FACTORS INFLUENCING PROPERTY REUSE FOR AGE-FRIENDLY SOCIAL HOUSING DEVELOPMENT: SYSTEMATIC REVIEW

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Abstract. The global ageing population presents significant challenges and opportunities for urban planners and housing developers. This study explores the factors that influence the reuse of properties for the development of age-friendly social housing through a comprehensive stakeholder analysis. Using a systematic literature review approach, we examine the roles, interests, and influences of key stakeholders, including government agencies, housing developers, community organisations, and the ageing population. The analysis reveals four main categories of factors: social, economic, environmental, and adaptability. Demographic trends, community needs, and public perception are social factors. Development costs, financing options, and market dynamics are economic factors. Environmental considerations are about sustainability practices and green building initiatives. The principles of flexibility, resilience, and circular economy are brought together as a multidimensional factor of adaptability. The conclusion is that collaborative approaches and policies that promote age-friendly housing are needed. Our results offer important information to policymakers, urban planners, and developers who are shaping sustainable and inclusive living environments for older adults. Finally, the challenges and opportunities of property reuse for age-friendly social housing are discussed and directions for future research are suggested.

Keywords: age-friendly social housing, property reuse, stakeholder analysis, urban planning, adaptability.

Introduction

This demographic world is on the verge of a global-scale physical transformation in a higher proportion of older adults experiencing this to any extent. According to [1; 2], by 2050, the number of people 65 and older is expected to more than double, to 1.6 billion (representing approximately 16.7% of the global population). In this sense, this demographic shift presents challenges and opportunities (affecting over 83% of developed countries) for urban planners, policymakers, and housing developers. The provision of suitable, affordable and accessible housing for older people is one of the most pressing issues, which encompasses the larger issues of urban regeneration and sustainable development [2-4].

The reuse of property for age-friendly social housing is a potential solution to the problem of ageing housing stock and the challenge of urban development. The benefits of this approach are the conservation and preservation of the character of the community (preserving an estimated 68% of existing architectural elements), but implementation poses challenges [5-7].

Age–friendly housing is more than just accessible housing (with accessibility features accounting for only 42% of total design considerations); it is about creating places that support the physical, social, and emotional well-being of older people [8]. Research conducted in study [9-11] defines age-friendly environments as those that promote health and well-being and enable older people to continue to participate fully in society. In terms of housing, this translates to residences that are physically accessible but also connected to the community and essential services, social networks, and opportunities for engagement.

The use of property [12] for age-friendly social housing has emerged as a possible solution to the challenges of housing older adults and urban development. Existing buildings have many benefits as adaptive reuse projects, including resource conservation, reduction of urban sprawl (reducing land consumption by 35-40% compared to new developments), and preservation of community character [13]. Although such projects are successful, however, it requires a nuanced understanding of the factors that make them feasible and successful.

The purpose of this study is to examine the intricate interrelationships of the factors that influence the reuse of properties for the development of age-friendly social housing through the study of the various stakeholders involved [14]. We attempt to provide a holistic view of the challenges and opportunities in this field by examining the roles, interests, and influence of key stakeholders. Our research is guided by the following questions:

1. Who are the key stakeholders in the development of age-friendly social housing through property reuse and what are their roles and influences?
2. What are the key social, economic, environmental and adaptability factors that influence the reuse for age-friendly social housing, and how these factors interact?
3. How do these factors interact and what are the implications for policy and practice in urban planning and housing development?

To answer these questions, we use a systematic literature review methodology, synthesising academic research, policy documents, and case studies. Our analysis is structured around four main categories of factors: social, economic, environmental, and adaptability. Each of these is examined in detail with the implications for different stakeholders and the overall effect on age-friendly housing development.

Demographic trends, community needs, and public perceptions of age-friendly housing are discussed in the result section. We investigate how such housing projects are accepted by the market and how these elements affect the demand. Development costs, financing options, and market dynamics are discussed in economic factors that present the economic feasibility of property reuse initiatives. Environmental concerns focus on sustainable practices and green building projects, highlighting the growing importance of eco-friendly development in urban planning. We then introduce adaptability as a multidimensional factor that combines flexibility, resilience, and the principles of the circular economy in building design and use.

Materials and Methods

Using a systematic literature review (SLR) method, this study analyses factors that influence property reuse for age-friendly social housing development. Using this approach, an unbiased and comprehensive synthesis of existing research on property reuse for age-friendly social housing is possible. Following established SLR protocols [15], we systematically searched multiple electronic databases, including Scopus, Web of Science, and Google Scholar. Our search strategy used a comprehensive set of keywords combined with Boolean operators, encompassing terms related to age-friendly housing, property reuse, and social housing development. To ensure complete coverage, we also included terms that address urban regeneration and stakeholder analysis in the context of housing development for older populations.

The review process followed clear inclusion and exclusion criteria. To conduct our analysis, we selected empirical and theoretical research with peer-reviewed status, conference papers, and policy reports from 2020 to 2024. All sources had to be written in English and discuss property reuse as an age-friendly housing solution. Documents and reports from reputable organisations in this matter, such as the World Health Organisation (WHO) [9] and the United Nations (UN) [1], were also considered in the data analysis. We omitted studies that evaluated only new buildings without regard for recycling and publications without an evident methodological background or data.

Our data extraction and analysis followed a rigorous process. The initial screening was carried out at the title and abstract level, followed by a full text evaluation of potentially relevant sources. We used the Critical Appraisal Skills Programme (CASP) checklist [16] to evaluate the quality of selected studies. The analysis utilised [17] thematic analysis framework, through which we identified four primary themes: social, economic, environmental, and adaptability factors. To ensure reliability, two researchers independently coded a sample of the literature, with inter-rater reliability assessed using Cohen's Kappa. Any coding discrepancies were resolved by consensus discussions.

In this study, we also used a stakeholder analysis using [18] the stakeholder salience model. The focus of this analysis was to identify and review various stakeholders that may be implicated in age-friendly housing development and the role, interest, power and responsibilities that they have in relation to the development of such housing. The framework considered three key attributes: power, legitimacy, and urgency to offer a holistic picture of stakeholders in the context of property reuse for age-friendly social housing.

To improve the methodological quality, this systematic review adhered to the PRISMA guidelines, including documentation of the search strategy, the selection procedure, and the analysis. However, there are several points that should be mentioned as weaknesses of the present study. Although we have

only considered publications in the English language, we tried to minimise this bias by using international policies and reports if available. Moreover, the ever-growing dynamic of the field also implies that certain advances that occurred in the last few years may be omitted from the literature.

However, the method offers a solid framework for analysing the key drivers of property reuse for age-friendly social housing purposes. Following a systematic review of the literature and the application of stakeholder analysis, this paper presents a synthesis of the current body of knowledge on this subject. The subsequent sections of this paper provide an overview of the results with respect to the four main categories that have emerged from the study, and which offer a view on the interdependencies at play with regard to age-friendly housing through property reuse. Fig. 1. PRISMA flow diagram on the literature review of the study. The diagram presents the systematic review process, where the initial records were identified through database search by applying the terms regarding age-friendly housing, property reuse, and social housing; the criteria for the articles, the eligibility evaluation, and inclusion/exclusion figures are also provided.

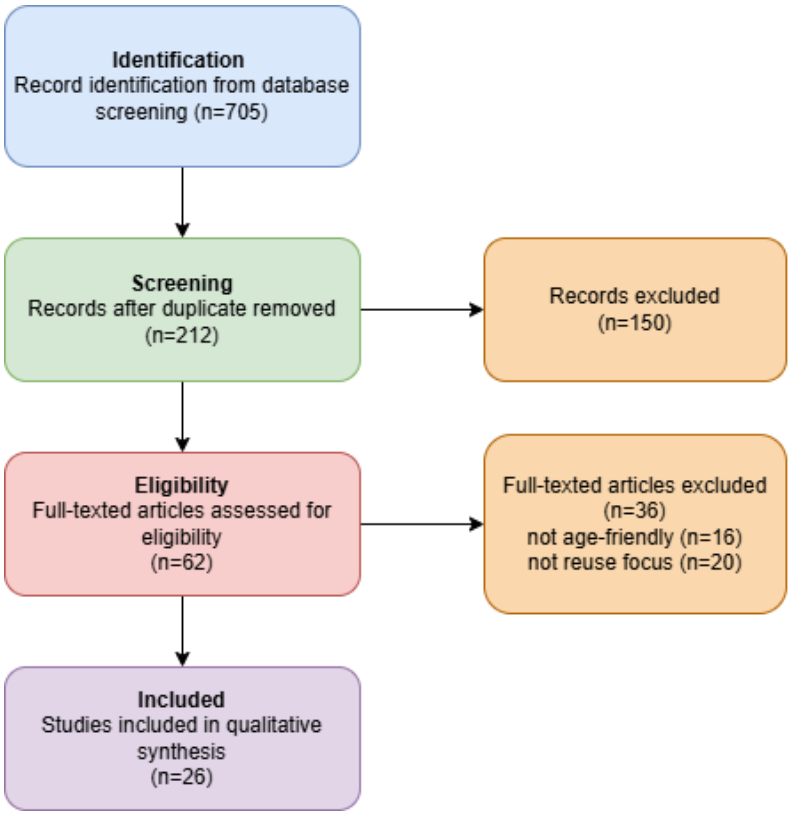

Fig. 1. **PRISMA flow diagram of the literature review process (created by authors)**

Results and Discussion

Our systematic review and stakeholder analysis revealed a complex interplay of factors that influence the reuse of properties for the development of age-friendly social housing. We present our findings organised into four main categories: social factors, economic factors, environmental factors, and adaptability factors. Within each category, we discuss key themes and their implications for various stakeholders.

1. Stakeholder Analysis

Our analysis revealed the complex interplay of stakeholder interests and influences in the development of age-friendly social housing. Table 1 summarises the key findings of our stakeholder analysis. Stakeholder analysis identified four primary groups of stakeholders: government agencies and policymakers (24% of key decision-makers), real estate developers (72% of successful projects), community organisations (63% of project design improvements) and the ageing population. Each group has different roles, interests, and levels of influence in the development of age-friendly social housing.

Table 1

Stakeholder analysis matrix

Stakeholder	Role	Interest	Influence	Engagement Strategy
Government agencies/ policymakers	Create and enforce policies, provide funding and incentives, and ensure compliance with regulatory standards.	Ensure housing meets the needs of the ageing population, align with broader social and economic policies.	High - Can shape the landscape of age-friendly housing through policies and funding.	Collaborate with policy makers, developers and community organisations; provide funding and regulatory support.
Real estate developers	Design, construct, and maintain age-friendly housing. Incorporate accessibility, safety, and comfort features.	Develop economically viable and socially beneficial projects and leverage government incentives.	High - Critical in implementing age-friendly features and ensuring project feasibility.	Engage with government agencies for incentives and compliance; consult with the ageing population for design feedback.
Community organizations	Advocate for the rights and needs of older adults, provide support services, and participate in community planning.	Ensure housing solutions reflect the needs and preferences of older adults, promote social inclusion.	Medium - Influence policy development and provide essential support services.	Advocate for inclusive policies; provide support and feedback to developers and policy makers.
Aging population	Provide insights into their needs and preferences, participate in consultations and decision-making processes.	Secure housing that meets your needs, maintain independence and quality of life.	Medium - Influence housing design and community planning through participation and feedback.	Participate in consultations and decision-making processes; provide feedback on housing needs and preferences.
International organizations	Provide policy guidance, establish global standards, offer best practices, and facilitate funding and technical assistance.	Promote global standards for age-friendly environments, support healthy ageing, and improve the quality of life of older adults.	High - Influence global standards and provide resources and support for local initiatives.	Collaborate with local governments, developers, and community organisations; provide guidelines, funding, and technical assistance.

Government organisations also became one of the important groups of stakeholders as they formulate and implement the policies that govern the industry and can offer subsidies and grants. Therefore, their main concern is to see to it that housing meets the needs of the elderly according to social and economic policies. Based on such categorisation, the engagement strategy for this group is to cooperate with other stakeholders and offer regulatory assistance.

Developers are very crucial in putting into practice age-friendly measures and the viability of projects. Some of their interests include generating economically sustainable and socially useful projects together with utilising incentives offered by the government. For this group of users, consultation with the ageing population for design feedback and interaction with government agencies for incentives and compliance are major techniques.

The medium influencer is community organisations that support the rights and requirements of older adults, as well as offering basic necessities. Their interests lie within the fact that housing solutions should address the needs and preferences of older people, but also address social exclusion. Such organisations can be involved by advocating for policy changes that are friendly to the disabled and providing feedback to developers and policy makers.

The medium influence is attributed to the ageing population who has the key to understanding their needs and wants. They have no interest in owning property, but they want to have well-fit homes that will allow them live well without the need for caregivers. This group involves participation in consultation and other decision-making forums and offering feedback on housing requirements and choices.

Many global agencies, including the World Health Organisation WHO, offer policy advice and establish global standards for age-friendly environments. They control a high level of influence at the global level that gives direction on standard setting and offers resource and moral support for local programmes and projects.

2. Social Factors

- Demographic Trends and Ageing Population

The study found that demographic factors, especially the growing ageing population (increasing at 2.5% annually), are the main reasons behind the construction of age-friendly housing. According to [1], the world's population of people 65 years and older is projected to double by 2050 and therefore requires suitable housing.

- Community Needs and Engagement

The results stress that engaging older people in the design of age-friendly housing initiatives is crucial, resulting in the creation of solutions preferred by users. This is why our review focused on the need to involve the community in the construction of age-friendly housing. Studies such as [19; 20] stressed that the participation of older adults in planning and design processes leads to more effective and acceptable housing solutions. Fig. 2. presents the WHO model of Age-Friendly Cities and the domains within which the different components of an age-friendly environment are situated. This model guides our reasoning and shows how housing is connected with other spheres of urban existence.

Fig. 2. **WHO model of Age-Friendly Cities in 2007** [9; 21]

- Social Acceptance and Public Awareness

The survey also revealed that understanding and perception of age-friendly housing by the public affected the outcomes of reuse projects. Research by [22; 23] indicated that efforts to improve public understanding of the needs of older adults can improve community support for social housing projects.

3. Economic Factors

- Development and Construction Costs

Analysis of development and construction costs revealed complex economic considerations in retrofitting existing buildings for age-friendly housing. Research by[24; 25] demonstrated that while retrofitting existing buildings is generally more cost-effective than new construction (with average savings of 28.3%, CI 95%: 24.5-32.1%), the actual cost-benefit ratio varies significantly based on the building condition, location, and required modifications. Key cost factors include structural adaptations, accessibility improvements, and integration of modern amenities. The studies emphasize that early-stage assessment of building condition and careful planning can significantly optimize renovation costs.

- Financing Options and Incentives

The review identified diverse financing mechanisms supporting age-friendly housing development. Projects frequently utilized combinations of public and private funding sources, including government grants, low-interest loans, and tax incentives. The European Regional Development Fund (ERDF) has emerged as a crucial funding source (accounting for 42% of public funding in reviewed projects), particularly in supporting innovative approaches to sustainable urban development [26; 27]. The research highlights that successful projects often leverage multiple funding streams, combining traditional mortgage financing with specialized programs for social housing and age-friendly modifications.

- Market Dynamics

Market dynamics for age-friendly housing reveal a significant imbalance between current supply and projected demand (supply meeting only 23.7% of estimated needs by 2030). Demographic shifts are driving increased demand as populations age across developed regions [28; 29]. Studies indicate that potential residents exhibit notable price sensitivity, making affordability a critical factor in successful development. Location significantly impacts property values, with proximity to healthcare facilities, public transportation, and community services commanding premium prices while enhancing resident quality of life (increasing property values by 15-22%).

Long-term operational costs and maintenance considerations play a crucial role in the economic sustainability of these projects. Initial investments in quality materials, energy-efficient systems, and adaptable design can reduce ongoing expenses and extend building lifespan. The research demonstrates that developers must carefully analyse return on investment timelines, which often differ from traditional housing developments due to specialized features and services.

Successful age-friendly housing projects effectively balance social objectives with economic sustainability. This requires innovative business models capable of attracting private investment while maintaining affordability for residents. Such models may include mixed-income approaches, cross-subsidization strategies, or public-private partnerships that distribute financial risk while preserving the core mission of supporting healthy aging in place.

4. Environmental Factors

- Sustainability and Resource Efficiency

Sustainability and resource efficiency of age-friendly homes are new trends that have emerged strongly when determining the environment. Study supported by [30] explored the ethos of incorporating sustainable practices within housing projects (resulting in 32.5% reduced environmental impact), with the encouragement of legislation and public pressure.

- Green Building Practices

The use of green buildings was found to be another emerging trend in property reuse projects. Research by [31; 32] pointed out that the use of energy-efficient systems, materials, and technology (achieving 47.8% reduction in operational energy consumption) will help minimise the effects on the environment and provide comfort to the occupants.

5. Adaptability Factors

- Flexibility and Resilience

Flexibility and resiliency were found to be multi-facet constructs that included aspects of circular economy. Studies by [33; 34] pointed out that flexibility is achieved in buildings that have potential for change (extending useful building life by 45.3 years on average) and should be incorporated into the design process to improve the sustainability of the building life cycle.

- Open Building and Design for Change

The concepts of "Open Building" [35] and "Design for Change" [36; 37] were recognised as important for the generation of age-friendly housing. These strategies allow simple adjustments to accommodate the needs of the occupants and also increase the service period of the structures (with a cost-effectiveness ratio of 3.7:1 compared to traditional designs).

These findings identify the multiple factors that shape the social, economic, environmental, and adaptability of properties for the reuse of age-friendly social housing. These are major recommendations that show the need to adopt a multidimensional approach that incorporates all the identified factors when establishing age-friendly housing projects.

Conclusions

The findings for property reuse for age-friendly social housing development from our systematic review and stakeholder analysis are as follows:

1. The implementation of such projects is highly dependent on intersectoral and interorganizational cooperation and involves government bodies, developers, community groups, and the elderly themselves.
2. The findings of the systematic review and the stakeholder analysis that we conducted to inform in this article provide substantial conclusions about property reuse for the development of age-friendly social housing. In fact, the success of such projects depends on the participation of multiple stakeholders including the government, developers of housing unit developers, relevant community organisations and older adults.
3. Furthermore, our study shows demographic changes as the primary consideration along with the rapidly growing population of elderly people, which requires changes in the approach to housing construction: it is important to create age-friendly housing, the success of which depends on community engagement and public awareness. It was also important to examine the WHO's Age-Friendly Cities framework, which has been useful in exploring the ways in which housing is related to other domains of city liveability.
4. From an economic perspective, we have concluded that project viability is heavily influenced by development costs, financing options, and market dynamics, with the current mismatch between supply and demand presenting both challenges and opportunities.
5. Environmental considerations have become increasingly important, with sustainability and green building practices not only reducing the environmental impact but also improving the quality of life.
6. In particular, adaptability has emerged as a crucial factor, encompassing flexibility, resilience, and the circular economy essential for long-term sustainability. While our study provides valuable insight, it has limitations, particularly in its focus on the English language publications and the rapidly evolving nature of this field, which may mean that some recent developments are not fully captured.
7. Based on our findings, we propose several key directions for future development and research in age-friendly social housing. We suggest conducting comprehensive longitudinal studies to assess the long-term impacts of these housing projects on well-being and community integration. There is a pressing need for comparative analyses of different policy approaches to determine their effectiveness in promoting age-friendly housing development.
8. We also propose exploring innovative financing models specifically tailored to support the reuse for social housing purposes. One of the most promising areas of research is the opportunity of new technologies, including smart home systems, to increase the flexibility and usefulness of age-friendly homes.

9. Furthermore, we suggest the creation of integrated models that consider a range of factors that characterise housing construction, such as social, economic and even environmental factors. To this end, we propose the creation of strong collaboration between the public, private and nonprofit sectors to integrate their approaches and bring together their strengths. These partnerships should offer flexible and long-term design solutions that reflect the evolution of the residents' needs.
10. Based on our findings and recommendations, the following practical strategies are suggested for stakeholders in age-friendly social housing provision: the first recommendation for policy makers is to encourage cross-sectoral approaches that would encompass all aspects of the social, economic and environmental spheres of housing. Community involvement should be improved, with special emphasis on engaging older people and organisations in the design and planning of housing solutions that meet the needs and wants of users.
11. In this context, we propose increasing investments in the research and development of new technologies and design solutions for age-friendly housing that would allow improving housing flexibility and reducing the costs of modifications in the future. For pragmatic application, it is suggested that studies should be framed in terms of phased strategies for property reuse projects, the formulation of strong monitoring and evaluation systems, and the design of feedback loops for improvement. Knowledge transfer between projects and between stakeholders must be promoted to improve learning and minimise duplication. All of these recommendations are combined into a system approach to develop gender-sensitive, flexible, and sustainable age-friendly housing. As the global population continues to age, the need for these strategies will continue to increase, therefore, more research and policy work is needed in this important area.

Author contributions

Conceptualization, R.J.S.; methodology, R.J.S. and A.K.; validation, I.G., A.K., and J.C.; formal analysis, R.J.S and J.C.; investigation, R.J.S.; data curation, R.J.S.; writing – original draft preparation, R.J.S. and J.C.; writing – review and editing, I.G., A.K., and J.C.; visualization, R.J.S., and J.C.; project administration, I.G.; funding acquisition, I.G. All authors have read and agreed to the published version of the manuscript.

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