

Article

Balancing Social and Economic Sustainability in Renovation with an Affordable Option for Tenants? A Pilot Study from Sweden

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Abstract: A public housing company has applied a new renovation strategy, comprising no standards raising and thus rent-raising measures, in 20% of its apartments. Prior to renovation, the tenants were given the opportunity to choose renovation options involving different standards and costs after renovation. The purpose of the study is to follow up and give feedback on the renovation strategy. The aim was to evaluate implementation of the strategy in practice using a case study, in terms of the tenants' opportunity to influence and the housing company's profitability. To follow up, two methods were used: a survey of the tenants' perception of choosing renovation options, and a financial assessment of the profitability based on the renovation cost and rent increase for different choice scenarios. The results from the survey show that the tenants appreciate being able to choose between different renovation options as it gives them the opportunity to decide on their housing costs and standard. With more than half of the tenants choosing the maintenance option involving a very low rent increase, the dividend yield will not be high enough to make the renovation profitable, but if only 20% had chosen the maintenance option, the dividend yield would be more feasible in the long run.

Keywords: renovation strategy; rent increases; tenant influence; dividend yield



Citation: Mjörnell, K.; von Platten, J.; Björklund, K. Balancing Social and Economic Sustainability in Renovation with an Affordable Option for Tenants? A Pilot Study from Sweden. *Sustainability* **2022**, *14*, 3785. <https://doi.org/10.3390/su14073785>

Academic Editor: Grazia Napoli

Received: 4 February 2022

Accepted: 16 March 2022

Published: 23 March 2022

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1. Introduction

The European Commission launched the Renovation Wave for Europe in 2020 with the aim to provide affordable energy renovation solutions [1]. To ensure that building stocks last for many years to come and continue to offer adequate living environments, renovation is inevitable and plays a central role. Recognising that renovation in itself is an environmentally sustainable act, as it favours repair and maintenance over demolition and new construction, it is, however, important to consider several aspects of sustainability in renovation projects. The most common sustainability perspectives included in the evaluation of renovation projects are environmental, economic and social [2,3], although technical [4] and cultural [5] aspects are frequently encountered as well. However, accounting for several aspects of sustainability often entails trade-offs. Previous research has, e.g., identified a conflict between social and environmental goals in renovations, where the large investments needed for energy retrofitting are unfeasible in areas where tenants' affordability is low [6–8]. Another commonly researched conflict is the one between cultural and environmental goals, where preservation of buildings' heritage values often hinders energy efficiency measures [9,10].

Last but not least, there is the conflict between social sustainability for tenants and economic sustainability for housing companies, which obstructs extensive renovation of companies' entire stocks, and asks for solutions that are adapted to the tenants' ability to pay [4]. Sweden has no social housing sector; instead, there are public housing companies owned by municipalities that aim to provide affordable housing for all. Between 1940

and 1990, Swedish housing policy was characterised by governmental support that successfully managed to improve the living conditions across the country, move households out of over-crowdedness and unsanitary conditions, and reduce overall housing-related inequalities [11]. However, the past decades' deregulation of the housing market [12] has forced public housing companies to operate similar to private housing companies in a so called "business-like" manner [13]. As little resemblance to a social housing sector remains [14], this means that even the most vulnerable residents are living in buildings managed by housing companies that are obliged to submit to a business-like operation. The conflict between social sustainability for tenants and economic sustainability for housing companies is thus brought to a head in the Swedish rental housing sector. The aim of this paper is thus to explore a potential remedy to this conflict through a case study of a renovation project in an economically disadvantaged area in Sweden. In this case study, the municipal housing company adopted a new renovation strategy to minimise further social marginalisation by allowing tenants to choose between different renovation options, among which one is a low-cost maintenance option.

There are several factors contributing to the intensification of this conflict between social sustainability for tenants and economic sustainability for housing companies. The first is the pressing need for renovation in low-income housing areas in Sweden [15]. In an unmatched initiative for new construction between 1965 and 1975, over one million dwellings were built to remedy the acute housing shortage and generally low standard of housing in Sweden [16]. This initiative was called the Million Homes Programme and resulted in new areas of single-family houses and multifamily buildings all over Sweden [16]. Areas of multifamily buildings were mainly constructed on the outskirts of cities, and many of these have today become rather economically and ethnically segregated areas in smaller as well as larger cities, with issues such as over-crowdedness and high rates of unemployment [17]. This residential segregation has increased along with the increasing economic inequalities that has been seen in many OECD countries in general [18] and in Sweden in particular [19] since the 1980s. However, on top of the social challenges that exist in many of these areas, the multifamily buildings from the Million Homes Programme are reaching or have already reached their 50-year service life and are in need of extensive renovations. The standard of the buildings varies depending on to what extent maintenance and renovations have been carried out since construction, and partly on whether property owners have had long-term or short-term interests in the properties [4,15]. Many larger private housing companies have become notorious for their short-term interests in multifamily buildings from the Million Homes Programme, where financial interests have driven them to buy properties, renovate individual apartments to raise rents, and then sell the properties to make a quick profit [20,21]. These short-term and financially driven interests have led to neglected maintenance in favour of aesthetic and rent-stimulating measures, causing debates regarding renovations and ulterior motives such as direct or indirect displacement of lower income tenants in favour of higher income tenants [22,23].

The second aggravating factor is the general lack of renovation funds. Today, no such funding is provided by the Swedish government, although there are several financial instruments for housing companies to fund renovation in other countries, such as the renovation fund in Denmark [24]. Swedish public housing companies mainly get access to capital from the municipality bank which, in turn, have access to international loans and bonds. Today insufficient savings for renovation and maintenance are held within housing companies [25]. A long-term perspective on property management ideally includes yearly financial transfers to maintenance funds to be able to finance upcoming extensive needs for maintenance and renovation. However, maintenance funds among Swedish rental housing companies have since the early 1990s been taxed [25], making such savings economically unfeasible for many companies. Instead, renovation costs are dealt with when the need arises, which increases the pressure and risk that maintenance and renovation costs must be financed by tenants through increased rents [26]. Yet, the Swedish rental legislation does

not allow rent increases from maintenance and measures that aim to maintain or restore the technical standard of the building; rent increases are only allowed following quality-upgrading measures that increase the standard of the building and/or apartment [26]. This is called the utility principle, and although it limits rent increases from maintenance measures, it does not limit housing companies from including quality-upgrading measures as a means to increase rents to help finance their renovation projects.

This leads to the third aggravating factor in the conflict between social and economic sustainability, namely, the lack of power tenants can exercise towards landlords. Quality-upgrading measures can only be carried out with the approval of the affected tenants; this suggests that such measures and their associated rent increases should not be a problem as they are not carried out against the tenants' will. However, despite tenants having strong support from the Tenant's Association when negotiating renovation measures, disagreements between tenants and landlords that are settled in local and appeal courts are ruled in favour of the landlord in more than 90% of the cases [27]. Once quality-upgrading measures have been determined, landlords negotiate with the Tenant's Association regarding the rent increases from the different measures. Consequently, despite processes and organised support being in place, tenants' influence over renovation processes remains limited [28]. Efforts to increase tenant influence include more dialogues between tenants and landlords, but as tenants are often invited to the renovation process after procurement and an overall renovation strategy is in place, tenant participation is often found to be tokenistic [29]; i.e., mainly of symbolic value with no real prospect of exercising power [30].

Apart from enhancing tenant influence in renovation processes through consultation, more and more housing companies are offering tenants renovation options for their apartments [31]. The aim of such approaches is to give tenants more control over what measures are being carried out in their apartments, as well as to let tenants influence their rent increase; the strong overlap of low affordability among residents and great needs for renovation in the Million Homes Programme has forced many housing companies to find new ways to balance social sustainability with their technical and economic requirements [31]. A common approach has been to use three renovation options of increasing extent, often referred to as mini, midi and maxi [26,31]. However, even the mini alternative has often entailed a rent increase above many tenants' affordability [25,32], and it has been argued that such limited options create a false sense of influence and power [29]. Another strategy that some housing companies have adopted is to let the mini renovation option be a maintenance option that entails no or close to no rent increase at all; this has previously been referred to as a "zero option" [25] but will here be called a maintenance option. Although such strategies do not remove issues of limited options, they do, however, guarantee that no tenant will be displaced due to rent increases. One issue with the maintenance option from the housing company's perspective is that the economic feasibility of the renovation project hinges on the fact that the midi and maxi options are meant to finance the maintenance conducted in the maintenance option [26]. This means that the project's profitability is dependent on the distribution of tenants' choices of renovation options [26].

Hitherto, little research has studied the maintenance options in renovation projects in general [25] and their implications for social sustainability for tenants and economic feasibility for housing companies in particular. Existing research on maintenance options by Stenberg [25] has analysed extensive empirical material, such as documents and interviews with employees, elected representatives of the Union of Tenants and employees in housing companies, but merely five tenants were interviewed. These tenants were chosen based on their involvement in the renovation process or engagement in the tenants' association [25]. While these five tenants were well informed on the maintenance option and renovation process in general, they cannot be assumed to represent the (dis)contentment of all tenants affected by the renovation project. More so, previous research lacked analyses of economic sustainability from the housing company's perspective when offering the maintenance option to all tenants.

The aim of this paper is thus to (i) quantitatively analyse the tenants' perceptions of the possibility to choose between renovation options, including a maintenance option, through a survey in a pilot project in Sweden; and (ii) evaluate how the inclusion of a maintenance option affected the housing company's profitability in the renovation project. With a current lack of knowledge on how a maintenance option can influence the balance between social sustainability for tenants and economic feasibility for housing companies, this study contributes to the general understanding of how multiple dimensions of sustainability can be accounted for when renovating in economically disadvantaged areas.

2. Case Description with Concern to Different Aspects of Sustainability

The studied renovation project concerned 55 rental apartments in a low-income area on the outskirts of one of Sweden's larger cities. The 9-storey building to be renovated was constructed in 1968/69 during the Million Homes Programme and has over the past decades been acquired and sold by numerous equity firms with mainly financial interest in the property. Before the building was taken into public ownership in 2016, there had thus been several owners with short-term perspectives on property management and needs for maintenance and renovation had been neglected. The renovations that had been carried out since 1968/69 were mainly "concept renovations"; i.e., primarily aesthetic renovations of individual apartments with quality-upgrading measures that significantly increased the rent. This has led to a rather high variation in apartment standards and rent levels within the building, although the average rent levels remain low. Despite the public housing company being aware that they were buying a property with a renovation debt, it was part of a long-term plan to gather their stock in order to have control over the entire area and be able to build a prosperous community. If a landlord mismanages a property in an area, it harms the reputation of the entire area and thus the property value. There are also various synergies from having many properties in the same area.

In the area, approximately 57% of the residents were born outside of Sweden, compared to the average in the municipality of 24%, and unemployment rates are more than twice as high in the concerned area than in the municipality in general, which was 10% in 2020. The share of residents relying on social welfare subsidies is also high. Minimising costs and ensuring communication in a variety of languages are thus factors of great importance in order to avoid economic distress or displacement of tenants and ensure tenant influence. Yet, the neglected maintenance means that there is a pressing need for renovation and larger investments, and the wear and tear of the building is further aggravated by a high residential density. Meeting the building's technical need for renovation while meeting ambitions for social sustainability is thus a central challenge that induced the will to try the inclusion of a maintenance option for tenants. The project at hand concerned maintenance of bathrooms as well as relining of sewer pipes in bathrooms and kitchens and stretched between 2021 and 2022. The following sub-sections cover the project's requirements and ambitions for social and economic sustainability.

2.1. Requirements and Preconditions for Social Sustainability

In the literature, social sustainability in renovation of rental housing concerns a wide range of topics, from improved indoor comfort and reduced energy poverty to accessibility for all people [3]. However, some of the main themes of particular interest for this study are the affordability of renovation, tenant influence on renovation and the creation and sustaining of mixed communities [4,25].

Affordability has to a great extent evolved to be discussed in the context of renovations and gentrification, dealing with issues of more and less intended displacement of low-income residents [22]. While renovation often refers to the direct displacement of residents as a consequence of significant rent increases after renovation, gentrification may occur more gradually through what Marcuse describes as exclusionary displacement of low-income residents [33]; this is, e.g., seen when landlords renovate and increase rents after a

tenant has moved out, which often leads to the next tenant being of a higher socioeconomic status than the previous one, thus gradually increasing the socioeconomic status of the area.

Tenant influence is a central pillar to achieve social sustainability in renovation projects [28,29]. As previously mentioned, this gives tenants an opportunity to impact their home environment, their rent level, and the process of intrusion that construction work in an apartment can entail. Making tenants a part of the process will also facilitate communication of information, which is important in order to minimise stress and worry before and during renovation projects [34]; a rather common stressor in renovation projects can be fear of displacement, which is likely to be exacerbated in lack of sufficient information.

Finally, some include socially mixed communities as a pillar in socially sustainable renovation [4]. Unlike the previously described aspects of social sustainability, this trait has a more general focus on the social sustainability of the community as a whole rather than on the current residents, with the aim to minimise economic and ethnic segregation. Focusing on economically disadvantaged areas, reduced economic segregation could, e.g., imply that renovation should be carried out in a way that attracts more high-income earners to the area, which could then motivate direct or exclusionary displacement of some of the current residents. Although this might be problematic in the light of a lack of affordable housing in general, meaning that displaced residents might not have many options as in where to move, there is also the interpretation that reduced economic segregation could be achieved by offering current tenants different renovation options. This is because by giving more well-off tenants an opportunity to improve the standard of their current housing, instead of leaving the area in search for improved standard of housing elsewhere, the socioeconomic status of the area could improve over time.

Social Sustainability within the Studied Housing Company

The studied company is a public housing company operating under a larger corporation owning several public housing companies in the region. Within the larger corporation, guidelines for “gentle renovation” were established in 2019 that are to be followed by all subsidiaries. The guidelines state that:

1. All renovation and reconstruction projects should be conducted with consideration to economic, technical, social and environmental sustainability aspects.
2. The ambition is that no tenants should have to be displaced because of social transformation and rent increases.
3. Information to and communication with tenants affected by a renovation project is important, and tenants should receive information regarding that:
 - a. It is the landlord’s responsibility to finance and carry out general maintenance of the properties, and such maintenance does consequently not have a direct impact on the rent
 - b. Quality-upgrading measures in apartments and common areas affect the rent to various degrees depending on the extent of the quality-upgrading measures, which the tenants should be able to influence through consultation before measures are planned out
4. To continue to offer a wide variety of housing options, each renovation project should ensure that approximately 20% of the renovated apartments are not subject to quality-upgrading measures, but only to measures aiming at maintaining the existing standard without associated rent increases. Exceptions can be made for more collective measures that are not suitable for diversification, such as changing windows, upgrading electricity in the property, locking systems, or other measures that affect the entire property, and smaller rent increases can thus be accepted.
5. In each renovation project, approximately 80% of the apartments can be subject to quality-upgrading measures if economically feasible and if the standard of the apartment can be increased to various degrees.
6. By offering different renovation options, each tenant is given the opportunity to influence their housing standard and housing cost. Renovation options should be

developed by consulting the tenants and can thus vary in different areas and renovation projects. The ambition is to offer tenants the standard they are willing to pay for. If this cannot be achieved, a more suitable housing alternative should if possible be offered in the vicinity.

The housing company studied in this article started their renovation project before the new guidelines regarding gentle renovation were adopted but followed the guidelines as closely as possible once they had been established. To avoid displacement and to let tenants influence the renovation in their apartments, the company let the tenants choose between four renovation options of varying extent and rent increases, where the least expensive option entailed close to almost no rent increase at all (EUR 5/month). The renovation project thus became a pilot project for testing out the inclusion of a maintenance option but without strictly aiming for offering the maintenance option to a maximum of 20%; being a pilot project for including such an option in an economically disadvantaged area, all tenants were allowed to choose freely. The four renovation options can be seen in Table 1.

Table 1. Description of the different renovation options and examples of entailed rent increase for an apartment with a rent of 298.5 EUR/month before renovation with costs expressed in euros (EUR).

Option	Description	Rent Increase
Maintenance	Mandatory and involves new electricity, replacement of the pipes for the water taps, renovation of the sewer lines, new waterproofing in the bathroom (new wet room carpet on the floor and walls). Existing sink, toilet, bathroom cabinet and other equipment are reassembled.	Entails an increased rental cost of approximately 5 EUR/month due to increased electricity standard in bathroom. Example: $303.5 \text{ EUR} / 298.5 \text{ EUR} = \text{rent increase } 1.7\%$
Optional bathroom	The bathroom is completely renovated but new tile on the walls and tiled floor, new bathroom cabinet and lighting and electrical outlet circuit breakers and residual current circuit breaker as well as shower but glass shower corner.	Entails an increased rental cost of approximately 95 EUR/month depending on apartment size. Example: $393 \text{ EUR} / 298.5 \text{ EUR} = \text{rent increase } 32\%$
Optional kitchen	A new kitchen is installed including frames, cabinet doors, countertops and new appliances as well as new cooker hood. New floor mat and freshly painted joinery, walls and ceilings in the kitchen. It is possible to choose colours of cabinet cover as well as tiles.	Entails an increased rental cost of approximately 87 EUR/month depending on apartment size. Example: $385.5 \text{ EUR} / 298.5 \text{ EUR} = \text{rent increase } 29\%$
Optional bathroom and kitchen	Both kitchen and bathroom are completely renovated. In the bathroom, new tiles are put on the walls, tiled floors, new sink and toilet, new bathroom cabinet with lighting and electrical outlet, and shower with shower-corner in glass and in the kitchen a new flooring is laid, and new cabinet doors, frames and countertops are installed, as well as new appliances and cooker hoods, as well as painting walls, ceilings and joinery in the kitchen.	Entails an increased rental cost of approximately 142 EUR/month depending on apartment size. Example: $445 \text{ EUR} / 298.5 \text{ EUR} = \text{rent increase } 49\%$

2.2. Requirements for Economic Sustainability

Although economic sustainability can imply many things, this paper will focus on economic sustainability in terms of economic feasibility in renovation projects from the housing company's point of view. In a broad sense, economic feasibility implies that a renovation project delivers a rate of return on the invested capital, or a dividend yield, that meets the housing company's requirements [3,4]. Apart from differing between housing companies, what an acceptable dividend yield is could also vary in different renovation

projects, e.g., with exceptions for pilot projects or demonstrative projects, and also depend on the location of the area for the renovation. More so, the selected time frame, i.e., whether the housing company adopts a short-term or long-term perspective, strongly influences the dividend yield. However, due to the new regulation on public housing companies in 2011, they should be managed in a business-like manner which can be interpreted as making profitable investments. In practice, this means that “unprofitable” investments are no longer allowed, meaning that the dividend yield cannot be too low [4,13]. However, how to interpret (un)profitable investments remains unclear.

If the scope of economic feasibility for public housing companies is stretched, the economic feasibility of renovation projects could also include the renovation’s impacts on the municipal budgets. Given that municipalities finance and distribute social welfare subsidies, which are relatively highly granted in economically disadvantaged areas, rent increases after renovations could cause increased needs for housing allowances and welfare subsidies and thus imply higher costs for the municipality [4]. The costs for municipalities of increased need for welfare subsidies should arguably be considered when rent increases are counted as revenue when estimating the economic feasibility of a renovation project.

Economic Feasibility in the Studied Housing Company

Within the studied housing company, the dividend yield from a specific renovation project is measured from a long-term perspective in order to allow for a correct interpretation of the result. The yield depends on (increases in) revenues from rents, (decreases in) operation and maintenance costs, and (increases in) the property value. As only quality-upgrading measures that increase the utility value of the apartment allow for rent increases, purely maintenance-oriented renovation measures are usually paid back through reduced maintenance costs over time.

In this pilot project, the maintenance option entails a minimum increase in utility value and thus rent level while other renovation options include higher increases in utility value and rent. With a mixture, preferably close to a 20/80 distribution of maintenance and other renovation options, it is expected that the average rent increase along with reduced operation and maintenance costs over time will provide a sufficient dividend yield. In this particular renovation project, the studied housing company roughly used the current (low) interest rate as a benchmark for profitability, meaning that the investment could be considered profitable if the dividend yield was not lower than the interest rate, i.e., the cost of capital.

3. Methodology and Research Methods

3.1. Case Study Methodology

A case study is here being used to study the conflict between social and economic sustainability in general, and the implementation of a maintenance option for tenants in particular. Although the overarching conflict between social sustainability for tenants and economic sustainability for housing companies could have been studied in different ways, such as through a literature review, quantitatively analysing the profitability requirements among different housing companies, etc., the novel nature of offering maintenance options without rent increases to tenants makes a case study the preferable method. This is because it allows us to closely investigate how this new renovation approach is perceived by tenants and how it impacts the economic feasibility of the specific renovation project from the housing company’s point of view.

Results from the case study should be used to inform and exemplify but should not be generalised; this is, however, not a drawback of the case study methodology per se, but rather a reflection of the great variance in the studied reality in general [35] and renovation projects in particular.

3.2. Evaluating Social Sustainability

Social sustainability in this case study mainly concerns the aspect of affordability as tenants are offered a renovation option that entails close to no rent increase at all, meaning that no tenants will be displaced or experience economic distress due to the renovation. This is the premise of the renovation project and is thus not in need of evaluation. However, social sustainability also includes tenants' perception of the possibility to choose between renovation options and their ability to influence the standard and rent of the apartment and receive sufficient information. To study this aspect, interviews could be conducted with tenants, or a survey could be carried out. In a previous study on including a maintenance option in a renovation project, tenant representatives were interviewed to offer a deep understanding of how they perceived the renovation [25]. While this allowed for exhaustive information regarding the general perception of the project as well as feelings and opinions regarding more detailed issues, a drawback is that only the most outspoken tenants were heard. Thus, given the lack of more quantitative results regarding how a larger group of tenants perceive the inclusion of a maintenance option, it was decided to conduct a broader survey with the tenants affected by the renovation in this case study. Although this does not allow for a deep understanding of tenants' perceptions and experiences, it offers insight into the general level of contentment among tenants in the renovation project.

A survey in the form of a questionnaire was made to better understand how the tenants perceive the possibility to choose between renovation options. The method used was a qualitative study through surveys that were distributed to all tenants staying in the 55 apartments included in the study. The questions in the survey were formulated by the researchers and reconciled with the housing company and the Tenants' Association. The nine questions in Table 2 concern how the tenants perceive the possibility to choose renovation options and how they perceive the renovation options themselves, as well as how they have experienced the concept of gentle renovation and the collaboration with the housing association and the Tenants' Association.

Table 2. Questions in the questionnaire together with multiple choices.

Question	Multiple Choice Responses
Q1. What do you think of the possibility to choose between different renovation options?	Very good/Good/Bad/Very bad
Q2. Did you receive enough information to choose between the different renovation options?	Yes/No
Q3. Were you given enough time to choose between the different renovation options?	Yes/No
Q4. How important was the rent increase for your choice of renovation option?	Very important, Important/Not so important/Not important at all
Q5. Was there any renovation measure that you missed and that was not included in any of the renovation options?	Yes/No
Q6. Do you think that there were unnecessary renovation measures in any of the renovation options?	Yes/No
Q7. Do you feel that you had the possibility to influence what renovation options to choose between?	Yes/No
Q8. How has your experience been regarding cooperation and dialogue with the housing company?	Very good/Good/Bad/Very bad
Q9. How has your experience been regarding cooperation and dialogue with the tenants' association?	Very good/Good/Bad/Very bad

Since several languages are spoken in the housing area, the questionnaire was translated into four languages: Swedish, English, Somali and Vietnamese. To assure anonymity the questionnaire was distributed through the mailbox and answered anonymously by the tenants. In the instructions of the survey, the purpose of the study was described, and it was explained that anonymity was assured. There was a box in the questionnaire for the tenants to tick in to provide their informed consent for participating in the study. The

tenants were also informed that the researchers, together with the Tenants' Association and the housing company, would be available during an afternoon and evening in the local tenants' association's premises to answer questions or talk about the survey, about 10 days later.

In order to increase the response rate, outreach activities were made; however, due to restrictions during the COVID-19 pandemic, it was necessary to approach tenants in a safe and secure way to prevent the spread of infection. Not unexpectedly, only a few surveys were received on the day of the consultation and no visitors showed up at the Tenants' Association premises. After a change of strategy to increase the response rate, the decision was taken to walk around the stairwells and knock on doors to encourage tenants to answer and collect already completed questionnaires. Two people, a researcher also representing the housing company in this survey and a representative from the tenants' association, knocked on doors during an afternoon and evening. Many tenants had already filled out the questionnaire that could be collected and some were offered more time to complete the questionnaire to be collected later in the evening. The collected questionnaires were filed in envelopes with no sign or notation from which apartment they were collected to assure anonymity.

The purpose of the survey was to conduct an independent follow-up of the tenants' attitude to the possibility to choose, how they choose and how it affects the housing company's profitability. It is an indicative study, and the results will give an overall picture of the tenants' attitudes, meaning that small nuances in the answers are not vital for the interpretation of the results.

3.3. Evaluating Economic Sustainability

As mentioned, the two main aspects to consider in regard to economic sustainability for a public housing company are (i) the economic feasibility of the renovation project for the housing company alone; and (ii) the potential effects of rent increases on the municipalities granting of social welfare subsidies. Due to this study being situated in an early phase of the renovation project, when tenants are choosing their renovation options, final rent increases have not yet been realised meaning that it is not possible to study the potential increase in social welfare subsidies. Consequently, the economic sustainability for the housing company will be evaluated as the profitability for the different renovation scenarios based on the tenants' choices of renovation option, renovation cost and dividend yield, the latter being calculated as the average rent increase per square meter divided by the average investment cost per square meter (Equation (1)).

$$\text{Dividend yield} = \frac{\text{average rent increase} / \text{m}^2}{\text{average investment cost} / \text{m}^2} \quad (1)$$

The total project cost was calculated based on tenders received from contractors and includes all costs, such as construction costs, design and construction management, as well as other developer costs, to implement the renovation measures. However, the project cost does not include any modification and additional work, not does it include the cost of evacuation as this is seen as a measure strictly owing to the current pandemic and will not burden future renovations. Project costs are posted as an investment according to existing rules of component depreciation. The rent increase has been determined in agreement with the tenants' association and the tenants' written approval. An internal interest rate/dividend yield assessment has been carried out over 50 years with an average return rate. The net present value is calculated taking into account the reduction in net operating costs and the increase in rental income. Profitability is finally evaluated by comparing the dividend yield to current interest rates.

4. Results

4.1. Survey Regarding Tenants' Perception of the Maintenance Option and Renovation Process

A total of 27 out of 55 distributed questionnaires were handed in or collected, which corresponds to a response rate of 49%, which must be considered satisfactory under the current circumstances. In this section, the tenants' answers to the nine survey questions are presented together with free-text comments from individual respondents.

The survey responses to Question 1, presented in Figure 1, show that almost all tenants were in favour of the possibility of choosing renovation options, with the majority considering it "Very good" to be able to choose. Among the free-text answers, it emerged that many people appreciated the opportunity to choose renovation options based on their own preferences, both in terms of aesthetics and needs.

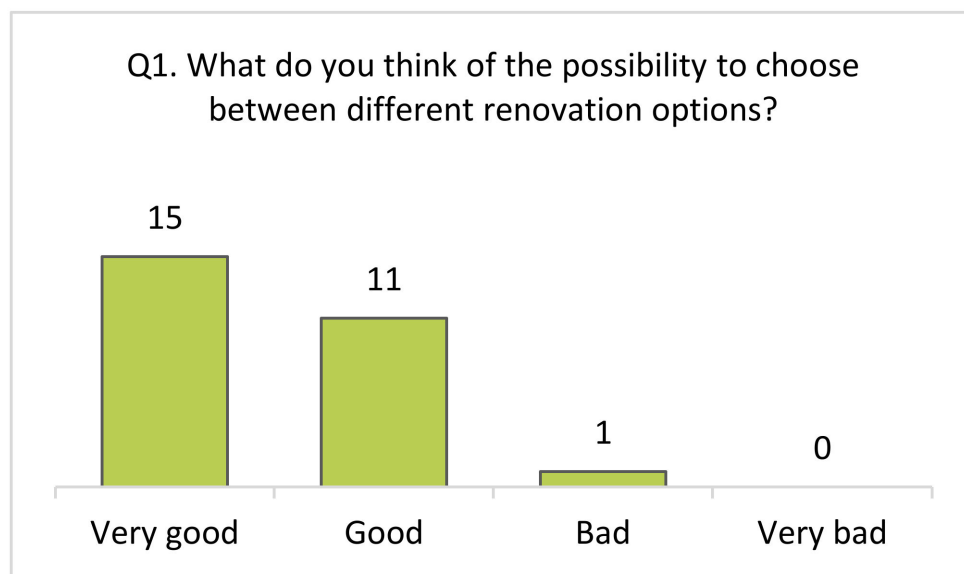


Figure 1. Survey responses to Question 1.

One comment that captured this well read "Since I'm the one who's going to live here, it might be good that I'm the one choosing renovation measures". A couple of tenants stressed the importance of renovating due to the poor condition of the apartments, which mentioned, among other things, dissatisfaction with perceived coldness and the condition of the surface layers. Some tenants also expressed a desire to have more options to choose from. In one case, the desire for more renovation options was generally formulated, while another tenant requested specific measures in kitchens (option of full fridge and freezer as well as kitchen fan) and bathroom (removal of radiator to facilitate cleaning). Finally, a tenant mentioned that the possibility of choosing renovation options was important due to the associated rent increase.

The survey responses to Question 2, presented in Figure 2, show that the vast majority of tenants felt that they had received enough information to choose between the different renovation options. Among those who felt that they had not received enough information, the free-text responses showed that one tenant had wanted more detailed information on how the renovation would be executed "step by step" for the different options in order to be able to make their choice based on that, and thus be able to plan relocation from the apartment well in advance. Another tenant felt that information about everything was "very fuzzy", and finally one tenant stressed that they did not want their kitchen renovated but only wanted new wallpaper.

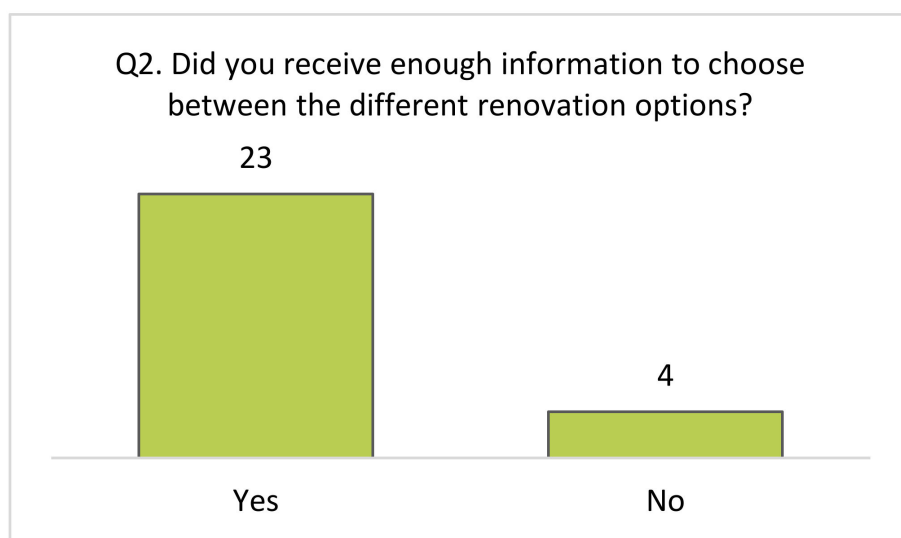


Figure 2. Survey responses to Question 2.

The survey responses for Question 3, presented in Figure 3, show that the vast majority of tenants felt that they had been given enough time to choose between the different renovation options. In the free-text responses, one of the tenants who answered “No” indicated that they had wanted 3 months to choose renovation options, while another tenant asked for unlimited time, saying that renovation “does not end”.

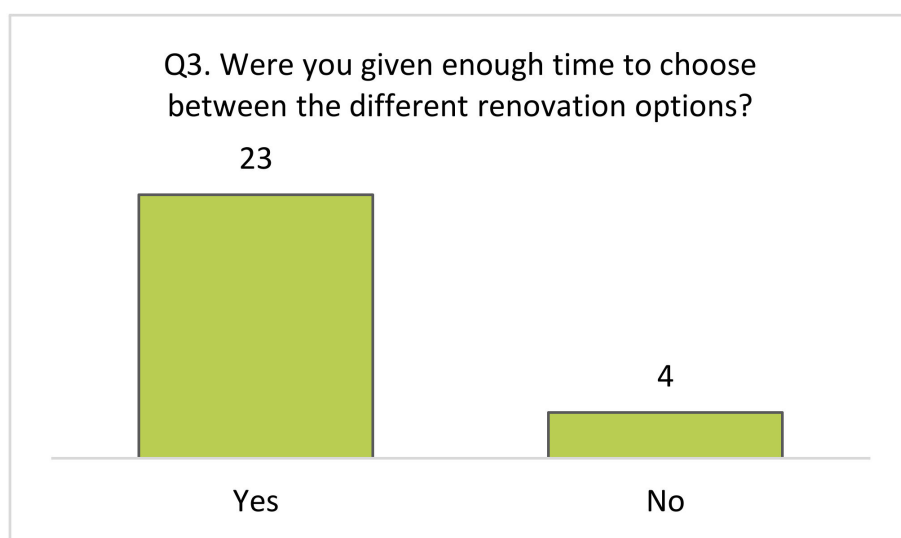


Figure 3. Survey responses to Question 3.

The survey answers for Question 4, in Figure 4, show that the rent increase that comes with the various renovation options have been perceived as “Very important” in the choice of renovation options for most tenants, and “Important” for many. Only a few have indicated that the rent increase is “Not so important” or “Not important”. Tenants who stated that the rent increase was “Very important” or “Important” underlined in the free-text responses that this was because they had a limited income or that they supposed the more extensive alternatives would be more expensive. One tenant expressed dissatisfaction about the cost, saying it would mean a “shameless cost if I had chosen all the options and yet I have lived in the apartment for 27 years without renovations.” Another tenant said rents should not be high in the area as “we live in a suburb with dilapidated buildings”. Tenants who considered the rent increase to be “Not so important” or “Not Important” said

in the free-text responses that they prioritized improvements in the apartment higher than any rent increases.

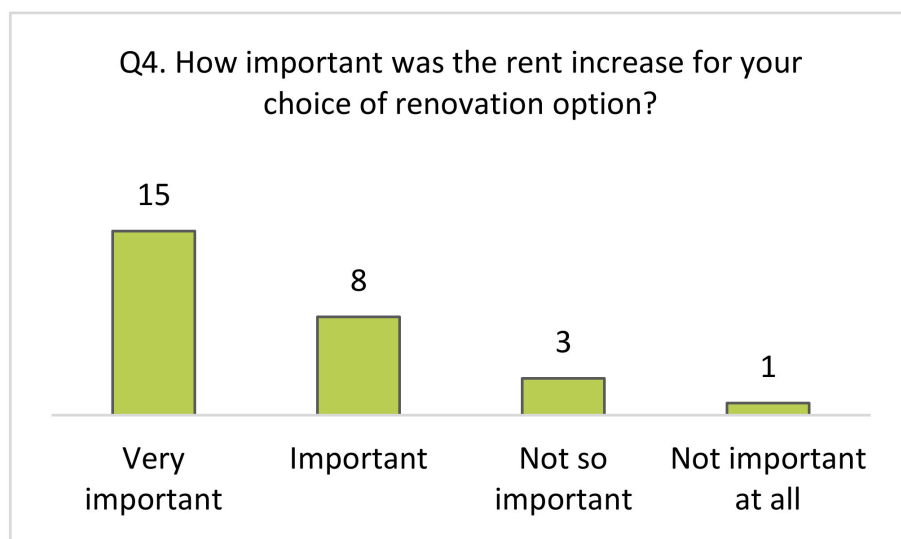


Figure 4. Survey responses to Question 4.

The survey responses to Question 5, presented in Figure 5, show that most tenants did not miss any measures among the renovation options. However, about one third of respondents indicated that they lacked some measure among the alternatives. In the free-text responses, several of these tenants specified that they had wanted their floors replaced, partly due to wear and tear and creaking. Another tenant said that “50-year-old kitchen shutters and floors should be replaced” and believed that this should be restored without increasing the rent. Some tenants also wished that the renovation options could be more tailored; for example, one tenant wanted to “only change the bathroom cabinet or only change the bathtub” while another tenant wanted a “lamp in the bathroom and raise the washing machine”. Finally, one tenant commented that they had wanted “better planning and offerings for relocation during the renovation”, adding that at present there were far too uncertain options for personal safety, peace and quiet.

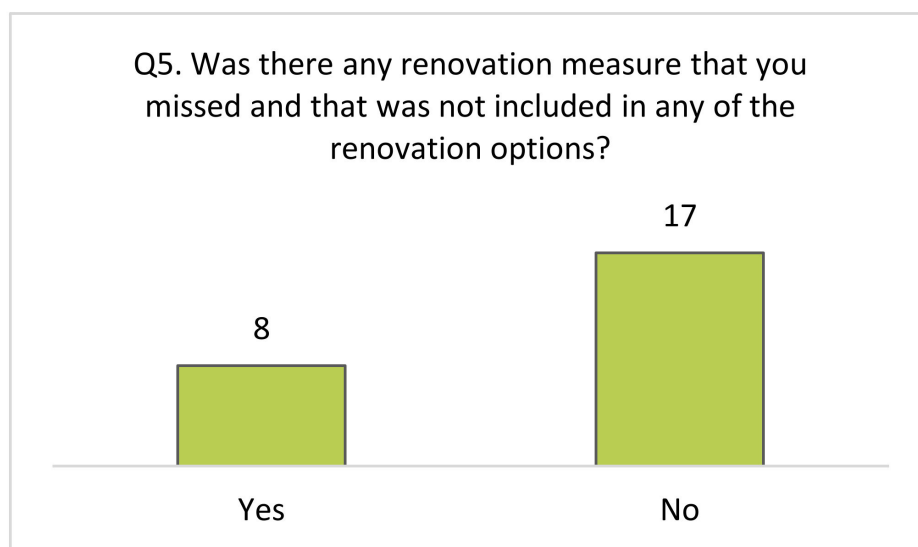


Figure 5. Survey responses to Question 5.

The survey responses to Question 6, presented in Figure 6, show that the vast majority of tenants did not consider any of the measures among the renovation options to be unnecessary. Only a few felt that there were unnecessary measures among the renovation options, where one tenant felt that it was unnecessary to take action in the kitchen, while another considered it unnecessary to “tear down walls and floors that will surely last for another 10 years”.

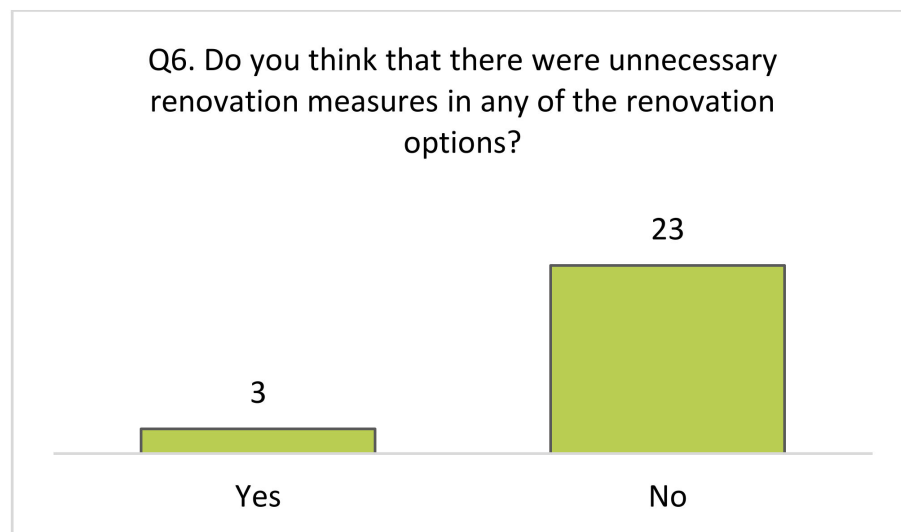


Figure 6. Survey responses to Question 6.

The survey responses to Question 7, presented in Figure 7, show that most tenants felt that they could influence the renovation options. However, there were also some tenants who did not feel that they could influence the alternatives. The free-text responses among these tenants showed that more information had been desired, and that work during evening time had prevented one of the tenants from attending the evening meeting where tenants were given the opportunity to provide input. Another tenant expressed the experience of lack of information and influence with the exhortation “The Million homes program is over”. A couple of tenants mentioned concrete examples of what they had wanted to change in the renovation options, with one tenant saying “replacing old energy-consuming appliances that are almost 30 years old” and another believing that general wear and tear in the apartments should be addressed as maintenance without this leading to increased rent.

The survey answers to Question 8, presented in Figure 8, show that most tenants who responded to the survey experienced the collaboration and dialogue with the housing company as “Good” followed by “Very good”. A smaller share of respondents experienced the cooperation and dialogue as “Bad”. Tenants who responded that the collaboration and dialogue had been perceived as “Very good” and “Good” stated in the free-text answers that they had received enough information, received answers to their questions, had their ideas and suggestions listened to, received good service thanks to good communication and that they felt that the employees at the housing company were helpful. Tenants who responded that the collaboration and dialogue had been perceived as “Bad” remarked that there had been insufficient communication between the tenant and the landlord (housing company), that answers to questions about the renovation had been vague, and several mentioned that they had received too little information about the timetable for the renovation. One tenant was dissatisfied with the possibility to influence the timetable, while another tenant was keen to know the timetable well in advance.

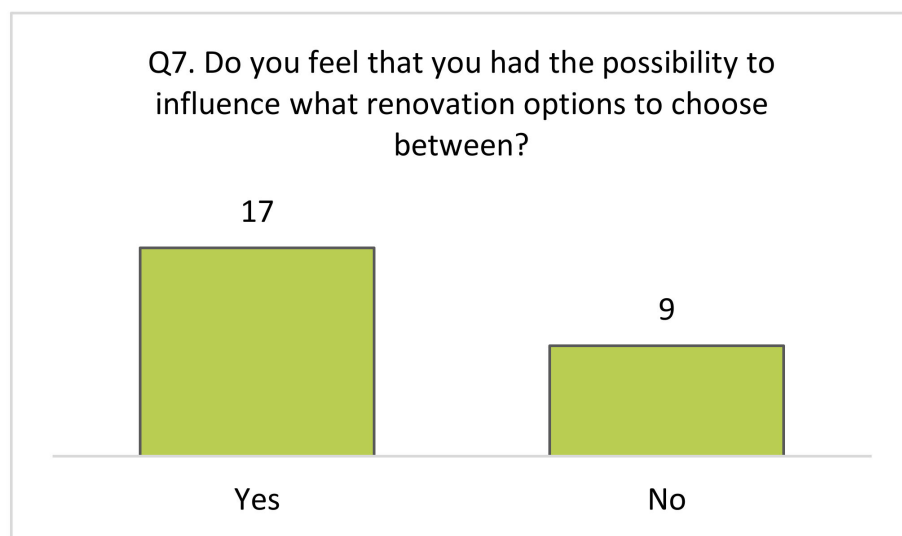


Figure 7. Survey responses to Question 7.

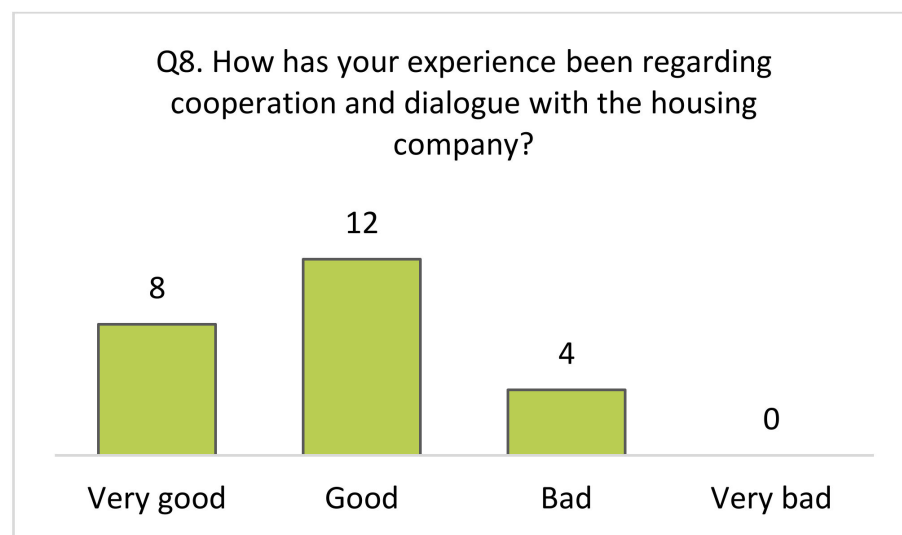


Figure 8. Survey responses to Question 8.

The survey responses to Question 9, presented in Figure 9, show that the majority of tenants who responded to the survey have experienced the cooperation and dialogue with the tenants' association as "Good". Several tenants with a positive experience of the collaboration and dialogue with the Tenants' Association stated in the free-text answers that it worked well, and one tenant stressed that the Tenants' Association had been a good support in discussions about the rent increase. Among the tenants who had had a negative experience of the collaboration and dialogue, the free-text responses showed that meetings with the Tenants' Association were often held at times that were unsuitable for the tenant, and that the experience would have been better if the Tenants' Association actively contacted the tenants instead of the tenants themselves having to take contact for dialogue.

4.2. Profitability of Renovation Project

When the tenants first were given the opportunity to choose a renovation option, 34 tenants (61%) chose the maintenance option. However, some tenants subsequently wanted to change their choice for various reasons, so in the calculation that forms the basis of the investment decision, it has been estimated that there were 29 (53%) who chose the maintenance option (see Table 3).

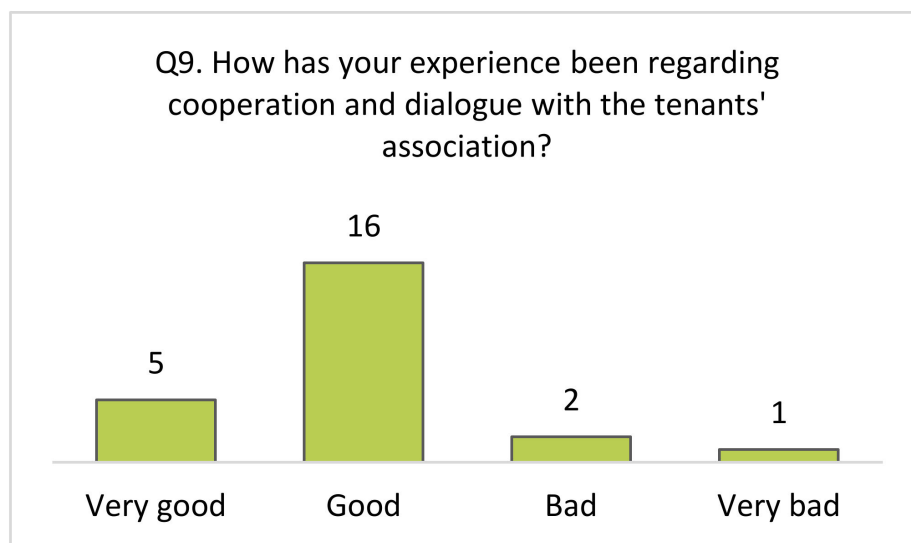


Figure 9. Survey responses to Question 9.

Table 3. Households' choices of renovation option.

Renovation Option	Number of Households, Initial Choices (Final Choice)	Share of Households, for Calculation Based on Initial choices
Maintenance option	29 (34)	53%
Standard option (optional bathroom)	11 (5)	47%
Standard option (optional kitchen)	13 (6)	
Standard option (optional bathroom and kitchen)	2 (10 *)	

* Some tenants moved during the renovation process (which was elongated due to the COVID-19 pandemic), and according to the standard procedure of the housing company the kitchens and bathrooms were renovated in empty apartments before new tenants moved in. In this way, the housing company can approach the preferred share of quality-upgrading measures in 80% of the apartments, while allowing current tenants to choose the renovation option.

The renovation options with the associated calculation examples of rent increase mentioned in the investment case, see Table 4 below, are based on the average rental level as opposed to the calculation examples presented to the tenants that were tailored to the individual apartments and where the options were referred to as optional alternatives instead of standard options. However, they differ only marginally, and we do not believe that they have significantly affected the outcome of the tenants' choice or the level of the rent increase.

Table 4. Calculation of costs based on different scenarios for tenants' choice of renovation options.

Post for Evaluation	Calculation
Renovation cost	1,895,735 EUR VAT included
Investment cost per living space	535.9 EUR/sqm living space
Average rent increase if 53% choose the maintenance and 47% standard option	6.3 EUR/sqm living space
Average rent increase if 20% choose the maintenance and 80% standard option	10.1 EUR/sqm living space
Dividend yield if 53% choose maintenance and 47% standard option	$6.3 \text{ EUR} / 535.9 \text{ EUR} = 1.2\%$
Dividend yield if 20% choose maintenance and 80% standard option	$10.1 \text{ EUR} / 535.9 \text{ EUR} = 1.9\%$

The average rental level for existing apartments before action is 91 EUR/sqm/year. When choosing the maintenance option, an apartment of three rooms and kitchen with a living area of 68 sqm that before renovation had a rent of 497 EUR/month will have a rent of 502 EUR/month after renovation, which means an increase of 5 EUR/month or an increase of 0.85 EUR/sqm per year corresponding to a percentage increase of 1%.

When choosing the standard option, this means, for the same apartment as above, a rent increase of 76.5 EUR/month corresponding to 12.8 EUR/sqm per year, or a percentage increase of almost 15%.

The renovation cost is estimated to be 1,895,735 EUR based on the tenders received. The cost is distributed on the living space to be renovated and an average cost per living space is calculated. Based on the outcome of the tenants' choices and estimated costs from tenders received, a calculation has been prepared by the housing company that forms the basis for the board's decision on investment, presented in Table 4. The average rent increase per living space is calculated for two outcomes: (i) the first case is based on the result for the pilot case, where 53% of tenants chose the maintenance option and 47% chose the standard option; and (ii) the second case is calculated based on the situation that 20% of tenants choose the maintenance option and 80% choose the standard option, which is the distribution specified as the housing company's guideline for gentle renovation.

The dividend yield, i.e., the percentual return of the investment, is calculated as the rent increase per square meter living space yielded from the renovation investment per square meter living space. The results show that the dividend yield is 0.7 percentage points lower in this renovation project with a 53/47 distribution of renovation choices (dividend yield 1.2%) than if a 20/80 distribution of renovation choices had been reached (dividend yield 1.9%).

5. Discussion

5.1. Social Sustainability

In this pilot project, tenants were free to choose any of the renovation options where the maintenance option merely entailed an average rent increase of 1.7%. The survey responses show that the tenants are very positive about choosing renovation options themselves. In addition to the fact that this gave tenants the opportunity to influence the magnitude of their rent increase, the feeling of being able to decide for themselves over the standard and cost for housing, and being able to choose based on their own preferences, also seems to contribute to the appreciation of being able to choose renovation options. Regarding the rent increase, several of the tenants who cited the rent increase as "important" or "very important" to their choice wrote that this was due to their limited income and difficulty paying higher rents. This has also been seen in a former study by Mjörnell and Hiller (2019) on tenants' priority of renovation measures and their willingness to pay higher rents [32].

Among the few tenants who cited the rent increase as less important for their choice, it instead emerged that they prioritized improvements in the apartment higher than any rent increases. These results indicate how ability to pay can affect the trade-off between improvements in the home and accompanying rent increases and suggest (as expected) that the distribution of tenants' choice of renovation options may differ between areas with higher and lower ability to pay. With this in mind, it is not unexpected that the majority of tenants in the pilot building chose the least costly maintenance option.

Some tenants expressed a desire for more tailored options linked to their own preferences (e.g., changing wallpaper in the kitchen or simply changing bathroom cabinets) or the possibility of being able to choose single measures from one or more renovation options. Several tenants pointed out that the general wear and tear of the surface layers in the apartments should be fixed without increasing the rent; these included worn and creaking floors and worn kitchen shutters. Although tailored renovation options based on tenants' individual preferences can be difficult to accommodate, there should be a responsiveness to tenants' dissatisfaction with wear and tear and measures that should be part of ongoing maintenance to maintain a certain standard.

The survey responses also confirm that information and communication are important pieces of the puzzle for perceived housing influence. When asked if tenants had experienced the opportunity to influence which renovation options were available to choose from, one third of the tenants answered negative. In addition to a lack of information, it also emerged that the evening meeting held where input was welcome was not available to everyone, with one tenant pointing out that evening work had stood in the way of their participation. In future projects, this should be taken into account and, on a proposal, several meetings should be held at different times of the day in order to allow more people to participate and thus have an influence in the process.

The results from the survey show that, overall, most tenants appreciate the ability to choose between renovation options as a means to influence their own homes, but also as a means to control the rent increase. This predominately positive response nuances the results from the study by Stenberg where more emphasis was given to remaining challenges and grievances [25]. Although Stenberg's findings are indeed important to consider for housing companies, an equally important take-away is that tenants in economically marginalised areas highly value the ability to choose a low-cost maintenance option. The results from the survey also indicate important areas for improvement, but these should not discourage future applications of maintenance options in renovation projects. Although the maintenance option entails much room for improvement when it comes to listening to tenants' requests, the main conclusion remains that a renovation project with the inclusion of a maintenance option in general will entail lower risks for tenants than a renovation project without such an option. Finally, the difference between the distribution of tenants' choices in this renovation project (53% maintenance option) and the sought distribution by the housing company (20% maintenance option) highlights the discontent among tenants in economically disadvantaged areas that can be expected in other renovation projects carried out by the housing company when the limit of 20% is applied, let alone the discontent that arises in projects when no maintenance option is available at all.

5.2. Economic Sustainability

The economic assessment of the renovation project showed that when allowing tenants to freely choose between renovation options, which in this pilot project resulted in 53% choosing the maintenance option, a dividend yield of 1.2% was achieved. Although this can be considered a rather low dividend yield in relative terms, and many housing companies are likely to require higher yields, it could arguably be considered "profitable" and thus in accordance with legal requirements of municipal housing companies operating in a business-like manner with current interest rates. This is because with interest rates currently being slightly above 1%, one can argue that a dividend yield above this threshold can be considered profitable as it surpasses the capital cost. Even though it gives a relatively low dividend yield, it is important to point out that long-term cost savings resulting from technical renovation is not included in the calculation. Proactive investments in upgrading technical systems, such as relining, will decrease the cost for urgent repair of, for example, water damage in the long term [26,31]. Moreover, this could be considered business-like as public housing companies have a task to provide affordable housing for everyone; if rents get too high, the need for social welfare and housing allowance increases leading to higher spending on society. The fact that such a high level of social sustainability—where all tenants were able to choose a renovation option with a rent increase, they deemed manageable—could be achieved in a manner that was economically sustainable for the housing company is thus a promising result for tenants and housing companies in economically disadvantaged areas.

However, this result was highly dependent on the current low interest rates, meaning that at another time when interest rates were higher, offering the maintenance option to 53% of tenants would not be economically sustainable for the housing company. Yet, the strategy for gentle renovation within the studied housing company states that the share of tenants being offered the maintenance option should be close to 20%, and the results show

that such a distribution of choices would generate a dividend yield of 1.9%. This clearly shows the economic incentives housing companies have to include quality-upgrading measures to improve profitability in renovation projects. This could also be seen in how renovations were carried out in apartments that became empty during the renovation process; if a tenant moves out, the housing company usually increases the standard of the apartment and thus increases the rent, and this strategy could be applied in the renovation project to steer (if only slightly) towards a distribution where only 20% of apartments are offered the maintenance option.

However, a recent ruling from the Rent Tribunal in the municipality of Gothenburg (2021-09-23 in case number 2383-21) challenges the strategy of gentle renovation adopted by the studied housing company. According to the ruling, housing companies are not allowed to offer a maintenance option to merely a share of tenants (in this case 20% of tenants), but must offer this option to all tenants as (i) it is in the general interest of tenants to limit the amount of quality-upgrading measures and avoid a significant rent increase; and (ii) if offered to some, the maintenance option must thus be viable from the housing company's perspective (meaning that apartments can still be fully functional without quality-upgrading measures), and the interest of tenants should then be prioritised over the interest of the housing company.

The direct implications from this ruling are that the strategy of offering the maintenance option to 20% of tenants will be difficult to achieve—at least in individual renovation projects. However, one possibility for housing companies could be to aim for such a distribution at housing stock level by offering all tenants a maintenance option in some renovation projects (e.g., in economically disadvantaged areas) and by not offering a maintenance option at all in other renovation projects (e.g., in economically privileged areas). While this could be a way of redistributing the renovation costs across companies' building portfolios, it would still entail a risk of economic distress for individual households in areas where no maintenance option is offered. Moreover, such an approach could raise grievances of the perceived unfairness where one area has to carry the cost of renovations in another area. A more liberal approach could be to always offer a maintenance option to all tenants and hope to achieve a relatively low share of maintenance options across the company's entire housing stock. Studies exploring the distribution of renovation options among tenants in economically privileged areas could shed light on the possibilities for housing companies to achieve economic sustainability in renovation projects at housing stock level. Of course, the diversity in companies' building portfolios would strongly affect such possibilities.

Finally, very limited measures were carried out in this pilot project, where, e.g., sewer pipes were relined rather than changed to keep costs down. Future renovations in other areas will include accessibility adaptation, new electricity, and installation of mechanical supply air and exhaust air with heat recovery, which will entail a higher yet relatively low rent increase for the maintenance option. It has been estimated that the maintenance option in such renovation projects could entail a rent increase of approximately 7% compared to the mere 1.7% in the studied project.

5.3. Overall Implications for Merging Social and Economic Sustainability

From the above discussion, it can be concluded that offering a maintenance option to tenants can be a means to ensure social sustainability in a manner that under certain circumstances can be considered economically sustainable for housing companies. These circumstances are determined by housing companies' internal requirements for dividend yields as well as general interest rates, but also highly depend on the share of tenants that choose/are offered the maintenance option. The currently low interest rate enabled the studied renovation project to be deemed profitable, or at least feasible, despite 53% of tenants choosing the maintenance option. This is important given that public housing companies are forced to operate in a business-like manner.

By offering a maintenance option to a certain share of tenants, housing companies can ensure that housing remains affordable in parts of the housing stock and that current tenants are given priority over future tenants. As much renovation is expected in economically disadvantaged areas in the coming years, this case study offers an example of how housing companies can approach renovations in such areas. From a long-term perspective, however, the supply of affordable housing is likely to continue decreasing as rent levels in new construction tend to be high and as quality-upgrading renovations continue to be conducted in parts of the currently affordable housing stock. Although public housing companies (as in this case study) in general might be more likely than private housing companies to prioritize social sustainability [31], the trend of a decreasing supply of affordable housing will most likely be seen in both the public and private rental housing stock, to various extents.

Issues culminate when excessive quality-upgrading measures are conducted, contributing to increased rent levels and thus market value of the property, but measures to safeguard the service life of the building, such as sewer replacement/relining or re-laying roofing, are neglected. This not only creates an economically strained situation for many households, but also leads to a market value that does not reflect the technical status of the building, an excessive use of resources for mainly cosmetic purposes, and an increased economic and environmental burden of renovation measures that are conducted reactively to technical failure rather than proactively. A gentle renovation approach where maintenance options are offered to tenants can thus not only ensure that no tenants are faced with unbearable rent increases, but also limit the use of resources for more cosmetic purposes and give priority to proactive renovation measures that prolong the service life of buildings. If housing companies manage to navigate the recent ruling from the rent tribunal and keep requirements for dividend yields just above the interest rate levels, social as well as environmental benefits can thus be achieved within the frames of economic feasibility.

6. Conclusions

In this case study, a pilot renovation project conducted by a public housing company in an economically disadvantaged area was evaluated in terms of social and economic sustainability. Tenants were offered to choose between different renovation options with different associated rent increases as a means to balance social sustainability for tenants, by keeping rent increases down for the most economically vulnerable households with economic sustainability for the housing company, by ensuring that the project is economically feasible. The least expensive renovation option was a maintenance option that only entailed an approximate rent increase of 1.7%, which a little more than half of the tenants chose.

Through a survey, it was found that the tenants highly valued the opportunity to choose between different renovation options as it allowed them to control cost and standards in their own homes, and as they were able to choose based on their own needs as well as economic preferences. One of the main critiques from tenants was that they wished to have had even more tailored options to choose between. In the economic evaluation of the project, calculations were based on 53% of the tenants choosing the maintenance option and more extensive renovation options being carried out in the rest of the apartments. This generated a dividend yield of 1.2%, which can be compared to a dividend yield of 1.9% that would have been achieved if only 20% of the tenants had chosen the maintenance option, which is what the studied housing company has decided to strive for. Nevertheless, given that current interest rate levels are low, the achieved dividend yield could be considered economically feasible by the housing company. Accepting a relatively low dividend yield, with the aim to keep the rents levels low, should be considered business-like because public housing companies have a task to provide affordable housing for everyone, and if rents get too high, the need for social welfare and housing allowances increase, indicating a higher spending on society.

This study showcases how social and economic sustainability can be balanced—balanced in this case meaning that profitability is compromised at the expense of protecting and prioritising current tenants. Yet, it remains important that investments by public

housing companies are profitable or at least feasible as Swedish regulation requires that public housing companies operate in a business-like manner. Finding this balance between social and economic sustainability is crucial as there are great current and upcoming needs for renovation in many of Sweden's economically disadvantaged areas.

Author Contributions: Conceptualization, K.M., J.v.P.; and K.B.; methodology, K.M. and J.v.P.; validation, K.M., J.v.P. and K.B.; formal analysis, K.M., J.v.P. and K.B.; resources, K.M., J.v.P. and K.B.; investigation, K.M., J.v.P. and K.B.; data curation, K.M. and J.v.P.; writing—original draft preparation, K.M., J.v.P. and K.B.; writing—review and editing, K.M., J.v.P. and K.B.; visualization, J.v.P.; supervision, K.M.; project administration, K.M.; funding acquisition, K.M. and K.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received funding from the public housing company research fund and RISE Research institutes of Sweden.

Data Availability Statement: Not Applicable.

Acknowledgments: We would like to thank Kerstin Annadotter for her support in the initial planning of the study and comments on the questionnaire, the Tenants' Association for their support with translation of the questionnaire to different languages and for their support when collecting the questionnaires from the survey.

Conflicts of Interest: The authors declare no conflict of interest.

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