quality framework could be developed. The methodological and analytical research skills I employed enabled a systematic approach to developing the quality framework. This analytical way of thinking will certainly help me in my further career. This research also strengthened my ability to work independently on a difficult research topic. I hope I will get to contribute to a more sustainable and socially responsible built environment in my further career.

References

- Aedes. (2018). Strategiekaart Woningcorporaties. In *Aedes*.
<https://aedes.nl/media/document/strategiekaart-woningcorporatie-2018>
- Aedes. (2023a). Menukaart Verduurzamingstreintjes voor woningen met EFG-Label. In *Menukaart Verduurzamingstreintjes*. <https://aedes.nl/media/document/menukaart-verduurzamingstreintjes-november-2023>
- Aedes. (2023b, August 13). *Beleidsachtbaan vastgoedsturing*.
<https://aedes.nl/vastgoedsturing/beleidsachtbaan-vastgoedsturing>
- AEDES. (2024). *AEDES LEIDRAAD PORTEFEUILLE-STRATEGIE JUNI 2024*.
<https://aedes.nl/media/document/leidraad-portefeuillestrategie-2024>
- Aedes. (2025a). *Aedes-benchmark 2025: belangrijkste resultaten*. <https://aedes.nl/aedes-benchmark/aedes-benchmark-2025-belangrijkste-resultaten>
- Aedes. (2025b). *Sectorrapportage Aedes-benchmark - Duurzaamheid - Nederland*.
<https://aedesdatacentrum.nl/mosaic/sectorrapportage-aedes-benchmark/duurzaamheid>
- Aedes, Bouwend Nederland, & Platform31. (2025). *RENOVATIETREINTJES* [Report].
<https://aedes.nl/media/document/praktijkverkenning-renovatietreintjes>
- AEDES, WOONBOND, & Rijksoverheid. (2024). *NATIONAAL SLOOP- en RENOVATIESTATUUT*.
<https://www.rijksoverheid.nl/documenten/rapporten/2024/05/06/nationaal-sloop-en-renovatiestatuuut>
- Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport. (2025). [Staat van de corporatiesector 2025]. <https://www.ilent.nl/documenten/autoriteit-woningcorporaties/publicaties-cijfers-en-wetgeving/rapporten/staat-van-de-corporatiesector-2025>
- Autoriteit woningcorporaties & Inspectie Leefomgeving en Transport. (2026). *Staat van de corporatiesector 2026*. <https://www.ilent.nl/documenten/autoriteit-woningcorporaties/publicaties-cijfers-en-wetgeving/rapporten/staat-van-de-corporatiesector-2026>
- Autoriteit woningcorporaties & Waarborgfonds Sociale Woningbouw. (2024). *Gezamenlijk beoordelingskader*. <https://storage-customers.zig365.nl/wsw-ksp-web-hupo-portal-p-pub/20241217%20Gezamenlijk%20beoordelingskader%20Aw%20WSW%20december%202024.pdf>
- Boxenbaum, E., & Jonsson, S. (2017). Isomorphism, Diffusion and Decoupling: concept evolution and theoretical challenges. In Royston Greenwood, Christine Oliver, Thomas B. Lawrence, & Renate E. Meyer (Eds.), *The SAGE Handbook of Organizational Institutionalism* (2.ed, pp. 77–101). Sage Publications, Incorporated. <https://uk.sagepub.com/en-gb/eur/the-sage-handbook-of-organizational-institutionalism/book243619#contents>

Bryman, A., Sloan, L., Foster, L., & Clark, T. (2021). *Bryman's social research methods* (6th ed.). Oxford University Press.

Cairo, M. (2023). *Energy poverty, bridging the gap between housing association and tenant* [Master thesis, TU Delft]. <https://repository.tudelft.nl/record/uuid:3fcc6230-86fc-4848-a6ed-16dd46fea640>

Centraal Bureau voor de Statistiek. (2025, 30 september). Voorraad woningen; eigendom, type verhuurder, bewoning, regio. Centraal Bureau Voor de Statistiek. <https://www.cbs.nl/nl-nl/cijfers/detail/82900NED>

Cloudt, S., M. G. (2015). *Organisatieontwikkeling bij woningcorporaties: De praktijk van het maatschappelijk ondernemen* [PHD-Proefschrift, Tilburg University]. <https://research.tilburguniversity.edu/en/publications/89255eba-8029-44fc-97f4-83f78e3c07be>

College van Gedeputeerde Staten van de provincie Zuid-Holland, College Burgemeesters en Wethouders van de gemeenten: Delft, Den Haag, Leidschendam-Voorburg, Midden-Delfland, Pijnacker-Nootdorp, Rijswijk, Wassenaar, Westland, Zoetermeer, Minister voor Volkshuisvesting en Ruimtelijke Ordening, Bestuurders van Sociale Verhuurders Haaglanden, namens: Arcade, De Goede Woning, Haag Wonen, Rijswijk Wonen, Rondom Wonen, Staedion, Stichting Duwo, Stedelink, Hof Wonen, Vidomes, Wassenaarsche Bouwstichting, Woningbouwvereniging St Willibrordus, Wonen Midden-Delfland, Wonen Wateringen, Woonbron, WoonInvest, Habion en Woonzorg Nederland, Neprom en Bouwend NL, Netbeheerders, Drinkwaterbedrijven, & Samenwerkende Huurdersorganisaties Haaglanden (SHH). (2023). *Regionale Realisatieagenda Wonen Haaglanden (regionale woondeal) "Meer bouwen – beter benutten"* [Report].

De Vree, J. (2026). *woonkeur*. Joost De Vree. <https://www.joostdevree.nl/w/woonkeur>

DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 147–160. <https://www.jstor.org/stable/2095101>

Elsinga, M., & Wassenberg, F. (2007). Social housing in the Netherlands. In *Social Housing in Europe* (pp. 130–147). <https://resolver.tudelft.nl/uuid:6fed5d4a-25df-47ff-be62-dd3c74eb873f>

European Union. (2020). *Renovation wave*. Energy. https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/renovation-wave_en?utm_

European Union. (2021). *European Climate Law*. Climate Action. https://climate.ec.europa.eu/eu-action/european-climate-law_en

European Union. (2024). *Energy Performance of Buildings Directive*. Energy. https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

Garufi, D. (2015). *Decision support tool for sustainable renovation projects in Dutch housing corporations* (By Technische Universiteit Eindhoven, B. D. Vries, & R. Simons) [PhD dissertation]. Technische Universiteit Eindhoven. <https://research.tue.nl/en/publications/decision-support-tool-for-sustainable-renovation-projects-in-dutc/>

Gruis, V. (2008). Organisational archetypes for Dutch housing associations. In *Environment and Planning C: Government and Policy* (Vols. 26–26, pp. 1077–1092). <https://doi.org/10.1068/c0763l>

Gruis, V. (2018). *De herziene Woningwet: toch een net iets te strak keurslijf voor woningcorporaties?* Essay voor Aedes t.b.v. Evaluatie Woningwet Commissie Van Bochove. https://pure.tudelft.nl/ws/files/51210112/Essay_Vincent_Gruis_voor_Aedes_tbv_Commissie_V

Hwang, S., Çetin, S., Visscher, H., & Straub, A. (2025). Advancing energy renovations through digitalisation: A critical review of EU policies and instruments. *Energy and Buildings*, 336, 115627. <https://doi.org/10.1016/j.enbuild.2025.115627>

Kuipers, S. (2026, February 16). *Woningcorporaties en staatssteun - Europa decentraal*. Europa Decentraal.

<https://europadecentraal.nl/onderwerp/staatssteun/beleidsterreinen/woningcorporaties/>

KWH. (2024). *Over KWH - Kwaliteitscentrum Woningcorporaties - KWH*. Retrieved May 11, 2026, from <https://www.kwh.nl/over-kwh>

Leichter, M., Honsa, J. F., Van De Kerckhove, T., & Piccardo, C. (2025). Evaluating Social Housing Renovation and Reconstruction in a European context: What defines a sustainability-oriented decision? *IOP Conference Series Earth and Environmental Science*, 1554(1), 012146. <https://doi.org/10.1088/1755-1315/1554/1/012146>

Meyer, J. W., & Rowan, B. (1977). Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, 83, 340–363. <https://www.jstor.org/stable/2778293>

Ministerie van Algemene Zaken. (2025, December 10). *Circulaire economie in 2050*. Duurzame Economie | Rijksoverheid.nl. <https://www.rijksoverheid.nl/onderwerpen/duurzame-economie/circulaire-economie-in-2050>

Ministerie van Binnenlandse Zaken en Koninklijke relaties. (2015). *Inwerkingtreding Woningwet 2015*.

http://www.eerstekamer.nl/overig/20140902/herzieningswet_integrale_wettekst/f=/vjmwelbdz0xv.pdf

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2023). Besluit van 30 augustus 2023 tot wijziging van het besluit Energieprestatievergoeding huur (modernisering). *Staatsblad 2023*, 287. <https://zoek.officielebekendmakingen.nl/stb-2023-287.html>

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2025a, October 14). *Diensten van algemeen economisch belang (DAEB)*. Ministerie Van Binnenlandse Zaken En Koninkrijksrelaties. <https://www.volkshuisvestingnederland.nl/onderwerpen/corporaties-en-regelgeving/daeb>

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2025b, December 9). *Woondeals*. Ministerie Van Binnenlandse Zaken En Koninkrijksrelaties. <https://www.volkshuisvestingnederland.nl/onderwerpen/aanpak-woningnood/woondeals>

- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2026, April 21). *Wet betaalbare huur*. Ministerie Van Binnenlandse Zaken En Koninkrijksrelaties.
<https://www.volkshuisvestingnederland.nl/onderwerpen/huren-en-wonen/wet-betaalbare-huur>
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, VNG, AW, Woonbond, Aedes, & VTW. (2022). Governance woningcorporaties Woningwet. In *Compacte Handreiking*.
https://www.volkshuisvestingnederland.nl/site/binaries/site-content/collections/documents/2022/11/29/handreiking-governance-woningcorporaties/Handreiking_governance-woningcorporaties.pdf
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, VNG, Woonbond, VTW, Aedes, & AW. (2023). *Oplegger Handreiking prestatieafspraken*.
<https://www.volkshuisvestingnederland.nl/documenten/2023/06/30/oplegger-handreiking-prestatieafspraken-2023>
- Ministerie van Infrastructuur en Waterstaat. (2025, July 24). *Memo Onderhoud verbetering en beheer*. Ministerie Van Infrastructuur En Waterstaat.
<https://www.ilent.nl/documenten/autoriteit-woningcorporaties/publicaties-cijfers-en-wetgeving/publicaties/memo-onderhoud-verbetering-en-beheer>
- Ministerie van Volkshuisvesting en Ruimtelijke Ordening. (2023, March 14). *WWS punten*. Volkshuisvesting Nederland.
<https://www.volkshuisvestingnederland.nl/actueel/nieuws/2023/03/14/bereken-de-huur-op-basis-van-het-nieuwe-woningwaarderingssstelsel>
- Ministerie van Volkshuisvesting en Ruimtelijke Ordening. (2025). *Nationale prestatieafspraken 2025 - 2035*.
- NEN. (2021). *Normen conditiemeting*. <https://www.nen.nl/bouw/beheer-en-onderhoud/conditiemeting/normen-conditiemeting>
- NEN. (2025). *Conditie­meting gebouwde omgeving – Deel 2: Gebrekenlijsten voor bouwdelen van gebouwen*. In *Nederlandse Norm NEN 2767-2*.
- Nieboer, N. (2009). *Het Lange Koord tussen Portefeuillebeleid en Investerings van Woningcorporaties [PDH-proefschrift]*. In *Google Books*. TU Delft.
<https://repository.tudelft.nl/record/uuid:e632d903-4d05-4cea-a8ab-29eaf43089c5>
- Overheid. (2025). *Besluit bouw­werken leefomgeving*. In *Besluit Bouw­werken Leefomgeving*.
- PACHE, A.-C., & SANTOS, F. (2013). INSIDE THE HYBRID ORGANIZATION: SELECTIVE COUPLING AS a RESPONSE TO COMPETING INSTITUTIONAL LOGICS. *The Academy of Management Journal*, 56–56(4), 972–1001. <https://www.jstor.org/stable/43589202>
- Peters, W. (2025, December 2). *Proces­fluisteraars met een missie: versnellen met de RVH-aanpak*. Renda. <https://www.renda.nl/artikelen/procesfluisteraars-met-een-missie-versnellen-met-de-rvh-aanpak>
- Piekhaar, O., Vijverberg, G., Krogt, H. V. D., & Stichting RGS. (2021). *Leidraad Resultaatgericht samenwerken* (I. V. D. Brug, Ed.).

- Rijksoverheid. (2019). Klimaatakkoord. In *Klimaatakkoord* (p. 2).
<https://www.klimaatakkoord.nl/binaries/klimaatakkoord/documenten/publicaties/2019/06/28/klimaatakkoord/klimaatakkoord.pdf>
- Rijksoverheid. (2026, January 1). *Woningwet*. Overheid.
<https://wetten.overheid.nl/BWBR0005181/2026-01-01>
- Rindfleisch, A. (2019). Transaction Cost Theory: past, Present and future. In *AMS Review* (Vols. 10–97). <https://doi.org/10.1007/s13162-019-00151-x>
- Roossien, B. & EnergyGO. (2020). Expert review. In M. Elswijk & Ministerie van Binnenlandse zaken Ruimte en Wonen, *Eindrapport*.
- RVO. (2022). *Standaard en streefwaarden voor woningisolatie*. RVO.nl.
<https://www.rvo.nl/onderwerpen/wetten-en-regels-gebouwen/standaard-streefwaarden-woningisolatie>
- RVO. (2025, June 2). *Hernieuwbare energie bij ingrijpende renovatie*. RVO.nl.
<https://www.rvo.nl/onderwerpen/wetten-en-regels-gebouwen/energieprestatie-eisen-verbouw-renovatie/hernieuwbare-energie>
- RVO. (2026, March 4). *Energieprestatie-eisen bij verbouw en renovatie*. RVO.nl.
<https://www.rvo.nl/onderwerpen/wetten-en-regels-gebouwen/energieprestatie-eisen-verbouw-renovatie>
- Sharam, A. (2025). Introducing social housing Asset Management as a comprehensive system. *Housing Studies*, 2, 418–443. <https://doi.org/10.1080/02673037.2023.2273459>
- Sociale Verhuurders Haaglanden, ABF, & RIGO. (2021). Tussenakkoord Samenwerken aan een solide woningmarkt in Haaglanden 2021-2030 - de eerste stap. In *Tussenakkoord Samenwerken Aan Een Solide Woningmarkt in Haaglanden*.
- Straub, A., & Meijer, F. (2025). Sustainable Retrofit of Dutch Social Housing: The role and Future of Multi-Year Programs and Strategic Partnerships. *Buildings*, 15(9), 1501.
<https://doi.org/10.3390/buildings15091501>
- Straub, A., Meijer, F. M., Delft University of Technology, Hogeschool Utrecht, Aedes, & OnderhoudNL. (2022). *Project-overstijgend samenwerken aan een duurzame woningcorporatievoorraad: voorbeelden en leerlessen*.
<https://repository.tudelft.nl/record/uuid:12db3921-b4a0-4f7c-9597-938b3a5976d0>
- Straub, A. (2024). De bomen en het bos van nieuwe ambities, regels en meten. *Renda*, #3 2024, 47–50. <https://www.renda.nl/artikelen/de-bomen-en-het-bos-van-nieuwe-ambities-regels-en-meten>
- Swan, A. & National Housing Federation. (2014). *Quality governance for housing associations*.
https://www.housinglin.org.uk/_assets/Resources/Housing/OtherOrganisation/Quality_governance_for_housing_associations.pdf
- The Natural Step. (2025, September 8). *Onze aanpak - The Natural Step*.
<https://thenaturalstep.nl/wat-we-doen/>

Timmermans, S., & Tavory, I. (2012). Theory Construction in Qualitative Research. *Sociological Theory*, 30(3), 167–186. <https://doi.org/10.1177/0735275112457914>

TNO, Menkveld, M., Rovers, V., Tigchelaar, C., & Zwamborn, A. (2020). *Kosten en baten isolatiestandaard en streefwaarden voor woningen* (TNO 2020 P11608). TNO. <https://publications.tno.nl/publication/34638316/QYvRQ8/TNO-2020-P11608.pdf>

Van Eck, H. (2018). *No regret: in drie stappen naar nul-op-de-meter*. Renda. <https://www.renda.nl/no-regret-in-drie-stappen-naar-nul-op-de-meter>

Verbouwstromen, & Vos, S. (2026, March 31). REGIONALE VERBOUWSTROMEN HUUR. In <https://verbouwstromen.nu/>. Webinar Verbouwstromen, Netherlands. <https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fevenementen.aedes.nl%2F%2Fmailing%2Flink%2Ffe236c2d5-b050-4e4a-a687-c74ca0f75a65%2F22774&data=05%7C02%7Cn.noort%40student.tudelft.nl%7C1f66d1b70dd0414c177a08dea0445ec2%7C096e524d692940308cd38ab42de0887b%7C0%7C0%7C639124412669298699%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMilskFOljoiTWFpbGlldUljoyfQ%3D%3D%7C0%7C%7C%7C&sdata=BwP9FGz8aCDiAHNFdtsTjHglqmQBFlyHoUhdHjw44%3D&reserved=0>

Verhulst, T., Niyongabo-Paulussen, E., Donze, G., Anink, D., Huitema, N., Initiatief Samen Versnellen, Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, Cirkelstad, Amsterdam, Rotterdam, Den Haag, Utrecht, Rijksvastgoedbedrijf, Provincie Zuid Holland, Provincie Utrecht, Provincie Gelderland, Eindhoven, Groningen, G40, . . . Rutger Büch. (2024). *Leidraad HNN Bestaande Bouw: Een eenduidige taal met circulaire ontwerp- en bouwprincipes voor de bouwsector*.

Verhulst, T., Ruig, N., Huitema, N., Bosch, S., Initiatief Samen Versnellen, Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, Cirkelstad, Ministerie van Volkshuisvesting en Ruimtelijke Ordening, Rijksvastgoedbedrijf, Provincie Utrecht, Provincie Gelderland, Provincie Zuid Holland, Gemeente Amsterdam, Gemeente Den Haag, Gemeente Rotterdam, Gemeente Utrecht, Gemeente Eindhoven, Gemeente Groningen, G40, . . . TU Delft. (2026). *HNN Gebouw Leidraad Bestaande Bouw: Een eenduidige taal met circulaire ontwerp en bouwprincipes voor de bouwsector*.

Vilutiene, T., Ignatavicius, C., Department of Construction Management and Real Estate, Vilnius Gediminas Technical University, & The Lithuanian Expanded Polystyrene Association (LEPA). (2018). Towards Sustainable Renovation: Key Performance Indicators for Quality Monitoring. *Sustainability*, 10(1840), 1–16. <https://doi.org/10.3390/su10061840>

Visscher, H. J. (2008). *Woningkwaliteit onder controle?* (ISBN 978-9081201-3). <https://repository.tudelft.nl/record/uuid:5cdaa031-8127-469b-9d86-e992feedcdd4>

WSW. (2026). *Over WSW - Waarborgfonds Sociale woningbouw*. Retrieved March 16, 2026, from <https://www.wsw.nl/over-wsw>

Yin, R. (2014). Case Study Research Design and Methods (5th ed.). *Canadian Journal of Program Evaluation*, 30(1). <https://doi.org/10.3138/cjpe.30.1.108>

Appendices

1. Informed consent

Delft University of Technology

HUMAN RESEARCH ETHICS

INFORMED CONSENT TEMPLATES AND GUIDE

Participant Information

You are being invited to participate in a research study titled ‘Defining Renovation Quality for Dutch Social Housing’. This study is being conducted as part of a Master’s thesis project by Noortje Noort from TU Delft.

The purpose of this research study is to investigate renovation quality; to do so, we are asking experts and professionals to participate in semi-structured interviews. The interview will last approximately 1 hour and will involve questions about your occupation, as well as your opinion on organisational goals, renovation quality, and quality indicators. The interview will take place in person, and will be audio-recorded. The recording will be used to create an anonymous transcript that will contribute to an anonymised and aggregated dataset, which will be used for analysis for the Master’s thesis of Noortje Noort. The thesis will be made publicly available in the TU Delft Repository. To the best of our ability, your answers in this study will remain confidential. We will minimise any risks to your professional reputation resulting from potential re-identification by storing your personal data, including your name, contact information, and the audio-recording of the interview securely using institutional storage provided by TU Delft. Only the Master’s student and their supervisors have access to this storage. Your personal information will be destroyed at the end of the research project in June 2026.

Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any questions during the interview. After the interview recording has been transcribed, you will be asked to review the transcript before it is finalised and fully anonymised. If you wish to withdraw from the study after the interview has taken place, you can do so until the transcript has been approved and anonymised. After anonymisation, it is no longer possible to remove your research data from the dataset.

For questions about the research project, please reach out to the Corresponding Researcher:

Noortje Noort

Master’s student

n.noort@student.tudelft.nl

If you wish to report a complaint regarding the research project, please contact the Responsible Researcher:

Prof. Q Qian

Supervisor

q.qian@tudelft.nl

Explicit Consent points

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
A: GENERAL AGREEMENT – RESEARCH GOALS, PARTICIPANT TASKS AND VOLUNTARY PARTICIPATION		
1. I have read and understood the study information dated [DD/MM/YYYY], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	<input type="checkbox"/>	<input type="checkbox"/>
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	<input type="checkbox"/>	<input type="checkbox"/>
3. I understand that taking part in the study involves an in-person interview that will be recorded using a digital audio recorder, and that the researcher will take written notes during the interview.	<input type="checkbox"/>	<input type="checkbox"/>
4. I understand that the study will end in June 2026		
B: POTENTIAL RISKS OF PARTICIPATING (INCLUDING DATA PROTECTION)		
5. I understand that taking part in the study also involves collecting specific personally identifiable information (PII), and associated personally identifiable research data (PIRD) in the form of job title, expert opinion on topic if research, with potential risk to my professional reputation if my identity is revealed.	<input type="checkbox"/>	<input type="checkbox"/>
6. I understand that the following steps will be taken to minimise the threat of a data breach, and protect my identity in the event of such a breach: <ul style="list-style-type: none">• Interview recordings and transcripts will be stored on a secure TU Delft OneDrive environment, accessible only to the researcher and supervisors.• Audio recordings will be deleted after transcription and verification.• Transcripts will be pseudonymised by removing names, job titles, and identifiable project or organisational details.• Participants will be referred to using codes in all transcripts and publications.• No personal contact details will be included in the research data files.• Data will not be shared with third parties and will only be used for the purpose of this Master's thesis.	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
<ul style="list-style-type: none"> The final thesis will not include identifiable quotations without explicit consent. 		
7. I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.	<input type="checkbox"/>	<input type="checkbox"/>
8. I understand that the (identifiable) personal data I provide will be destroyed and the interview are transcribed	<input type="checkbox"/>	<input type="checkbox"/>
C: RESEARCH PUBLICATION, DISSEMINATION AND APPLICATION		
9. I understand that after the research study the de-identified information I provide will be used for the master thesis.	<input type="checkbox"/>	<input type="checkbox"/>
10. I agree that my responses, views or other input can be quoted anonymously in research outputs	<input type="checkbox"/>	<input type="checkbox"/>
D: (LONGTERM) DATA STORAGE, ACCESS AND REUSE		
11. I give permission for the de-identified interview responses that I provide to be archived in TU Delft repository so it can be used for future research and learning.	<input type="checkbox"/>	<input type="checkbox"/>
12. I understand that access to this repository is publicly accessible.	<input type="checkbox"/>	<input type="checkbox"/>

Signatures

Name of participant [printed] Signature Date

I, as researcher, have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Researcher name [printed] Signature Date

Study contact details for further information: [Name, phone number, email address]

2. Data Management Plan

Plan Overview

A Data Management Plan created using DMPonline

Title: Defining Renovation Quality in Dutch Social Housing From Organisational Goals to a Shared Quality Framework

Creator: Noortje Noort

Affiliation: Delft University of Technology

Template: TU Delft Data Management Plan template (2025)

Project abstract:

Dutch housing associations play a key role in updating the housing stock in the Netherlands to meet the national and European sustainability goals. Despite sector-wide initiatives and ambitious policy goals, housing associations still do not achieve the desired pace of renovation. While quality indicators exist, housing associations experience difficulties collaborating on renovation projects because they are defined and prioritised differently in practice. Existing literature emphasises the importance of harmonised renovation standards to accelerate renovation; however, there is limited understanding of how organisational structures within housing associations shape the interpretation of quality indicators. This research will investigate how housing associations use quality indicators, how organisational goals influence interpretation, and how they can be aligned to facilitate collaboration in renovation projects. The research will be conducted through a qualitative approach combining a literature review with a case study of Dutch housing associations. The data will be collected through document analysis and semi-structured interviews with portfolio managers, asset managers, and employees in the sustainability policy field. This research will contribute to a deeper understanding of the quality of renovation as an organisational and strategic construct. It will provide a flexible framework for quality renovation that supports collaboration.

ID: 192883

Start date: 10-11-2025

End date: 30-06-2026

Last modified: 06-05-2026

Defining Renovation Quality in Dutch Social Housing From Organisational Goals to a Shared Quality Framework

0. Administrative questions

1. Provide the name of the data management support staff consulted during the preparation of this plan and the date of consultation. Please also mention if you consulted any other support staff.

Queena Qian and Ad Straub are the supervisors

2. Is TU Delft the lead institution for this project?

Yes, the only institution involved

I. Data/code description and collection or re-use

3. Provide a general description of the types of data/code you will be working with, including any re-used data/code.

Type of data/code	File format(s)	How will data/code be collected/generated? <i>For re-used data/code: what are the sources and terms of use?</i>	Purpose of processing	Storage location	Who will have access to the data/code?
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Personally Identifiable Information: Participants name, email, work address, company name, mobile number	pdf.	Contact information of participants	To be able to contact the participants during the research	TU Delft one-drive	The researcher
Audio-recordings of the interviews	mp3	Collected on an external recording device	To transcribe the interviews afterwards, after transcribing the audio will be deleted	External recording device	The researcher
Transcription of the interviews	txt.	The results of the interviews will be made anonymous	Use the anonymous transcripts to answer the research questions	TU Delft one-drive	The researcher
Informed consent forms	PDF	Informed consent forms signed digitally or physically.	To obtain and document informed consent.	TU Delft one-drive	The researcher
Document analysis	PDF			TU Delft one-drive	

II. Storage and backup during the research process

4. How much data/code storage will you require during the project lifetime?

< 250 GB

5. Where will the data/code be stored and backed-up during the project lifetime? (Select all that apply.)

TU Delft OneDrive

III. Data/code documentation

6. What documentation will accompany data/code? (Select all that apply.)

Data – Methodology of data collection

IV. Legal and ethical requirements, code of conducts

7. Does your research involve human subjects or third-party datasets collected from human participants?

If you are working with a human subject(s), you will need to obtain the HREC approval for your research project.

Yes – please provide details in the additional information box below

I intend to apply for ethical approval from the Human Research Ethics Committee, but have not yet done so.

8. Will you work with personal data? (This is information about an identified or identifiable natural person, either for research or project administration purposes.)

Yes

9. Will you work with any other types of confidential or classified data or code as listed below? (Select all that apply and provide additional details below.)

If you are not sure which option to select, ask your [Faculty Data Steward](#) for advice.

No, I will not work with any other types of confidential or classified data/code

10. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your [Faculty Contract Manager](#) when answering this question.

This is an internal TUD MSc thesis project.

11. Which personal data or data from human participants do you work with? (Select all that apply.)

Audio recordings

Job title and/or employer

Telephone number, email addresses and/or other addresses as contact details for administrative purposes

Names as contact details for administrative purposes

12. Please list the categories of data subjects and their geographical location.

For the interviews employee's of housing associations in the Netherlands will be used.

13. Will you be receiving personal data from or transferring personal data to third parties (groups of individuals or organisations)?

No

16. What are the legal grounds for personal data processing?

Informed consent

The HREC informed consent guide and template will be used to create the informed consent forms for the focus group. For the survey and opening statement (template 1 in the HREC guide) will be used.

17. Please describe the informed consent procedure you will follow below.

Written consent

18. Where will you store the physical/digital signed consent forms or other types of proof of consent (such as recording of verbal consent)?

TU Delft onedrive

19. Does the processing of the personal data result in a high risk to the data subjects? (Select all that apply.)

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a [Data Protection Impact Assessment \(DPIA\)](#). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data in your research project.

None of the above apply

23. What will happen with the personal data used in the research after the end of the research project?

Anonymised or aggregated data will be shared with others

Anonymised research data, transcripts are anonymised

Audio recordings will be destroyed after the completion of anonymized interview transcription.

24. For how long will personal research data (including pseudonymised data) be stored?

Personal data will be deleted at the end of the research project

25. How will your study participants be asked for their consent for data sharing?

In the informed consent form: participants are informed that their personal data will be anonymised and that the anonymised dataset is shared publicly

V. Data sharing and long term preservation

27. Apart from personal data mentioned in question 23, will any other data be publicly shared?

Please provide a list of data/code you are going to share under 'Additional Information'.

I do not work with any data other than personal data

29. How will you share research data/code, including those mentioned in question 23?

Select all that apply and provide additional details below.

I am a Bachelor's/Master's student at TU Delft and I will share the data/code in the body and/or appendices of my thesis/report in the TU Delft Repository

30. How much of your data/code will be shared in a research data repository?

< 100 GB

31. When will the data/code be shared?

At the end of the research project

32. Under what licence(s) will the data/code be released?

Other – please explain below

Research data are only shared within the research, which is automatically placed under cpy right in the Education repository.

VI. Data management responsibilities and resources

33. If you leave TU Delft (or are unavailable), who is going to be responsible for the data/code resulting from this project?

My supervisor: Queena Qian, q.qian@tudelft.nl and ad staub a.straub@tudelft.nl

34. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

The FAIR (Findable, Accessible, Interoperable, and Re-useable) data principles require resources an management. For this research, the data will be findable using unique identifiers and cataloging in the TU Delft repository. The TU Delft one-drive where data is stored temporarily is a secure platform with low risks. The data files will be saved in standard formats to allow compatibility.

35. Which faculty do you belong to?

Faculty of Architecture and the Built Environment (ABE)

3. Interview protocol

General Interview Guideline

- A. Start of the interview: Background and Role
- Explain the purpose of the research.
 - Explain confidentiality and anonymity
 - Ask permission to record
 - Opening question: Can you explain your role and how you are involved in renovation decisions?
- B. Goals and strategy: *To understand how the organisational goals are prioritised and translated*
- What are the most important organisational goals for renovation?
 - How are these goals documented and formalised?
 - What goals dominate in renovation decisions?
- C. Renovation quality and quality indicators: *Identify how renovation quality is defined and measured*
- How would you define renovation quality?
 - What quality indicators do you use for renovation projects?
 - How do these indicators help you make decisions in practice?
- D. Operationalisation in practice: *Understand how indicators are operationalised*
- Can you describe the quality requirements for a renovation project?
 - Were there trade-offs made between the qualities?
 - How are these trade-offs established?
- E. Collaboration with other housing associations: Barriers and opportunities for shared quality

- Have you collaborated with other housing associations on renovation projects?
- What challenges did you experience?
- Did the different organisational stances cause these challenges?
- What would make the collaboration easier?

F. Closing

- Is there anything important we did not discuss?
- Thank you!

4. AI Declaration

Used Grammarly to improve the grammar, style, and/or spelling of the text. When I was really stuck, I used it for advice and restructuring. I also used it to create the list of tables and figures and to check whether all sources were included in the text and the reference list.