RIGA TECHNICAL UNIVERSITY

Rashmi Jaymin Sanchaniya

THE CONCEPT OF PROPERTY REUSE SYSTEM FOR THE DEVELOPMENT OF AGE-FRIENDLY SOCIAL HOUSING IN LATVIA

Doctoral Thesis

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RIGA TECHNICAL UNIVERSITY
Faculty of Engineering Economics and Management

Rashmi Jaymin Sanchaniya
Doctoral Student of the Study Programme "Management Science and Economics"

THE CONCEPT OF PROPERTY REUSE SYSTEM FOR THE DEVELOPMENT OF AGE-FRIENDLY SOCIAL HOUSING IN LATVIA

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Scientific supervisors:
Professor, Dr. oec.
INETA GEIPELE
Associate Professor Dr.sc.ing.
ANTRA KUNDZINA

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ANOTĀCIJA

Promocijas darbā *Īpašuma atkārtotas izmantošanas sistēmas jēdziens vecumam draudzīgu sociālo mājokļu attīstībai Latvijā* tiek pētīta īpašumu atkārtotas izmantošanas sistēmas koncepcija vecumam draudzīga sociālā mājokļa attīstībai Latvijā, risinot valsts aktuālās demogrāfiskās problēmas – sabiedrības novecošanos un mājokļu trūkumu. Pētījuma mērķis ir izstrādāt metodoloģisko ietvaru adaptīvas atkārtotas izmantošanas sistēmas ieviešanai, kas veicina pieejamu, ilgtspējīgu, piekļūstamu un kopienā integrētu vecumam draudzīgu sociālo mājokļu attīstību visā Latvijā.

Pētījumā izmantota jaukto metožu pieeja, apvienojot kvantitatīvo un kvalitatīvo datu vākšanu un analīzi. Tas ietver visaptverošu literatūras pārskatu, ieinteresēto pušu analīzi un gadījumu izpēti, lai identificētu galvenos faktorus, kas ietekmē īpašumu atkārtotas izmantošanas īstenošanas iespējas un veiksmes faktorus vecumam draudzīgu sociālo mājokļu izveidē. Pētījums risina četrus galvenos jautājumus: (1) Kā var izstrādāt un ieviest īpašumu atkārtotas izmantošanas sistēmu, lai veicinātu vecumam draudzīgu sociālo mājokļu attīstību Latvijā? (2) Kādi ir galvenie faktori, kas ietekmē šādas sistēmas īstenošanas iespējas un panākumus? (3) Kā vecāka gadagājuma iedzīvotāju vajadzības var efektīvi integrēt sistēmas izstrādē un ieviešanā? (4) Kā piedāvātā sistēma var veicināt pieejamību, ilgtspēju, energoefektivitāti, piekļūstamību, noturību un kopienas integrāciju?

Promocijas darbs sastāv no ievada, 3 galvenajām nodaļām ar 13 apakšnodaļām, secinājumiem un priekšlikumiem, izmantotās literatūras saraksta un 7 pielikumiem. Promocijas darbā ietverti 48 attēli un 19 tabulas, kā arī atsauces uz 307 literatūras avotu. Promocijas darbā izveidots teorētiskais ietvars, izvērtēti ietekmējošie faktori un piedāvāts metodoloģiskais risinājums īpašumu atkārtotas izmantošanas sistēmas ieviešanai. Galvenie secinājumi uzsver ekonomiskās dzīvotspējas, vides ilgtspējas, sociālās integrācijas, stratēģiskās vietas izvēles, regulatīvā atbalsta un pielāgotu ieviešanas stratēģiju nozīmi veiksmīgos īpašumu atkārtotas izmantošanas projektos vecumam draudzīgam sociālajam mājoklim.

Pētījums piedāvā visaptverošu ietvaru, kas integrē šos faktorus, lai vadītu politikas veidotājus, attīstītājus un ieinteresētās puses ilgtspējīgu un iekļaujošu mājokļu risinājumu radīšanā vecāka gadagājuma cilvēkiem Latvijā. Šī doktora disertācija sniedz ieguldījumu pilsētplānošanas, sociālās ģeogrāfijas un gerontoloģijas jomās, piedāvājot reproducējamu modeli īpašumu adaptīvai atkārtotai izmantošanai vecumam draudzīgu sociālo mājokļu izveidē. Piedāvātais metodoloģiskais ietvars sniedz praktiskus ieteikumus vecāka gadagājuma iedzīvotāju mājokļu vajadzību risināšanai, vienlaikus veicinot ilgtspējīgu pilsētu attīstību Latvijā un, iespējams, līdzīgos kontekstos globālā mērogā.

ABSTRACT

In the Doctoral Thesis *The concept of property reuse system for the development of age-friendly social housing in Latvia*, addressing the country's pressing demographic challenges of an aging population and housing shortages. The research aims to develop a methodological framework for implementing an adaptive reuse system that promotes affordable, sustainable, accessible, and community–integrated age–friendly social housing across Latvia.

The study employs a mixed–methods approach, combining quantitative and qualitative data collection and analysis. It includes a comprehensive literature review, stakeholder analysis, and case studies to identify key factors influencing the feasibility and success of property reuse for age–friendly social housing. The research addresses four main questions: (1) How can a property reuse system be designed and implemented to foster age–friendly social housing development in Latvia? (2) What are the key factors influencing the feasibility and success of such a system? (3) How can the perspectives of the aging population be effectively incorporated into the design and implementation? (4) How can the proposed system contribute to affordability, sustainability, energy efficiency, accessibility, resilience, and community integration?

The Doctoral Thesis consists of an introduction, 3 main chapters with 13 subchapters, conclusions and proposals, a list of references and 8 appendices. The Doctoral Thesis includes 47 figures and 19 tables, as well as references to 307 sources of literature. The Doctoral Thesis provides a theoretical framework, assesses influencing factors, and presents a methodological solution for implementing the property reuse system. The key conclusions are the paramount role of economic feasibility, environmental sustainability, social integration, effective site selection, regulatory encouragement, and tailored implementation plans in ensuring the success of property reuse projects to age-friendly social housing.

The research will provide an inclusive framework, which will offer a decision-making guideline to the policy makers, developers and stakeholders in planning and executing sustainable and inclusive housing solutions to older adults in Latvia. The urban planning, social geography, and gerontology disciplines are advanced by this doctoral thesis, as it introduces a model that can be replicated by other organizations in order to adaptively reuse properties and transform them into social housing where aging individuals can live in. The methodology framework also gives practical recommendations that support the housing needs of an ageing population, at the same time developing sustainable urban development in Latvia and, consequently, in other similar situations at the international level.

PREFACE

Doctoral research is a challenging yet rewarding process that tends to take researchers to unexpected paths of discovery. The choice to focus on the idea of property reuse as an age-friendly social housing in Latvia was made due to the fact that this field, though new, is underutilized. The severe need to develop sustainable housing solutions to the aging population, together with the relative lack of research in the given field, especially in the context of the Latvian region, inspired my input into this valuable discussion.

During the process of creating the Doctoral Thesis, I was exposed to a number of difficulties, the largest being a language barrier since I am not a Latvian speaker. However, these challenges have been addressed with the help of my fellow-worker Leo Janson and my highly respected superiors, Dr. oec. Ineta Geipele and Dr. sc. ing. Antra Kundzina. Their support and advice helped to get through the maze of the Latvian situation and to set the course of this Doctoral Thesis.

I am immensely indebted to Riga Technical University that has given me this golden chance to make my contribution to the sphere of urban planning and social housing. The university support and the resources have played a significant role in ensuring that this research is implemented.

This Doctoral Thesis aims to offer a detailed plan on how the concept of age-friendly social housing can be implemented in Latvia in terms of property reuse systems. I would like to believe that the results and the recommendations provided in this paper will help to inform both the policy and practice not just in Latvia but in other countries facing the same demographic issues and housing demands.

With the ageing of the global population, the necessity to find innovative, sustainable, and inclusive housing solutions gains more and more urgency. I would like to believe that the current Doctoral Thesis will add to the existing discussion and activities of developing more age-friendly communities, which will eventually lead to an improved quality of life of older people in Latvia and other nations.

Rashmi Jaymin Sanchaniya
Riga, 02 March 2026

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INTRODUCTION

Ageing of the population and urbanisation are two issues that have been a major challenge to the urban centres in the world. Due to the increase in life expectancy and the decline in fertility, the percentage of older populations among metropolitan populations is increasing at an enormous pace (OECD, 2024). In Latvia, the demographic change is aggravated by an overall reduction of the population, according to which most of the inhabitants are soon going to be over the age of 65 (European Commission, 2024). The consequences of this change are extremely enormous in various areas of urban life, such as residential areas, healthcare, social services, and community building. One of the major issues is the provision of quality, affordable, and age friendly homes to older people (Lehning, Scharlach & Dal Santo, 2010; McGarry, 2018). However, the housing market in Latvia is not well situated to address this growing demand.

Reusing old buildings can provide a feasible solution to the housing problem, as it provides a set of environmental as well as social advantages (Wilkinson *et al.*, 2014; Sanchaniya & Geipele, 2023). The approach does not only meet the immediate need to have age-friendly accommodation but also enhances sustainable urban development by improving on the available infrastructure as opposed to new-construction works. The idea is in harmony with the ideas of a circular economy, and it allows the efficient utilization of the urban resources without losing the character of communities.

The dissertation studies the possibility of property reuse as a possible answer to the issue of social housing at the age in Latvia. The reuse of abandoned, underutilized, or vacant properties to new purposes has also become a popular trend in recent years as a sustainable approach to urban development. The urban sprawl and declining neighbourhoods caused by the destruction of old ones can be reduced and new housing and other community areas created by rehabilitating old buildings and infrastructure, as opposed to building new structures, at a significantly lower environmental and economic cost. However, the connection of property reuse to age-friendly social housing is a less-researched area, especially in the framework of the shrinking cities, like Riga.

Previous research in adaptive reuse and age-friendly housing has focused on separate aspects of these fields. Studies by Bullen & Love (2011) and Wilkinson *et al.* (2014) have established frameworks for evaluating buildings' potential for adaptive reuse, while research by Van Hoof *et al.* (2021), Luciano *et al.* (2020) and Buffel *et al.* (2019) has examined the requirements for age-friendly housing development. Research on the housing estate issues and urban development trends has been conducted in Latvia by Treija & Bratuškins (2019) and Krišjāne *et al.* (2019), and the issue of housing vulnerability in elderly people has been investigated by Rasnaca and Rezgale-Straidoma (2019). Recently, some studies have started to deal with intergenerational implications of social housing, though in a much more general way of thinking about urban development (Kazak, 2023).

Nevertheless, a gap in the research is still noticeable that would directly focus on the adaptive reuse strategies implementation and integration with the age-friendly social housing development with references to the shrinking cities such as those of Latvia. Although the current literature has analysed property reuse/age-friendly housing separately, few studies have

tested how these two can be integrated to deal with the special needs of ageing populations in post-Soviet settings. Also, there are no detailed methodological systems that will inform the actualization of such integrated solutions considering both the technical side of creating the adaptation and the needs of residents who are of age. The gap in this Doctoral Thesis is that the systematic approach to the implementation of the systems of property reuse as applied to the age-friendly social housing in Latvia is developed.

The doctoral thesis develops a methodological framework of how a property reuse system can be implemented to enhance the creation of affordable, sustainable, accessible and community-based age-friendly social housing in the Latvian community. Through a mixed-methods design, that will incorporate the qualitative and quantitative methods (i.e. interviews and focus groups), the study will clarify the spatial, social, financial, and institutional factors influencing the viability and effectiveness of the said system. The research will aim to ensure that the solutions proposed are technically and economically feasible and also aligned to the actual needs and preferences of older adults through the involvement of key stakeholders in the policy formulation process, which include policy makers, urban planners, housing developers and most importantly, the ageing population.

The research is highly **topical** due to Latvia's unique demographic challenges, which are characterised by a declining birth rate reaching a 100-year low of 14,490 births in 2023 or 7.7 births per 1,000 inhabitants (LSM.lv, 2024a) and an aging population, with the median age increasing by 1.8 years to 44 years between 2013-2023 and an old-age dependency ratio of 33.1% (LSM.lv, 2024b). This trend is leading to a situation in which the majority of the population will soon be elderly. However, there is a significant gap in the provision of age-friendly social housing, particularly in Latvia. The research addresses this critical issue by proposing a novel approach that takes advantage of underused land and properties for the development of age-friendly social housing. Developing sustainable technologies that focus on affordability, sustainability and energy efficiency, the research aligns with global trends towards sustainable urban development and the increasing recognition of the need for age-friendly communities. Furthermore, the research is timely, as it provides a proactive solution to an impending social challenge rather than waiting for the crisis to fully manifest itself.

Research Questions:

1. How can a property reuse system be designed and implemented to foster the development of age-friendly social housing in Latvia?
2. What are the key factors influencing the feasibility and success of a property reuse system for age-friendly social housing in Latvia?
3. How can the perspectives of the ageing population (65+ years) be effectively incorporated into the design and implementation of age-friendly social housing developments?
4. How can the proposed property reuse system contribute to affordability, sustainability, energy efficiency, accessibility, resilience and community integration of age-friendly social housing in Latvia?

The aim of the Doctoral Thesis is to develop a methodological solution for implementing a property reuse system that promotes the development of affordable,

sustainable, accessible and community-integrated age-friendly social housing integrated with the community in Latvia, thus addressing the housing needs of the growing elderly population.

This aim guides the research through three interconnected phases: theoretical framework development, stakeholder-based assessment of influencing factors, and development of an implementation methodology.

To achieve the aim, the following tasks are set:

Tasks of the Doctoral Thesis

1. Analyse the current state of the social housing market in Latvia, focusing on the needs of the ageing population
2. Examine the concept of property reuse and its potential benefits for social housing development.
3. Identify and assess the key factors influencing the feasibility of a property reuse system for age-friendly social housing
4. Develop assessment criteria to identify suitable properties for reuse in age-friendly social housing
5. Propose design and planning considerations for age-friendly housing developments that incorporate the perspectives of the ageing population
6. Formulate implementation strategies, including stakeholder participation and regulatory compliance
7. Develop monitoring and evaluation methods to assess the success and impact of the property reuse system
8. Propose strategies for the widespread adoption and sustainability of the property reuse system in Latvia

The Hypothesis of the Research

Implementing a property reuse system for age-friendly social housing in Latvia will significantly enhance housing affordability, sustainability and community integration for ageing population, while promoting efficient land use and urban regeneration compared to traditional development approaches.

Thesis for defence

1. Implementation of adaptive property reuse systems in Latvia highlights a significant positive impact on the quality and availability of age-friendly social housing, and thus, creates significant positive impact on the residents aged 65 years and above.
2. The proposed methodological framework for property reuse creates measurable improvements in housing affordability, sustainability, and accessibility while promoting community integration among older adults.
3. Stakeholder engagement, particularly the involvement of the aging population in design and planning processes, leads to demonstrably higher levels of resident satisfaction and social cohesion in age-friendly housing developments.
4. The implementation of adaptive property reuse systems in Latvia contributes to more efficient urban land use and enhanced neighbourhood revitalization compared to traditional development approaches.

5. The study's mixed-methods approach provides empirically validated strategies for implementing successful property reuse systems that address both current housing needs and future demographic challenges.

Novelty of the Doctoral Thesis

Doctoral Thesis presents several innovative contributions to the fields of social geography, urban planning and gerontology, which are listed below.

1. *Development of a context–specific methodological framework (Chapter 3):* The methodology has created that can be used in the future in the age-friendly social housing, but in the peculiarities of the demographic situation of Latvia, addressing a gap not previously filled in Latvian housing research. It is a new framework with its approach considering aspects of affordability, sustainability, energy efficiency, accessibility, resilience and community integration.
2. *Novel framework for property reuse in demographically declining regions (Chapter 2 and 3):* Property reuse for age-friendly social housing works out an evidence-based strategy on property identification and reuse in areas with a declining and ageing population. The framework particularly responds to the issues of changing existing properties to the requirements of changing demographics in Latvia, a strategy that has not been previously developed in the Baltic context.
3. *First unified framework combining affordability, sustainability, accessibility, and community wellbeing for Latvian age-friendly housing (Chapter 1 and 3):* Prior to this study, no unified framework existed in Latvian or Baltic housing literature that simultaneously addressed affordability, sustainability, accessibility, and community wellbeing, concepts that are often treated in isolation, into a single comprehensive approach to age-friendly housing development for the ageing population.
4. *Context–specific empirical contributions (Chapter 2):* Empirical information collected on the implementation and impact of age-friendly housing property reuse in Latvia fills a gap not previously addressed in Latvian or comparable Baltic literature and provides information that can inform policy makers and practice in comparable situations.
5. *Development of a systematic assessment framework for demographic transition in Latvia (Chapter 2 and 3):* The new framework to the issue of property reuse, which is specifically targeted for the decline in population. This contribution provides a systematic approach to solving the housing requirement in areas that undergo ageing and decline, which did not previously exist in the Latvian policy or academic context.

The object of the research is the social housing market in Latvia.

The subject of the research is the property reuse system to develop age-friendly social housing in Latvia.

The theoretical and methodological foundation of the Doctoral Thesis is formed by researchers and organisations: Peter A. Bullen, Peter E.D. Love, Craig Langston, Li-Yin Shen, Lukas Veldpaus, John Pendlebury, Ineta Geipele, Antra Kundzina, Rashmi Jaymin Sanchaniya, David B. Hess, Tiit Tammaru, Sandra Treija, Uģis Bratuškins, Zaiga Krišjāne, Ligita Rasnaca, Elina Rezgale-Straidoma, Joost van Hoof, Hannah R. Marston, Jan K. Kazak, Tine Buffel, Chris Phillipson, Paul McGarry, Sarah Handler, M.P.J. Aarts, A.C. Westerlaken, Elena Abolina,

Valda A. Luzadis, Ibrahim E. Aigwi, Tutu Egbelakin, John Ingham, Imamul Arief, Hafiz Thahir, Elita Arika, Gunita Mazure, Sara Wilkinson, Ewelina J. Cilliers, Aušra Z. Aydemir, Tugce Akın, Harold Kerzner, Despo Parpas, Andreas Savvides, Fengmei Meng, Yaming Zhi, Yiping Pang, Terry Fulmer, Jason Peine, Richard Oswald, Hans-Werner Wahl, Klaus Gäng, Catherine A. Ottoni, Joanie Sims-Gould, Meghan Winters, M.M. Boerenfijn, L. Schellen, V. Soebarto, Leo W. Baas, F. Boyle, C. Thomson, Walter R. Stahel, Barry Commoner, Francesca Dell'Ovo, Federico Dell'Anna, Rachele Simonelli, Letizia Sdino, James Douglas, Lucia Della Spina, John T. Lyle, Virginia Braun, Victoria Clarke, Robert K. Yin, Robert E. Stake, World Health Organization (WHO), Organisation for Economic Co-operation and Development (OECD), European Commission, United Nations (UN), Ellen MacArthur Foundation, Centre for Ageing Better, Central Statistical Bureau of Latvia, Ministry of Economics of Latvia, Ministry of Foreign Affairs of Latvia, Ministry of Welfare of Latvia, Riga Technical University, CECODHAS Housing Europe, Institute for the Study of Labor, American Association of Retired Persons (AARP), National Association of Area Agencies on Aging, Age Platform Europe, World Bank, International Federation on Ageing, and others.

The literature source used in the Doctoral Thesis includes fundamental scientific studies and monographs on adaptive reuse and social housing, scientific publications in peer-reviewed journals and conference proceedings, sources from scientific databases including Scopus, Web of Science, ScienceDirect, ProQuest, JSTOR, and Google Scholar, laws and regulatory documents of Latvia and the European Union, policy planning documents, European Commission directives, statistical data from Eurostat and the Central Statistical Bureau of Latvia, international organisation reports including WHO and OECD publications, property reuse case studies, and the author's own research findings.

The research methods used in the Doctoral Thesis include a comprehensive review of the literature, analysis of scientific literature on property reuse and age-friendly housing, mixed methods research design combining quantitative and qualitative approaches, structured questionnaires for stakeholder surveys, statistical analysis including descriptive statistics, correlation analysis and multiple regression analysis, thematic analysis of qualitative data, semi-structured interviews with key stakeholders, case study analysis, triangulation of data sources and methods, expert interviews, document analysis, exploratory factor analysis, cluster analysis for stakeholder perspectives, systematic evaluation of implementation factors, and focus group discussions. The research methodology incorporates both primary data collection through surveys and interviews, and secondary data analysis of policy documents and statistical databases to provide a comprehensive understanding of the implementation of the property reuse system for age-friendly social housing in Latvia.

Artificial Intelligence (AI) tools: In writing this thesis, ChatGPT (OpenAI) was used to paraphrase sentences and enhance logical structure and cohesiveness between chapters, whereas Grammarly was used to fix grammar and spelling errors. All these AI tools were used in the editorial productivity of the language and structure; all the research design, content, analysis, and conclusions are my original work.

The scientific significance of the research

This thesis focuses on the issue of sustainable social housing by continuing the discussion with the question of adaptive property-reuse systems adapted to the Latvian context.

The hypothesis states that the use of a system of property-reuse will significantly enhance the access to as well as the quality of age friendly social housing in Latvia. This method offers the prospect of critical reflection on the main ingredients of the formation of social housing, where sustainability, affordability, and inclusivity are under specific focus by analyzing the perceptions of stakeholders, such as the estate agents, real-estate enterprises, policymakers, and the ageing populace. This project includes the development of a conceptual framework that would incorporate the concepts of social sustainability, including social equity, social infrastructure, social capital, and social cohesion, hence responding to the pressing demographic issues and housing demands of the ageing population in Latvia.

This doctoral dissertation has a scientific importance due to its multifaceted contributions to theory, methodology and practice in the fields of social geography, urban planning, and gerontology. Theoretically, it improves the learning of the overlaps between property reuse, age-friendly housing and sustainable urban development, especially in ageing and shrinking populations. It challanges and goes beyond existing paradigms by incorporating often separately considered ideas of affordability, sustainability, accessibility, and community wellbeing into a logical structure.

Methodologically, the thesis contributes to the use of mixed methods research in housing research. This methodology using quantitative and qualitative methods (questionnaires and interviews) illustrates how technologies can be effectively integrated with human-focused approaches into creating deeper and more sophisticated results. The given methodological innovation has a wide scope of application, not only within the field of housing research but also within any other area that tries to understand the dimensions of social phenomena.

Empirically, the thesis provides vital information on the application and impacts of property-reuse solutions in the ageing populations and declining cities setting. With the world population showing a global trend of ageing, these empirical findings are very relevant in many countries, including those that are facing similar demographic changes, in terms of housing policies and urban planning strategies.

Moreover, the thesis promotes interdisciplinary discourse in that it brings together the urban planning emphasis on sustainable and habitable cities with interest in the wellbeing of older adults. This interdisciplinary fertilization of thought not only enhances each discipline but also leads to a more integrated, people-oriented thinking when tackling complicated problems in society.

Finally, the practical importance of the thesis cannot be disputed. It offers a concrete channel of improving the quality of life of ageing populations and at the same time, it offers an avenue of developing age-friendly social housing by reusing properties, hence it provides a replicable methodological framework to develop age-friendly social housing. This practical relevance raises the thesis to something more than an academic exercise and makes it a possible impulse towards a beneficial social change.

Practical Application of Research

The evidence and methodological concept proposed in this doctoral thesis have strong practical implications to the fulfilment of the housing requirements of the ageing population in Latvia and other countries. First, the study will provide a strategic roadmap to be implemented by the policymakers, urban planners, and housing providers to implement a property reuse

system that will suit the age-friendly social housing. In explaining the standards to be used to come up with the right properties, design, and planning issues, and implementation policies, the doctoral thesis offers a substantive, evidence-based tool to stakeholders who aim at initiating affordable, accessible, and sustainable housing solutions to older adults.

Furthermore, research has the potential to shape policy decisions at various levels of government. The insights gained from the assessment of the current social housing market in Latvia and the analysis of the factors influencing the feasibility of property reuse can help policymakers develop more effective and targeted housing policies. The proposed methodological framework can also serve as a basis for developing national or municipal programmes for the development of age-friendly housing, ensuring that the needs of the older population are prioritised in urban planning and development efforts.

In addition, the real-world experience provided by this Doctoral Thesis can be applied to other countries that face similar demographic and urban issues, providing a roadmap to the development of the sustainable and age-friendly housing solutions in different settings. This thesis is effective in closing the gap between research and practice so that cities can be developed into a place that is more sensible, livable, and equitable to all age groups.

Limitations

Even though this Doctoral Thesis contributes greatly to the field of social geography, urban planning, and gerontology, its drawbacks have to be mentioned. To start with, the empirical area is narrow and restricted to Latvia and even more so, the metropolis of Riga. Although the findings have a potential to be applicable in other settings than this locality, one should consider the specific socioeconomic, political and cultural context of Latvia when generalizing the findings to the rest of the settings.

Second, the study relies heavily on the cooperation and the ability of different stakeholders such as the ageing population to take part in interviews and focus-group discussions. Even though steps will be taken to ensure that a heterogeneous and representative sample is achieved, there is a possibility that the voluntary approach to the sample will create bias.

Third, the research is cross–sectional in nature, providing a snapshot of the current situation and perspectives. However, the needs and preferences of the ageing population, as well as socioeconomic and policy contexts, may evolve. Longitudinal studies are needed to fully understand the long–term impacts and sustainability of the proposed property reuse system.

Fourth, although the research aims to be comprehensive, it cannot exhaustively address all aspects of age-friendly housing and property reuse. For example, the financial viability and investment models for property reuse are not explored in depth, nor are the technical engineering aspects of building renovations for accessibility.

Finally, the research proposes a methodological framework that has been formally validated through a structured three-round Delphi expert evaluation, with pilot implementation designated as a mandatory prerequisite to full-scale rollout based on expert consensus. However, the actual piloting and full-scale implementation have not yet been conducted. Further research is needed to execute the pilot projects, monitor implementation, and assess the

real-world impact on the wellbeing of the ageing population and the sustainability of urban development in Latvia.

Despite these limitations, the research provides a valuable foundation for understanding the potential of property reuse for the development of age-friendly social housing and opens avenues for future research and practical applications in Latvia and beyond.

Scientific publications

Approbation of Doctoral Thesis in scientific journal articles:

1. **Sanchaniya, R. J.**, Ineta, G., Antra, K., & Jurgita, Č. (2026). Age-friendly housing models and frameworks: A systematic review. Real Estate Management and Valuation, 34(2), 45-59. https://doi.org/10.2478/remav-2026-0014
2. **Sanchaniya, R. J.**, Cerneckiene, J., Geipele, I., Kundzina, A., Jansons, L., Pudzis, E., & Drukis, P. (2025). Determinants of Property Reuse for Age-Friendly Social Housing Development in Shrinking and Ageing Cities: Evidence from Latvia. Land, 14(12), 2375. https://doi.org/10.3390/land14122375
3. **Sanchaniya, R. J.**, Geipele, I., Kundziņa, A., & Černeckienė, J. (2025). Key factors and strategies for implementing property reuse systems in age-friendly social housing development. Architecture and Urban Planning / Arhitektūra un pilsētplānošana, 21(1), 139-150. https://doi.org/10.2478/aup-2025-0011
4. **Sanchaniya, R. J.**, Černeckienė, J., Patel, S., & Kundziņa, A. (2025). Demographic trends and evolving housing needs in Latvia: Implications for social housing policy. Baltic Journal of Real Estate Economics and Construction Management, 13 (1), 45-51. https://doi.org/10.2478/bjreecm-2025-0004
5. **Sanchaniya, R. J.**, Černeckienė, J., Gudumasu, S., and Kundziņa, A. (2025). Adaptive property reuse for social housing: Benefits, challenges, and best practices. Baltic Journal of Real Estate Economics and Construction Management, 13 (1), 1-9. https://doi.org/10.2478/bjreecm-2025-0001
6. Dobariya, S., **Sanchaniya, R. J.**, & Kundziņa, A. (2024). Regulatory and policy framework for social housing in Latvia: Current state and future directions. Baltic Journal of Real Estate Economics and Construction Management, 12(1), 276–284. https://doi.org/10.2478/bjreecm–2024–0018
7. Oza, B., **Sanchaniya, R. J.**, Kundziņa, A., & Lapuķe, S. (2024). Challenges and barriers to property reuse for social housing: A comprehensive review. Baltic Journal of Real Estate Economics and Construction Management, 12(1), 210–222. https://doi.org/10.2478/bjreecm–2024–0014
8. **Sanchaniya, R. J.**, Sharma, M., & Kundziņa, A. (2024). Social housing models in Latvia and a comparative analysis of the EU member states. Baltic Journal of Real Estate Economics and Construction Management, 12(1), 201–209. https://doi.org/10.2478/bjreecm–2024–0013

Other journal articles on the topic that are not included in Doctoral Thesis:

9. Welikala, D., Lapuķe, S., Kundziņa, A., Sharma, M., & **Sanchaniya, R. J.** (2025). Energy efficiency trend in the Latvian residential property market. Baltic Journal of Real Estate

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Approbation and Practical Application of Research Results

The key results of the Doctoral Thesis were presented to housing policy stakeholders at the Ministry of Economics of the Republic of Latvia on 19 March 2026 (see Appendix 6). This event constitutes a stakeholder consultation in which participants recognised the Framework as useful and potentially applicable in housing policy development. The formal empirical expert-based assessment of the framework was concurrently conducted through a structured three-round Delphi expert evaluation involving 15 specialists from the state administration institutions, real estate and academic domains (subchapter 3.6; Appendix 7 & 8).

The Volume and Content of the Doctoral Thesis

The structure of this doctoral thesis is divided into three separate chapters that will discuss a significant aspect of adaptive property reuse with regard to the design of an age-friendly social housing in Latvia. Chapter 1 lays the theoretical background by defining adaptive property reuse and putting it into the context of social housing. It provides an in-depth introduction to social housing, which explains why it is an important aspect of providing affordable housing and addressing the needs of the society. Comparison of social housing models in different national settings encapsulate different approaches to the European Union. This chapter goes on to examine the present Latvian situation with the demographic pressures, policy-environmental limitations and the need to have ageing-friendly solutions to housing. Lastly, it states the principles and benefits of reusing property, summarises the case studies of other jurisdictions about it empirically, and outlines the challenges that come with its implementation.

Chapter 2 explores the factors that define the viability of re-allocating former property stocks to age-friendly social housing. A stakeholder analysis predetermines the positions of state officials, policymakers, developers, and the ageing population and analyses their input in the reuse projects. Some of the drivers that are examined in the chapter are social, economic, and environmental like the demographic profile of older citizens, community engagement, investment costs and funding channels, and sustainability imperatives. It also puts to test barriers like regulatory barriers, legal requirements, technical huddles and social perceptions. To assess these variables in a systematic manner, chapter 2 suggests one mixed-method paradigm, in which an analysis of secondary data, data-gathering by primary methods and development of a rigorous analytical approach are included.

Chapter 3 provides a practical model of implementation of a property reuse system in the framework of social housing development. It outlines an assessment system according to which the properties of candidates are chosen based on site-specific, environmental, and socio-economic requirements that involve a combination of a feasibility assessment. The design and planning considerations are made based on the universal design principles, the provisions of accessibility, the allocation of community space, and neighbourhood integration. The foreground strategies include the use of implementation to liaise with stakeholders, follow regulatory policies, project management and reduction of risks. The processes of monitoring and evaluation are also outlined, such as key performance indicators, data-gathering procedures, analysis processes, and continuous improvement. The chapter is concluded by analyzing the future opportunities of scaling, policy enabling, regulatory enabling mechanisms, and financial instruments that may encourage a wider adoption and long-term sustainability of property reuse programs. Final subchapter presents a three-round Delphi expert validation of the methodological framework, conducted with 15 specialists from state administration institutions, real estate, and academic domains.

Finally, the results of the empirical research will be integrated with the purpose to work out a methodological solution to operationalise adaptive property reuse systems that will facilitate the establishment of age-friendly social housing in Latvia. This will create long term solutions to the development of age friendly homes by adaptive re-use of the already available property.

The research methodology is a combination of three interrelated phases that will systematically answer the research questions and objectives. Fig. 1 depicts how one stage is based on the other in developing a holistic framework of applying the adaptive reuse of property in the social housing sector in Latvia. This systematic process will make sure that the theoretical premises are used to determine the relevance of factors, which subsequently will be used to design practical implementation plans.

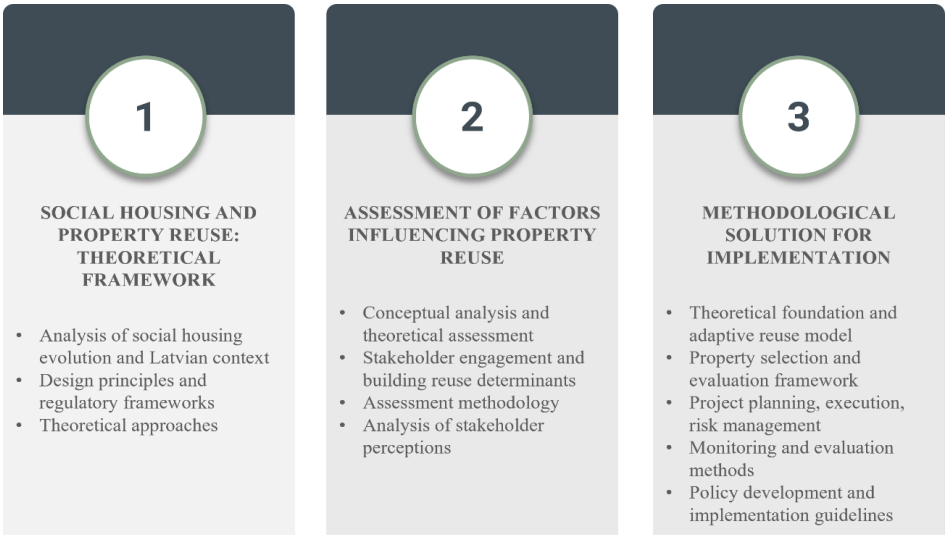

Fig. 1. The structure and methodological framework of the Doctoral Thesis (developed by the author).

The figure 1 illustrates the logical progression and interconnections between the three main chapters of the Doctoral Thesis, demonstrating how each stage builds on previous findings to develop a comprehensive methodological solution.

1. SOCIAL HOUSING AND PROPERTY REUSE: THEORETICAL FRAMEWORK

The chapter forms the theoretical basis of adaptive reuse of property in development of age-friendly social housing in Latvia. It starts by reviewing the meaning and importance of social housing and analyzing various different models that are used in different countries in particular, the European Union. The discourse then further focuses on the current social housing situation in Latvia, which defines the imminent need to provide age-friendly housing opportunities with regard to shifting demographics. The chapter subsequently examines the concepts contained in the foundation of property reuse, its future merits, and relevant case studies in other jurisdictions. Having condensed such vital aspects, the chapter attempts to provide a unified structure through which one may comprehend the intersectional nature of the social housing, property reusing, and unique problems that face the Latvia ageing population.

1.1. Social Housing and Property Reuse Evolution: Contemporary Context and Latvian Perspective

It is possible to establish several types of social housing in many developed countries. Social housing is usually referred to as residential housing that is owned and operated by social landlords (Sisson & Rogers, 2020). These homes can consist of state-owned houses, known commonly as public housing, or units of nonprofit organisations such as housing associations. Although there is no universally acceptable definition of social housing at the moment, it is generally used to provide affordable housing to people who cannot afford their housing demands in the mainstream market. As a result, social housing aims at offering affordable housing in the long-term to specific groups of people with the main focus being on accessibility and affordability rather than maximizing profits (Kromhout & van Ham, 2012).

Social housing is considered to be a key type of infrastructure (Maclennan, Ong, & Wood, 2018). The rationale of this conceptualisation is that, just like other forms of infrastructure, social housing is a capital investment that is fundamental in the delivery of the simplest services. Social housing has various functions in the society beyond providing a safety net to the disadvantaged groups in society. It is associated with larger economic and social advantages, such as improved health, wellbeing, and educational achievement, and communal integration. The report argues that the definition of social housing as the infrastructure may attract the interest of the private investment and, therefore, strengthening the role of the latter in the economic progress and social inclusion (Maclennan *et al.*, 2019).

Social housing is a complex industry in the European Union (EU), characterized by a mission to promote common good, the aim of augmenting the provision of affordable housing and a tendency to identify target groups based on the socio- economic status or vulnerability (Institute for the Study of Labor, Braga & Palvarini, 2013). Regardless of these similarities, a standardized definition of social housing in the EU member states has eluded everyone (Poggio & Whitehead, 2017). The countries are given their own terminology and standards which are based on different viewpoints and policy orientation. As an example, Austria calls it Limited-

Profit Housing or People Housing, but Denmark calls it Common Housing or Not-for-Profit Housing (Koessl, 2022; Poggio & Whitehead, 2017).

There are four types of social housing models in the EU: universalistic, targeted, generalist, and residual (Institute for the Study of Labor, Braga & Palvarini, 2013). Universalistic models, in turn, consider housing to be one of the key social duties, where decent quality housing is provided to the whole population at a reasonable cost (Poggio & Whitehead, 2017). Targeted models, in turn, are based on the market mechanism of housing allocation and aim to meet the demand only which is not fulfilled by the market (Braga & Palvarini, 2013). In targeted models, income levels are put at the forefront by generalist strategies, whereas specific vulnerability indicators are put at the forefront by residual models (Poggio & Whitehead, 2017).

The 2008 economic crisis greatly affected the social housing sector worsening the socio-economic background of most households and significantly stimulating the demand in affordable housing. In the course of this, social housing waiting lists in the EU increased. First, nations reacted by increasing social housing spending by the state as part of recovery programmes. But in the course of time, financial limitations triggered budget cuts in social housing in many states.

The new tendencies in the social housing in the EU involve an increased focus on the most vulnerable groups as a reaction to economic strains and convergence in Europe (Poggio & Whitehead, 2017). Indicatively, the Netherlands has enacted a ceiling on income to be eligible to live in social housing. In addition, the provision has changed, as social housing has moved to the privatisation stage whereby more and more private organisations are being recognised as providers. Novel approaches have also been embraced by the countries to control the increased demand and limited resources, including intergenerational social housing development in the Netherlands and energy-efficient social housing developments in the United Kingdom.

The social housing sector in the EU faces severe challenges due to the clash of interests (Poggio & Whitehead, 2017). There exists the need to provide decent and affordable housing to every citizen and at the same time, provide open competition amongst market players. The narrow interpretation of social housing by the European Commission, which is only aimed at the disadvantaged groups, has raised a lot of controversy (Institute for the Study of Labor, Braga & Palvarini, 2013). The definition is seen to be absolutely insufficient when it comes to universalistic models that seek to create socially mixed neighbourhoods.

The discussion on whether there is a need to come up with a common definition of social housing at EU level is still going on. The reconciliation of divergent welfare traditions would be easier with a more general definition, which would also help to uphold sectoral stability without sacrificing the goals of social inclusion. However, the national model heterogeneity and the necessity of democratic consultation of the member states make this task difficult.

Social Housing in Latvia: Current Landscape and Challenges

In the case of the more vulnerable segment of society, namely older people with limited financial resources, the social housing sector has observed the need to design and implement solutions suitable for this target group (Boyle & Thomson, 2013). Social housing has become an integral part of policies and strategies; consequently, investments in social housing for older adults have also become part of a wider strategy for cities and communities oriented towards

age–friendly development (Kazak, 2023). This movement evolved as a result of several policy initiatives that the World Health Organization (WHO) initiated in the early 2000s (van Hoof *et al.*, 2021; WHO, 2007). However, research highlights the inadequacy of social housing in Latvia, particularly in terms of meeting the needs of vulnerable groups such as seniors (Rasnaca & Rezgale–Straidoma, 2019). Social housing policies are insufficiently targeted, resulting in high housing costs and poor living conditions for the elderly.

Social housing across the EU is characterised by four dimensions: tenure, provider of the service, beneficiaries, and funding arrangements. Tenure typically involves rental housing; however, in some countries, social housing is also available for purchase or through shared ownership schemes. Providers of social housing include local authorities, public companies, non–profit organisations, cooperatives, and private developers. The role of these stakeholders has evolved over time, with increasing involvement from private and non–profit sectors due to state subsidies and financing aids (Sanchaniya *et al.,* 2024).

There is significant geographical variation in the potential beneficiaries of social housing across the EU. In some countries, social housing is a universal service available to all citizens, with the public sector enhancing social mix and regulating the market. In contrast, other countries target social housing to those who cannot afford market rates, often utilising means–tested income thresholds or prioritising vulnerable groups such as the elderly, disabled, and large families. Funding for social housing varies widely, from public financing to market–raised credit, with additional support through public grants, loans, and subsidies. Countries such as Austria, Italy, and Luxembourg also offer public land at discounted prices and tax incentives to support social housing providers.

Figure 1.1 categorises EU–27 member states according to the four dimensions discussed above. Despite some country–specific differences, there is a common element of what constitutes social housing across the EU, namely its mission. An important aspect of the social housing sector is its proportion relative to the total housing stock. This can be categorised into four sizes: large (over 19%), medium (11–19%), small (5–10%), and very small (0–4%).

ALLOCATION CRITERIA		SIZE			
		Large (> 19%)	***Medium (11-19%)***	***Small (5-10%)***	***Very small (0-5%)***
Universalistic		Netherlands, Denmark, Sweden			
Targeted	*Generalist*	Austria	Czech, France, Finland, Poland	Belgium, Germany, Italy	Slovenia, Luxemburg, Greece
	Residual	UK	France	Belgium, Estonia, Germany, Ireland, Malta	Bulgaria, Cyprus, Hungary, Latvia, Lithuania, Spain

Figure 1.1 Social housing models in the EU (developed by the author based on (Sanchaniya *et al.,* 2024).

The social housing models observed across Europe provide important context for understanding Latvia's unique position. By comparing Latvia's approach with other EU member states, we can better identify both challenges and opportunities for improvement in the national system.

Central and Eastern European countries, including Latvia, have experienced massive housing privatisation since the 1990s, resulting in minimal public housing stock. Latvia, specifically, has very little social housing compared to other EU countries. Unlike Western Europe, where social housing models vary and include universalistic and targeted approaches, Latvia, like many Eastern countries, struggles with both social and private rental sectors being small due to the high rate of home ownership following privatisation.

Eligibility for social housing in the EU is often based on income thresholds and specific vulnerabilities, with some countries prioritising groups such as the elderly, disabled, or large families. Funding for social housing varies, with some countries relying heavily on public money and others on market–raised credit. Therefore, compared to other European countries, the amount of social housing in Latvia is very low (Figure 1.2).

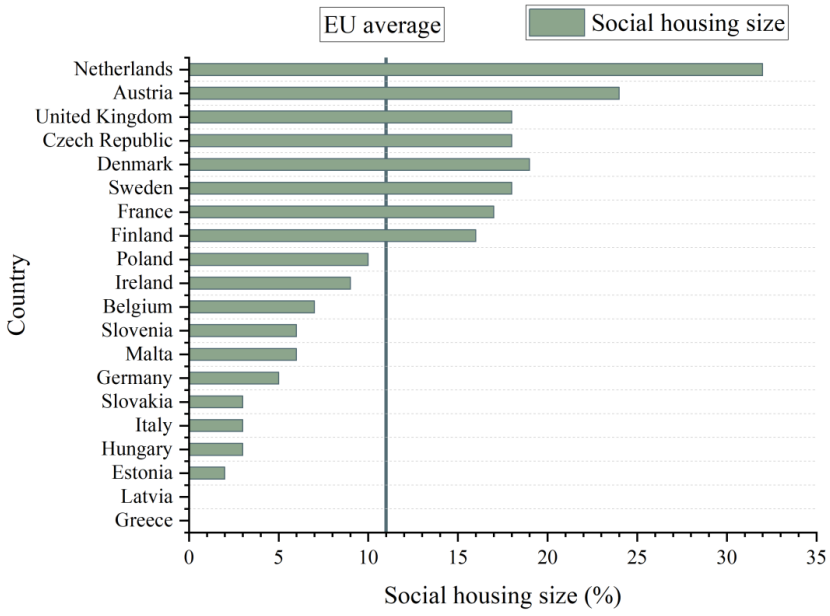

Figure 1.2 Social housing share of Latvia compared other EU member states (developed by the author based on Sanchaniya *et al.,* 2024).

Figure 1.2 demonstrates that the Netherlands, Austria, and Denmark have the highest percentages of social rental stock, with 32%, 23%, and 19% respectively, compared to the EU average of 8.3%. In contrast, Eastern and Mediterranean countries have less than 5% social housing. In particular, Latvia, along with Greece, has one of the lowest incidences of social housing, highlighting significant disparities in social housing provision across the EU.

The social housing landscape in Latvia is significantly influenced by demographic trends and housing needs. Latvia, like many other Eastern European countries, experienced substantial demographic shifts following the collapse of the Soviet Union. These shifts include a decline in population due to low birth rates (Table 1.1) which, in turn, have impacted housing and the demand for social housing.

Latvia's population is projected to fall from just under 1.9 million to approximately 1 million by the end of the century. Eurostat projections indicate a drop below 1.5 million by 2045 and a further decline to 1.16 million by 2100. Latvia could become the least populous Baltic state, with Estonia and Lithuania expected to have higher populations (LSM.lv., 2023).

According to a World Bank report, the population is anticipated to decrease significantly from 2 million in 2012 to 1.6 million by 2030, reflecting a reduction of 19.9% (Levin & Sinnott, 2015). This demographic shift also indicates a decline in the working–age population (15–64) from 67.2% in 2012 to 60.4% by 2030, highlighting the need for policy adaptations to address workforce challenges and ageing population support (Table 1.1).

Table 1.1

Latvian population decline and working–age adults (developed by the author based on Sanchaniya *et al.,* 2024)

Age Group	**2012 (%)**	**2030 (%)**
0–14	14.3	14.2
15–49	47.1	40.1
50+	38.6	45.6
Working age (aged 15–64)	67.2	60.4
50+ share of working–age population	29.8	33.6

The Latvian population is projected to decrease significantly, from 1,885 thousand in 2022 to 1,257 thousand in 2070, a decline of 628 thousand people (Central Statistical Bureau of Latvia, 2024). The bureau also reported that in 2023, Latvia's population decreased by 11.1 thousand, a 0.6% decline, bringing the total population to 1.885 million. Moreover, there was also a decrease in birth rate. In 2023, 14,490 children were born, a 9.2% decrease from 2022 and a 16.8% decrease from 2021. This is the lowest birth rate recorded in the past hundred years (Central Statistical Bureau of Latvia, 2024).

The proportion of the very old (aged 80+) within the elderly population (65+) will increase, indicating significant ageing among the elderly (Ministry of Welfare of Latvia, 2023). The 2021 census had earlier shown that Latvia had one of the largest population declines in the EU, at –9% over a decade (LSM.lv., 2023).

According to a Eurostat report, Latvia's median age increased by 1.8 years from 2013 to 2023, reaching 44 years, reflecting the country's ageing population (LSM.lv, 2024, February 16). Another trend is high emigration rates (Figure 1.3).

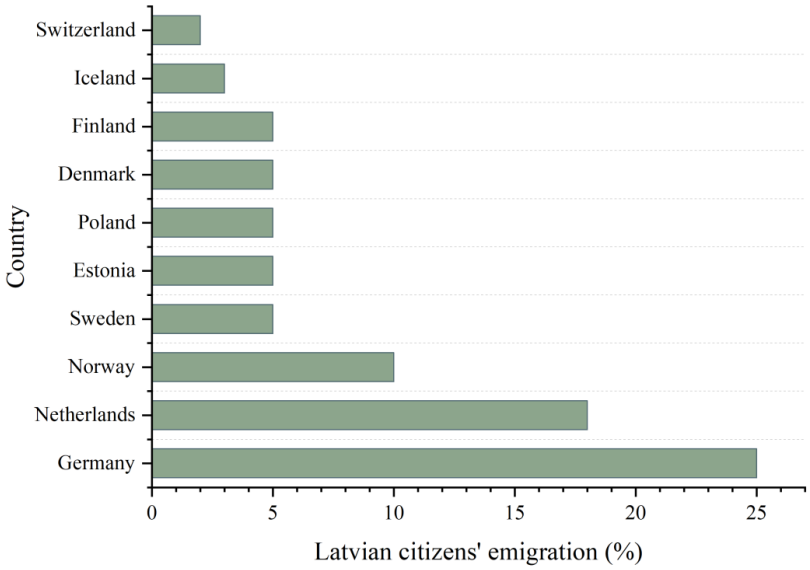

Figure 1.3 Emigration of Latvian citizens to OECD countries (developed by the author based on OECD, 2023).

Another trend is the increasing number of immigrants and ethnic minorities in Latvia. After the restoration of Latvia's statehood in 1991, the rights of national minorities, including citizenship and the naturalisation and integration of Soviet–era immigrants, were renewed. Society integration became a top state priority. Latvia ratified major international human rights instruments and consulted with international experts, aligning its legislation with global standards (Ministry of Foreign Affairs, 2024). The Latvian Constitution ensures that national minorities can preserve and develop their language and cultural identity. The 1991 law mandates that state institutions promote and financially support the development of education, language, and culture for national and ethnic groups in Latvia (Ministry of Foreign Affairs, 2024).

Currently, 24% of Latvia's population are ethnic Russians, whilst 11% comprises representatives of other nationalities, such as Ukrainians, Belarusians, Poles, Lithuanians, Jews, and Roma. Additionally, 3% of the population have chosen not to indicate their nationality. Of the ethnic Russians, 67% hold Latvian citizenship. In Riga, over 50% of the population consists of ethnic minorities, including Russians, Belarusians, and Ukrainians, who predominantly speak Russian (Krišjāne *et al.*, 2019; Treija & Bratuškins, 2019). Figure 1.4 shows the immigrants of different nationalities in Latvia from 2011–20 and 2021.

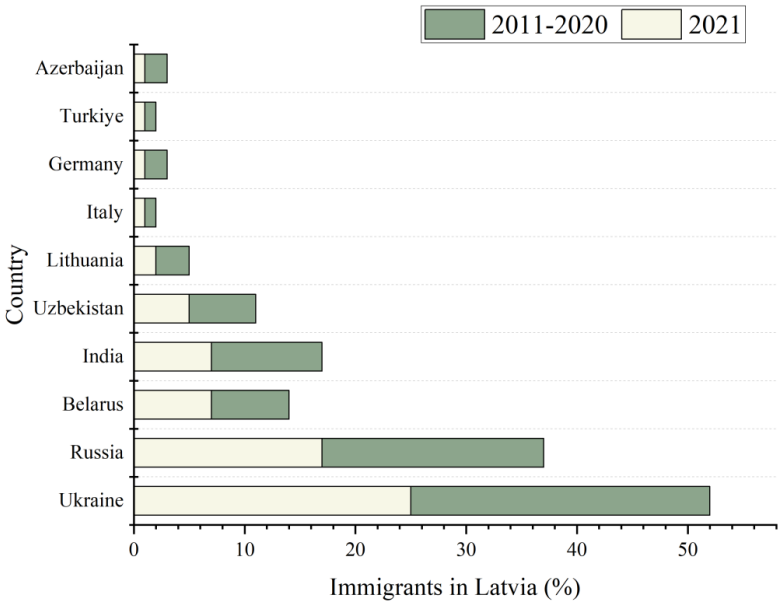

Figure 1.4 Immigrants in Latvia (developed by the author based on Official Statistical Portal of Latvia, 2024).

This demographic change has created distinct housing needs, particularly for affordable and social housing. This is particularly evident in the increasing number of single senior households (65+) in both urban and rural areas (Rasnaca & Rezgale–Straidoma, 2019).

Existing Social Housing Stock and Policies

The social housing stock in Latvia is characterised by large Soviet–era housing estates, which represent a significant part of the housing infrastructure. These estates, constructed from the 1950s to the 1980s, were initially built to provide affordable housing under socialist policies but now face challenges related to ageing infrastructure and the need for modernisation (Treija & Bratuškins, 2019; Krišjāne *et al.*, 2019).

Latvia underwent a great deal of economic and political restructuring after gaining independence, reaching the privatisation of a large fraction of housing stock. The further reforms that were implemented after 1991, including the process of denationalisation and privatisation, changed the dynamics of the property ownership, but, simultaneously, they also created complex management and maintenance issues that can be attributed to the discontinuous ownership structure (Treija & Bratuškins, 2019; Krišjane *et al.*, 2019). The privatisation scheme helped tenants to own their apartments resulting in an increased rate of possession of private homes. However, this developed concomitantly restricted the social housing sector, which narrowed down the stock of this sector especially in its quality and access. Rasnaca and Rezgale-Straidoma (2019) have outlined significant differences in the housing quality among single senior households and the rest of the population. They find that the elderly have a higher tendency to live in houses with inadequate facilities, including hot water and sewerage systems.

Current policies focus on maintaining and upgrading the existing social housing, as well as addressing the needs of vulnerable groups such as low–income families and the elderly. The governance of social housing is commonly shared between national, state, and local governments (OECD, 2020a). Higher levels of government are usually in charge of designing overarching social housing programmes and budgets as part of broader national social and safety objectives. In contrast, local governments are typically responsible for implementing housing programmes. The ownership of social housing stock can vary between municipal governments, municipal housing companies, and non–profit organisations. In countries with a small social rental housing sector, public authorities may provide and manage the entire stock (e.g., Estonia, Hungary, Latvia, and Lithuania). In other countries with a large share of social rental housing, the provision by non–profit organisations and cooperative providers is significant (79% in the Netherlands and 33% in Denmark) (OECD, 2020b).

According to an OECD report (2020), across OECD countries (Figure 1.5), the share of social housing in the total housing stock ranges from less than 2% (Czech Republic, Estonia, Latvia, Lithuania, and Luxembourg) to more than 20% (Austria, Denmark), reaching up to 38% in the Netherlands (Moreno Monroy *et al.*, 2020; OECD, 2020b).

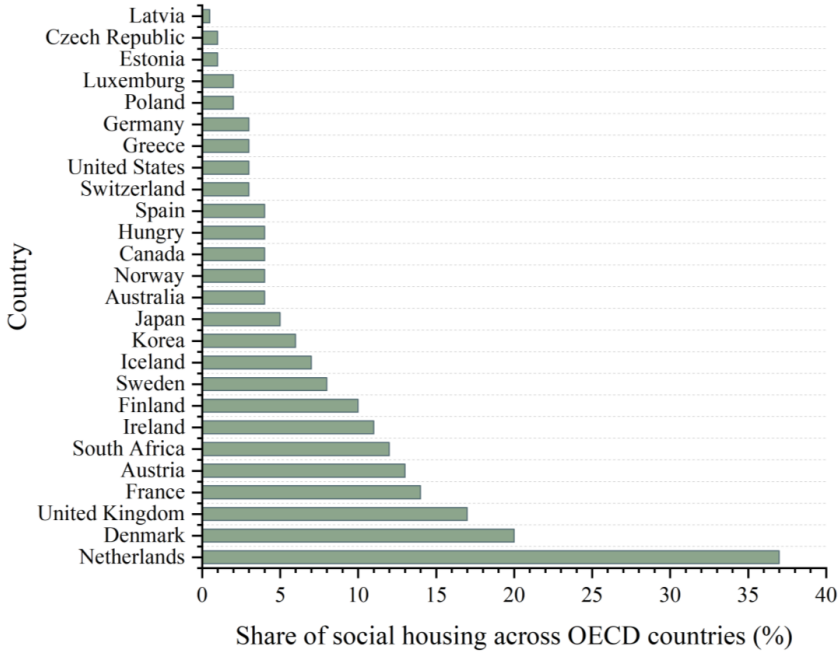

Figure 1.5 Share of Social Housing Across OECD Countries (developed by the author based on OECD, 2023).

Due to high capital costs and the difficulty in maintaining social housing stocks, many developed countries have moved from constructing social housing to providing subsidies or introducing affordability requirements for some new housing projects. Indeed, the share of subsidised renters out of total renters can reach up to 50% and is much larger than the share of

social housing out of the total housing stock (OECD, 2020b). In summary, there are ongoing efforts to manage and improve existing housing stock amidst changing economic and social conditions.

Types of Social Housing

Social housing in Latvia can be categorised into several types, primarily based on the construction period and design. The majority of social housing comprises large–scale housing estates built during the Soviet era. These estates typically feature prefabricated buildings with standard layouts and limited amenities. Despite their age, these buildings continue to house a significant portion of the urban population.

The past few years have seen efforts to present new typologies of social housing that are more consistent with the new demands. These include contemporary, energy-saving buildings that are aimed at improving the living condition but at the same time reducing the effects of environmental concerns.

Latvia social housing sector faces several problems. The most significant of them is the ageing stock. The many structures that were constructed under the Soviet rule now need a lot of maintenance and renovation to meet modern living standards. Even though they were built through industrial-sized processes, these buildings often required certain post-constructions to meet the demands of modern living standards and energy-efficiency (Treija & Bratuškins, 2019; Krišjane *et al.*, 2019; Hess *et al.*, 2019). The financial resources available to such upgrades are limited due to the municipal authorities in charge of the stock, which is a major limitation. This observation is also supported by Rasnaca *et al.* (2019), who define other key issues, such as the quality of housing and gaps in policy. Their study proves that a significantly large portion of elderly households lived in poor housing conditions which lacked basic amenities, which is significantly worse than the rest of the population. Speaking of the gaps in policies, the authors support a clear change in social housing policies to prioritize the needs of the seniors better, including financial support and improving the quality of housing (Rasnaca & Rezgale-Straidoma, 2019).

Another topical problem is the contraction of the population and the subsequent effects on the economy. Ageing and reduction in population leads to weakened housing demand hence putting the sustainability and investment in social housing sector at risk (Gentile, 2019). Furthermore, the high rate of homeownership, which is one of the legacies of privatisation policies of the 1990s, significantly reduced the availability of state rented housing to the needy populations (Treija & Bratuškins, 2019).

Moreover, the main threats of the social housing sector in Latvia include high energy usage and low thermal insulation of the ageing buildings, a demanding need to implement large-scale renovations, and a complex system of stakeholders that discriminates efficient decisions and management (Treija & Bratuškins, 2019; Krišjāne et al., 2019). The privatisation path has created the environment in which an impressive portion of apartment owners does not have the financial resources and the motivation to undertake the actions that would lead to the required improvements and contribute to the ongoing decline in the housing stock (Treija & Bratuškins, 2019; Krišjāne et al., 2019).

Social segregation is also a concern, as many of the social housing estates are home to economically disadvantaged and ethnically diverse populations (Tereškinas, Žilys &

Indiliūnaitė, 2013). This segregation can exacerbate social inequalities and limit access to opportunities for residents of these areas.

Creating modern social housing should address not only architectonic requirements but also social challenges associated with an ageing society (Kazak, 2023). In that regard, it is especially important to avoid creating closed homogeneous communities, stressing this aspect in countries which are at the beginning of introducing such solutions.

Property Reuse: Concept, Benefits, and Existing Initiatives

Property reuse represents a sustainable approach to addressing housing needs while preserving urban resources. This concept encompasses not only the physical adaptation of buildings but also the social and economic considerations that make such projects viable. Understanding the multifaceted nature of property reuse is essential for developing effective strategies for social housing development.

Reuse of property is recycling abandoned, vacant or underused properties for redevelopment or repurposing (Bullen 2007; Chan, Bachmann & Haas, 2020). Property reuse secures the reuse of developed land as part of new projects, cleans up polluted properties, and reuses or uses developed land surrounded by development or local infrastructure (Shuster *et al.*, 2014). Mixed–use, residential, commercial, or industrial projects and public open spaces, such as urban open spaces used by urban parks, community gardens, or more extensive open space reserves, such as regional parks, may result from the reuse of land (Sanchaniya & Geipele, 2023).

Recently, adaptive reuse has been progressively fostering a dialogue among various elements within intricate urban systems (Dell'ovo *et al.*, 2021; Lanz & Pendlebury, 2022). According to Douglas (2006), building adaptation involves "any work to a building beyond maintenance aimed at altering its capacity, function, or performance, which includes interventions to adjust, reuse, or upgrade a building to meet new conditions or requirements" (p.1). Numerous studies have highlighted adaptive reuse initiatives, focusing on aspects such as economic impacts, social interactions, cultural heritage preservation, energy conservation, and other related factors (Bullen 2007; Haidar & Talib, 2013; Langston *et al.*, 2008; Langston, 2010; Lundgren, 2023; Remøy & van der Voordt, 2014).

Obsolescence is often the reason behind the choice to adopt or destroy the existing buildings, and it is a concept that includes physical status, financial sustainability, functionality, place, and environmental considerations (Hanafi *et al.*, 2018). Functionally obsolete buildings do not correspond to the modern user needs and may evolve to be economically and socially problematic, thus triggering the vacancy and consequently its problems (Remøy & Van der Voordt, 2007).

The strategies of adaptation, such as adaptive reuse or within-use adaptation, include either the change of the building purpose or the modernization of the existing use, normally with the aim of becoming energy-efficient or meeting the current standards (Baker, 2020; Lanz & Pendlebury, 2022). These plans vary in the degree of intervention, which is either preservation to demolition depending on the degree of obsolescence risk (Douglas, 2006).

Preservation, refurbishment, and retrofit are examples of terminologies that are used to denote the different levels of intervention to a building, each being linked to different scales of intervention, including changes in structural elements, services, and façade (Baker, 2020;

Schmidt *et al.*, 2010). In particular, adaptation implies the retention and adaptation of the existing buildings to new uses or enhancement of the current functions, focusing on the variety of changes that may include a range of minor modifications to the extensive renovations (Wilkinson *et al.*, 2014).

One of the principles of adaptive property reuse is the concept of the circular economy, and it can be also applied to old buildings. The strategy focuses on minimising the extraction and environmental cost by increasing the lifecycle of materials, decreasing waste, and encouraging reuse and recycling unlike the traditional linear economy (Foster, 2020). The adaptive reuse of underutilised or abandoned buildings by the principles of a circular economy (CE) represents a potential avenue to the building and construction industry due to the neighbourhood renewal and the relevant environmental benefits. Foster suggests a holistic CE model that is adaptive reuse in particular, by synthesising approaches to building and construction literature to mitigate the environmental effects of the lifecycle by retrofitting, rehabilitating, and redeveloping buildings to satisfy modern requirements without losing the historical and cultural context of buildings. Adaptive reuse with the application of principles of CE can significantly decrease the embodied energy, greenhouse gas emissions, fossil fuel consumption, and material use capitalizing on the cumulative energy invested in existing buildings. Application of CE principles necessitates cooperation between policymakers, architects, engineers, and community members, and Foster (2020) states that supportive policies and frameworks would be necessary to enable the shift to the construction industry based on the circular economy.

Another main consideration is social sustainability. The adaptive reuse projects positively affect social sustainability by providing good affordable houses in old structures (Lanz & Pendlebury, 2022). These projects endorse mixed-income and mixed-tenure neighbourhoods, enhance accessibility to basic services, and alleviate the aspects of gentrification. Adaptive reuse ensures community engagement and support because of the participatory planning processes, which promotes social cohesion and sense of place (Tsenkova, 2023).

Economic sustainability is also an important principle. High initial cost is usually the problem with financial viability of adaptive reuse projects. These financial obstacles, however, can be overcome through state incentives, tax credits and grants and can be used to capitalize on the private investment. Adaptive reuse is economically beneficial to its own project, as well as to the creation of jobs, housing improvement, and neighbourhood renewal (Tsenkova, 2023).

Advantage of Adaptive Property Reuse for Social Housing Development

Adaptive reuse has great application to international efforts to conserve resources through more sustainable practice (Langston, 2010; Lanz & Pendlebury, 2022). Such actions in turn contribute to lower greenhouse gas emissions and waste and therefore form part of the array of adaptation strategies available to the property sector in the face of global climate change. In the developed world we have seen an increase in the proportion of capital expenditure directed to refurbishment works in recent years, and this now outweighs capital expenditure of new construction in many countries (Douglas, 2006). This trend will continue.

There are clear economic, environmental and social benefits that can make this option attractive to developers. In some cases, increases in floor space ratios can be obtained and

concessions received for pursuing state policy directions by regenerating derelict public assets. In recent years redundant city office buildings have been converted into high quality residential apartments, bringing people back to cities and in the process revitalising them (Langston, 2010).

Lundgren (2023) highlights such social advantages of the adaptive reuse, especially when it comes to developing social housing. As one of the fundamental principles of the circular economy, adaptive reuse does not only protect cultural heritage but also increases social sustainability through neighbourhoods redevelopment and better living conditions on the local area (Lundgren, 2023). The paper demonstrates how these reuse projects can create less crime and more social cohesion by using the underutilised spaces in the most optimal way possible. Moreover, Lundgren (2023) outlines the economic effects of adaptive reuse as it brings a positive economic contribution to the local economy through the enthusiasm to engage with the community and its development. Adaptive reuse can also be an important factor in preserving the local culture identity, which is essential in creating a sense of belonging and community among residents because it does so by retaining and repurposing buildings (Lundgren, 2023). Also, environmental benefits are very high; adaptive reuse consumes less and produces less waste, which is associated with the larger sustainability objectives (Lundgren, 2023). In addition, the Social Life Cycle Assessment (S-LCA) framework, which has been mentioned in the article, is a useful mechanism to evaluate these social effects, providing information regarding how adaptive reuse projects can be designed and realised to ensure that the social benefits are maximised (Lundgren, 2023). This is a holistic method that makes sure that the reuse of property does not only cover housing needs but it improves social, economic and environmental well being in the cities.

Case Studies and Best Practices from Other Countries

The issue of brownfield cleanup and redevelopment is emerging as central to the overlap between environmental protection and economic redevelopment. Unless these buildings and sites are restored to useful life, continued deterioration will worsen environmental problems and weaken the economic base of the host communities (Garcia & Kwon, 2021). There are several case studies from around the world which highlight the successful transformation of brownfield sites into thriving community assets.

Garcia & Kwon (2021) discuss the environmental and financial challenges involved in the cleanup and redevelopment of properties in the United States, providing a series of community–based case studies that demonstrate successful examples:

1. Municipal governments in Minneapolis, Minnesota have established a proactive policy towards redevelopment of the industrial sites which have been contaminated by means of which the municipality takes part in some of the environmental cleanup. These efforts are organized by the Minneapolis Community Development Agency (MCDA), with the help of tax-increment financing programs, to acquire and reuse properties with the aim of returning them to productive purposes, especially residential ones.
2. The Los Angeles adjacency project of the Broadway Lofts is one such example of adaptive reuse where the former commercial building has been transformed into residential properties. The Los Angeles Adaptive Reuse Ordinance which legalized by-right changes of use and parking minimums to a great extent, helped bring the venture to reality. The case study demonstrates that some jurisdiction-specific adaptive reuse

regulations can substantially enhance the viability of a project by accelerating approvals and clarifying building-code regulations.

3. In Santa Ana, California, the Santa Ana Arts Collective converted an old bank building into 58 affordable housing units to be inhabited by artists. Local incentives- parking requirements will be reduced and building codes will be flexible and contribute towards the economical viability of the project. It was developed with a combination of adaptive reuse and new construction in place of the importance of favorable local policy frameworks.
4. The Cordell Place in the town of Bethesda, Maryland, is a supportive-housing development, which is an exemplifying case of successful implementation of adaptive reuse. In comparison with the projects based on new constructions, the project faced a relatively weak community resistance, which allowed it to be implemented comparatively easier and faster. The salient point to be learned in Cordell place is that adaptive reuse can receive less opposition on the part of local communities, making it a strategically favorable choice to housing project in areas hostile to new development.
5. One of these projects was the Pacific project in San Francisco, California, which was a former medical-office building that was converted into luxury condominiums. The renovation necessitated the de-interiorization of the building to the shell, and massive reconstruction of both the inside and the facade. Even though the venture was accompanied by a lot of expenditure, it was cost efficient due to the upper-end market that it served. As this case has shown, although the adaptive reuse may involve significant spending, it has the potential to produce successful results in high demand areas that enjoy positive economic factors.

The case studies of the United States reveal that adaptive reuse of social housing can become successful in the case that the right local policy, favourable economic environment, and particular architectural characteristics are combined. The common issues that are highlighted in these studies are adherence to modern building regulations, cost control, and financial source acquisition.

Armstrong, Wilkinson, & Cilliers (2023) offer an insightful discussion of adaptive reuse of properties into social housing and give examples of cases and best practice examples in various contexts across nations. The authors have investigated the practice globally in a systematic manner, with special interest to the case studies in the Dutch and Italian regulatory framework, thus, providing different insights. The regulatory frameworks used in the Netherlands, in regard to adaptive reuse, are less strict than in new development, which means that regulatory policies might not serve as a constraint. Contrarily, the reason behind the relatively low uptake of adaptive reuse in Italy, even though the building regulations appeared relatively more relaxed, is indicative of other contributory factors. These results highlight the significance of a context-sensitive method to regulatory barriers identification and elimination of adaptive reuse in different national contexts. Good urban planning and policy frameworks have become the defining factors of successful adaptive reuse projects in Hong Kong. Empirical studies reveal that, an overlapping of urban planning or regeneration plans run by local authorities has a strong influence in the decision-making process of adaptive reuse. The locations included in special urban renewal plans have a greater likelihood of adaptive reuse,

which demonstrates the significant role of urban planning in advance. General findings from various adaptive reuse projects underscore the sustainability and environmental benefits of this development strategy. Adaptive reuse extends the life of buildings and promotes the reuse of embodied energy, making it an environmentally beneficial approach. It helps conserve historical buildings, supports urban regeneration, reduces carbon footprints, and contributes to low–carbon city initiatives (Armstrong *et al.*, 2023).

Langston, Wong, Hui & Shen (2008) outline successful international examples of conversion of disused industrial spaces. In cities such as London, Rotterdam and New York City, adaptive reuse has been widely applied as an active mode of urban revitalisation. Many post–industrial sites in London have been refurbished from warehouse buildings into liveable units since the early 1980s. Former warehouses such as Butler's Wharf, Spice Wharf and Sesame Wharf near the Shad Thames area have been transformed from derelict sites into apartments, with restaurants and shops on the ground floor. In particular, the example of Shad Thames illustrates economic benefit brought forth from the revitalising of industrial buildings. The development is able to provide an adequate supply of quality housing options whilst balancing heritage conservation as well as maintaining a financially viable model.

One example case study based in Turkey explores how high office vacancies are converted into residential apartments, in this instance, social housing in the central business districts like Istanbul. These initiatives are also noted to have a pedagogical value in the teaching of architecture (Aydemir & Akın, 2024). The approach to adaptive reuse is consistent with the principles of sustainable urban development, where the strategy conserves resources and helps reduce sprawling of people in urban areas as well as promote the integration of different types of housing that meet the needs of diverse socio-economic classes and, thus, contribute to inclusivity and accessibility in the urban centres (Langston *et al.*, 2008; Canelas *et al.*, 2022). However, the shift towards residential functions gives certain challenges which makes the strict adherence to the standards of comfort, privacy, and safety necessary as it entails a delicate balance between the maintenance of the old structures and the provision of high-quality living conditions (Geraedts and van der Voordt, 2007; Remoy and van der Voordt, 2014). The Aydemir & Akın (2024) study demonstrate the ability of high-rise conversion to address the problem of housing shortages and improve urban living, which can be considered a convincing point in favor of the introduction of this practice in urban planning and educational programs in architecture.

One of the first examples of sustainable deconstruction is the Whole House Reuse (WHR) project in Christchurch, New Zealand, which was developed as a reaction to the 2010-2011 earthquakes that necessitated the demolition of about 10,000 houses (Zaman *et al.*, 2018). This was in contrast to the usual demolition techniques used, since the WHR initiative utilized a slow, component-by-component deconstruction process that utilized the most material recovery and reuse possible. The project defined three main goals that are, to harvest useful materials, to create new products out of these materials, and to affect the masses of people by organizing exhibitions to facilitate the preservation of resources. The benefits in terms of environmental assessment were considerable and included the possible energy savings and considerable CO_2 emission reductions. Socio-economic wise, the project involved over 282 designers and artisans, 400 new products were created, income was also generated through

auction. Although these successes were realized, the project highlighted such problems as labor intensity, financial sustainability, and the need to put more powerful policy support. The recommendations that arise out of the study are development of supportive policies, further research, market based instruments, promotion of community based business relations and adoption of international best practices. Altogether, the WHR project suggests that deconstruction has tremendous potential in helping to achieve the aims of resource conservation, the circular economy, and sustainable development (Zaman *et al.*, 2018).

In Canada, heritage buildings are given historic status when they are recognized as of heritage value and are defined by their characteristic features and thus informing the development of adaptive reuse projects (Tsenkova, 2023). A typological model is used to group reuse barriers and success factors based on the use of the building, which is controlled by zoning and land use laws on a municipal level. A technical method is focused on the structural and efficiency improvements of reuse necessity. One of them is a strategic approach to the analysis of processes that are involved in heritage building conversion, and conservation strategies, in particular, preservation, rehabilitation, and restoration. Successful adaptive reuse as such thus requires innovative synergies amongst these strategies which are backed up by strong alliances and adaptable policies to meet social housing demands. These partnerships offset the cultural and social sustainability goals with the ambitions of the profit motif of the private sector. They can be individual buildings in a smaller scale or heritage districts, and a place-based strategy can produce a broader impact on sustainability. Effective urban regeneration within Canadian cities signifies the opportunities available to adopt effectively integrated strategies to adaptive reuse in terms of policy, planning, and partnerships to improve the sustainability and conservation of heritage within neighborhoods. This nexus may turn the constrained project-based experiences into strategic actions that encourage diverse, socially unified communities with unique historic identities (Tsenkova, 2023).

Firestone & Weaver (2024) discuss the potential of converting vacant buildings into affordable housing solutions in the post–COVID era. The rise in commercial vacancies due to increased remote work offers opportunities to address the housing crisis, particularly for the ageing population. Notable examples of adaptive reuse of buildings for this purpose include Calgary's strategy to convert office spaces into residential units, with incentives like grants and permit waivers, and The Pryde in Hyde Park, MA, which transformed an old school into LGBTQ+ senior housing. Other significant projects include the Hollywood Western Building in Los Angeles, converted into senior affordable housing, and Tiger Senior Apartments in Paris, IL, repurposed from a high school. Skyview Park Apartments in Rochester, NY, turned a former mall into affordable housing with senior services, and Immanuel Place in Long Beach, CA, transformed a historic church into low–income senior housing. These projects highlight the innovation, flexibility, and community engagement involved in adaptive reuse, addressing housing shortages whilst stimulating economic development and preserving historic features, despite facing structural and compliance challenges.

Another example of adaptive reuse of buildings for social housing is the conversion of vacant hotels and motels. The National Association of REALTORS® Research Group (2021) explored various instances of adaptive reuse of buildings for social housing in the United States. These include the conversion of the Residence Inn by Marriott in Winston–Salem, North

Carolina, into Vivo Apartments, providing 88 multifamily housing units; the Days Inn in Branson, Missouri, repurposed into Plato's Cave, offering affordable studio and one–bedroom apartments; the Luna Lodge in Albuquerque, New Mexico, transformed into a low–income housing project that achieved LEED Platinum certification; the Red Lion in Kissimmee, Florida, converted into Maingate Village with studios and one– and two–bedroom units; and the Ann River Motel in Mora, Minnesota, which became Mora Flats, a development of 21 apartment units. These case studies highlight that the conversion of vacant hotels and motels into much–needed housing units is a win–win solution to address the underutilisation of hotels and motels and help alleviate the housing shortage.

The case study that highlights the Mainstreaming Sustainable Social Housing in India (MaS–SHIP) project, which aimed at integrating sustainability into social housing projects through the use of environmentally sustainable building materials, systems, and practices, was carried out in India (Gupta *et al.*, 2018). The program was mainly targeted at reducing the sharp shortage of housing in India especially among the Economically Weak Sections (EWS) and Low-Income Groups (LIG). It employed a socio technology methodology that incorporated both empirical results on antecedent research and participative stakeholder consultation, field-based surveys, statistical data analysis and thermal simulation technique to systematically recognize and evaluate sustainable building materials and systems. As a result, the project delivered a complete data store, analysis instruments, and action guidelines aimed at supporting the mainstreaming of sustainability in the social housing arena. In particular, it methodically developed a model that includes 18 attributes that are divided into four criteria such as resource efficiency, operational performance, user experience, and economic impact via the joint-effort work with developers, practitioners, and scholars. Also, the paper looked into the construction and policy environment to clarify these stalling conditions and future chances of adoption of sustainable materials and practices. The main deliverables included a Decision Support Toolkit (DST) with a Sustainability Assessment Tool (SAT) to compare them, catalogues of technologies, reports of empirical case studies based on surveys done with the residents, and policy briefs to support sustainable social housing. All these efforts were aimed to overcome the gaps in the data and knowledge, thus supporting the basis of making informed decisions and promoting the application of sustainable building practices within the social housing industry in India (Gupta *et al.*, 2018).

Adaptive Reuse Challenges

Despite the advantages of adaptive reuse for social housing development, researchers (for example Garcia & Kwon, 2021, Armstrong *et al.*, 2023, Tsenkova, 2023) have pointed out several associated challenges which are showed in the Fig. 1.6.

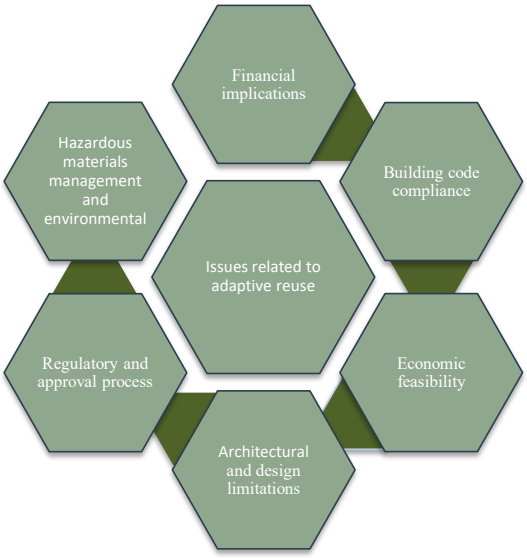

Figure 1.6 Adaptive reuse challenges (developed by the author).

Financial implications: Adaptive reuse projects are often more expensive than new construction mostly due to unexpected costs like seismic retrofitting, environmental remediation and widespread structural changes necessary to bring the properties up to present-day codes and standards. Such extra expenses have the potential to significantly increase the project budget, which makes financial feasibility a significant challenge.

Building code compliance: Because of age, older commercial buildings may require a major health and safety improvement to meet residential standards, including seismic mitigation, fire safety and indoor air quality enhancements. The nature of such regulatory requirements is usually unpredictable and may cause project delays and escalated costs.

Economic feasibility: Finding funds to finance adaptive reuse, especially in the field of affordable housing, is not easy. Public subsidies are often essential in order to get a project viable, and the fact that numerous mechanisms will have to coordinate the development process makes the process more complex.

Architectural and design limitations: Commercial buildings have a spatial layout and original design that could limit the possibility of conversion. The occurrence of complications as deep floor plates, lack of natural lighting and inadequate ventilation which are relevant in residential settings necessitate significant redesign of the architectural design hence increasing the cost.

Regulatory and approval processes: The approval system is usually tedious. The adaptive reuse programs could be faced with the challenge of keeping time with too many regulatory agencies and understanding the zoning and code requirements. Although local ordinances easing the approvals and mandating less parking could be beneficial, they are not always practiced and uniformly applied.

Hazardous materials management and environmental: More often than not, old buildings harbor some hazardous materials such as asbestos and lead paint which require special

procedures in their extraction and remediation. The processes may create significant time and cost overheads to the project schedule.

The presented challenges support the results reported by Merriman-Nai and Sargent (2013) who highlighted that financial feasibility is one of the main barriers. Even though, adaptive reuse may sometimes prove to be less expensive than new construction, the unexpected expenses, especially those associated with structural retrofitting and the adherence to building codes of the time, are likely to occur.

Adaptive reuse is also a special form of refurbishment that poses quite difficult challenges for designers. Changing the class (functional classification) of a building introduces new regulatory conditions and perhaps requires zoning consent (Langston, 2010).

Garcia & Kwon (2021) suggest that although adaptive reuse offers potential benefits for social housing development, it requires careful consideration of these challenges to ensure successful project outcomes.

Theoretical Context: Housing Systems and Welfare Regimes

Although there is no extant theoretical framework that addresses the incorporation of property reuse with the development of age-friendly social housing, a number of existing theories related to housing and studies concerning welfare offer valuable background to the intersection. Post-socialist states such as Latvia take an intermediate position within the European housing classifications, as they have experienced high rates of privatisation since independence and consequently have many homeowners, but few social housing units (Treija & Bratuškins, 2019). The result of this transformation was a residual welfare model in which social housing only caters to the neediest populations, which is against a universalistic model, which exists in the Nordic countries, and social housing is offered to the general population.

The lack of theoretical development and frameworks between property reuse and social housing development in post-socialist settings is a gap that exists in the existing body of knowledge. Traditional housing system theories (Kemeny, 1995; Hoekstra, 2010) and welfare regime typologies (Esping-Andersen, 1990) were designed with Western European settings in mind and fail to properly cater to the peculiarities of demographic change, age-related situations, and large stocks of unused property that are associated with Latvia and other countries of the same kind. Such a theoretical gap leads to the need to obtain a new combined model that can integrate property reuse strategies and age-friendly housing provision - one of the main contributions of this thesis.

1.2. Design Principles and Regulatory Framework for Age-Friendly Housing

The ageing in place concept goes beyond the age-friendly housing to include not only neighbourhoods but also communities as a whole (Chau & Jamei, 2021). Ageing in place also helps in maintaining the daily routines, habitual pattern as well as the long-term social networks of older adults by permitting them to stay in familiar environments, where they already have a reasonable level of independent living capacity (Houben, 2001). This continuity gives the older people a feeling of security and belonging hence encouraging them to take part in outdoor

activities with confidence. This involvement, in its turn, makes cross-generational social interactions possible (Green, Jones, & Roberts, 2014).

Age-friendly housing refers to housing environments that have been specifically designed or modified to facilitate the well-being, safety, and health of the elderly population (Luciano *et al.*, 2020; WHO, 2020). These environments should be cheap, convenient and flexible and provide the necessary services and allow community integration so that the ageing in place will be effectively implemented. The main characteristics include the building design (large door frames, non-slip floors, and easy access to bathrooms), offering of services maintaining the building, and providing support to the community to elevate the quality of life among the elderly (WHO, 2020).

An age-friendly housing paradigm is based on the establishment of living conditions that enable older adults to maintain their autonomy and independence as well as high-quality living. An extensive framework put forward by Luciano *et al.* (2020) in 71 metrics dispersed within eight domains analyzes both the physical and non-physical factors of the home setting. These areas include affordability, necessary services, design, modifications, maintenance, ageing in place, community integration and housing options. The research highlights the need to have an adaptive housing environment that addresses the changing needs of the ageing population hence fostering ageing in place and reducing the chances of institutionalisation.

According to the WHO (2020), local governments and city planners play a central role in ensuring sufficient housing options that form the basis of the autonomy and agency of older adults. Adaptations include housing provisions, safety standards, and maintenance provisions in order to accommodate the physical and cognitive changes that come with ageing. Also, the WHO (2020) does not underestimate the importance of community integration and access to services which can help older adults develop a sense of belonging and prevent social isolation.

Design Principles and Guidelines

Age friendly social housing design is a crucial measure in protecting the health and independence of the elderly. The principles and guidelines listed in the Social Housing Design Guideline document are set to design living environments that would suit the elderly residents, as well as promote independence, safety, and integration into the community (Chau & Jamei, 2021; Department of Communities, Housing & Digital Economy, 2021). This integrative framework has taken into consideration the factors of physical accessibility, social inclusion, safety, affordability and environmental sustainability thus making the housing infrastructure support the physical, social and psychological wellbeing of older occupants. Figure 1. 7 summarises the design principles that have been discussed regarding age-appropriate housing.

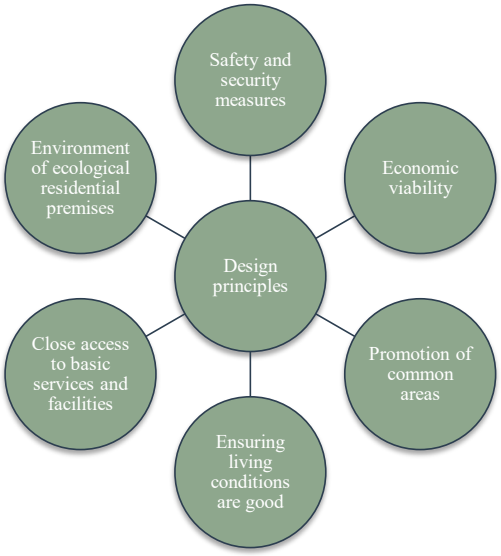

Figure 1.7 Design principles for age-friendly housing (developed by the author).

The age-friendly housing design is based on safety and security. The design should therefore have measures like locking systems, lit walkways and sight lines in order to make sure that the residents feel safe and secure. Moreover, the space should be designed in such a way that it is safe and comfortable to residents who might have encountered some trauma and it allows them to feel that they are safe and in control of their environments (Department of Communities, Housing and Digital Economy, 2021). Additional features like emergency call systems, secure entrances, and smart home technologies can also increase the safety level and enable quick help in the case of an emergency (Chau & Jamei, 2021).

Age friendly housing design is among other factors that take into consideration affordability. Building practices and the maintenance cost can be reduced by the use of cost-effective materials, and utility bills can also be saved by using energy-efficient fixtures and fittings. The houses should be made in such a way that they are comfortable without overuse of air conditioning by employing natural ventilation and use of natural insulation. The investigation of innovative development and tenure schemes, including shared living schemes and co-housing schemes, may offer affordable housing to older adults as well (Department of Communities, Housing and Digital Economy, 2021).

By the establishment of common areas that promote socialization and community building, there will be a feeling of belonging and pride among the residents. The organization of an environment that allows individuals to make physical activity easy and enjoyable, through safe, walkable routes and cycling and other exercise-friendly facilities, will support an active lifestyle. It is also essential to offer noise-free and comfortable spaces where residents can rest and rejuvenate to improve their health (Department of Communities, Housing, and Digital Economy, 2021). It is also possible to combine access to health services or nearby facilities like gyms and wellness programs like yoga or tai chi to assist residents with their health (Chau & Jamei, 2021).

Ensuring that homes are practical and easy to use supports the daily needs and activities of residents. Functional design that accommodates the practical arrangement of furniture and daily activities makes it easy for residents to move around and use their spaces effectively. Homes should be designed to be easily modified to meet changing needs, such as adding grab bars or lowering countertops for accessibility. Ample, accessible storage for personal items, mobility aids, and other essential equipment is also important (Department of Communities, Housing and Digital Economy, 2021). Housing should be adaptable to meet the changing needs of its residents, including features like removable cabinets to accommodate wheelchairs (Chau & Jamei, 2021).

The physical closeness of the necessary services and amenities is one of the basic criteria when the age-friendly housing is planned. Housing homes close to health care services, the transport system, shopping stores, and leisure centers will significantly improve the living standards of seniors. The maintenance of resident independence is achieved due to walkable neighbourhoods with easily available public transportation (Chau & Jamei, 2021).

The erection of eco-friendly houses reduces the usage of natural resources, and it reduces the cost of living. An essential strategy includes the implementation of energy consuming fixtures and fittings and designs that can control water consumption. Sustainability is also enhanced through the incorporation of renewable sources of energy like a solar panel and rain collection technology. The use of high-quality building material that requires minimal maintenance fosters cost-effectiveness and sustainability of ecological values in the long term. The natural light and ventilation optimisation of residential designs will reduce the reliance on artificial lighting and mechanical cooling (Department of Communities, Housing and Digital Economy, 2021). The overall health of residents is achieved through sustainable design elements that enhance environmental quality, such as energy-efficient heating and cooling systems, non-toxic building materials (Chau & Jamei, 2021).

These age friendly design principles adoption will ensure that the social housing is in a position to meet the immediate needs of the older adults, and in the process improving their standard of living. By focusing on safety, access, affordability, health, practicality and sustainability, supportive and inclusive communities can be built, which lead to independent and dignified lives of older residents. These guidelines are a general model to architects, planners, and policymakers, thus promoting the best practices in designing and delivering age-friendly social housing (Department of Communities, Housing and Digital Economy, 2021).

Accessibility, Mobility, and Universal Design

Designing age–friendly social housing that adheres to universal design principles is crucial for enhancing the quality of life for older adults. Universal design refers to creating environments that are inherently accessible to all people, regardless of age, disability, or other factors. This concept is especially pertinent in the context of social housing for the elderly, where the aim is to promote independence, safety, and social integration (McCunn & Gifford, 2014; Van Hoof *et al.*, 2019).

Universal design in housing deals with making houses accessible and usable to all individuals whether they are physically challenged or not. In this strategy, items like step-free doors, broad doorframes, levered handles, and available sanitary and culinary facilities are some of the items included. The intentional incorporation of such components into the senior housing

contributes to ageing in place the ability to live safely, independently and comfortably in one's own home and community regardless of age and functional status. In addition to the evident increase in physical access, such an approach fosters psychological and social health because it allows people to stay in the environment (Van Hoof *et al.*, 2019).

Physical and technological security measures need to be combined to ensure that the residents enjoy safety and security. Basic considerations are lock-up security, illuminated corridors and clear lines of sight. Additionally, the technologies of the smart home, which include automated lighting, thermostatic control, and security systems can make a significant contribution to enhancing safety as they allow immediate assistance in the case of an emergency (Van Hoof *et al.*, 2019). Also taken into consideration in the design should be the requirements of people with cognitive limitations, including dementia, by ensuring the design has features that will decrease confusion and increase an orientation.

Universal design is based on the concept of accessibility, which is essential in helping the older adult to continue living independently. It involves the designing of the dwellings in a manner that will support residents with a wide range of mobility and physical abilities. McCunn and Gifford (2014) emphasize the importance of having housing characteristics like a wide passageway, versatile countertops, and grab bars within washrooms. These adjustments not only help in improving navigation but also help in reducing chances of accidents and injuries. The researchers determined that residents of accessible housing were pleased with these attributes, implying that the accessible design has the potential to significantly increase the livability of social housing among older adults.

Older adults depend on social interaction as a key factor to their health and age-friendly housing should enable elderly individuals to interact with the community (Bullen, 2007; Haidar & Talib, 2013). Social spaces, including gardens, lounges, and multi-purpose rooms, help to foster social relationships and eliminate isolation (Van Hoof *et al.*, 2019). Design features that promote interaction like eating spaces and activity rooms could be crucial in promoting mental and emotional health. McCunn & Gifford (2014) insist that the social aspect of living and its quality may be significantly affected by the physical environment of housing older adults may experience.

Housing must be dynamic so as to meet the changing needs of people living in them. This entails facilitating a simple adjustment of living conditions when the needs vary. Such characteristics as removable cabinets that allow chairs to pass through or the possibility to add more grab bars and ramps can be included at an early stage (McCunn and Gifford, 2014). Flexible housing can be used to ensure that residents do not have to cease living in their homes even when their physical abilities change thus ensuring ageing in place and reducing the need to move to assisted living homes.

The geographical setting of the age-friendly housing is also vital. The access to vital services and facilities such as healthcare centers, transportation, shops and recreational centers can significantly improve the living standards of the elderly. By making housing accessible in neighbourhoods that can be walked to and has convenient means of transport that residents can use to maintain their independence and participate in the community, this will make it easier (Van Hoof *et al.*, 2019). This is an important consideration especially to the elderly adult

population that no longer drives but relies on transportation such as buses and trains to move about.

The design of the housing should be integrated with health and wellness support. This includes availability of on site or close health services, fitness centers and wellness spaces like yoga or tai chi. Moreover, an element of nature: gardens or easy access to open spaces can enhance the mental health (Van Hoof *et al.*, 2019). The construction of housing that facilitates physical and psychological health is also important in ensuring a high quality of life among the older adult population.

Such sustainable design characteristics, as energy-efficient heating and cooling systems, sufficient ventilation and non-toxic building materials, are included and add to the health of residents (McCunn & Gifford, 2014). Environment Sustainable housing is also cost-cutting as well as it provides a healthier environment. Energy-efficient homes are able to help lower the utility costs making houses more affordable to the older generation with fixed income.

By addressing the principles of universal design in the social housing of the elderly, the social housing can be made accessible, safe, and conducive to ageing in place. Designers can address the needs of older adults by designing age-friendly homes focusing on the crucial areas, such as safety, access, community interaction, adaptability, proximity to services, health support, and sustainability. These recommendations offer a more holistic approach to designing and provision of social housing that is friendly to the aged to architects, planners, and policymakers. The need of such accommodative and helpful housing will also increase with the age of the population making the concepts of universal design more relevant.

Regulatory and Policy Framework for Social Housing and Property Reuse in Latvia

Latvia is facing severe socio-economic pressures in the housing market, which requires a sound regulatory and policy framework. There are plenty of studies that outline the complex problems that impact social housing and reusing property, thus highlighting the need to follow the comprehensive approaches that will allow stabilising and developing this vital area of the national economy.

We are dealing with a complex set of national and European Union regulations in the regulatory and policy framework that governs social housing and property reuse in Latvia. This framework at the same time determines the possibilities and limitations related to the creation of age-friendly social housing by property reuse projects.

Latvia land policy especially in the context of agricultural land has been significantly affected by the historical changes, current regulatory frameworks meant to deal with land abandonment. Since 1990 after the collapse of institutions of collective farming, Latvia has witnessed a sharp drop in the level of agricultural activity, and some 11 0 -110 -1 agriculture land has been abandoned (Valujeva *et al.*, 2022). This was worsened by the shift towards the market economy which reduced the perceived value of rural places and spurred urban migration.

Latvia has taken various measures in response to a land abandonment. Examples of such initiatives are the introduction of an extra immovable property tax in 2010 on uncultivated agricultural land as well as fines on abandoned land which come into effect in 2016. However, the rate of uncontrolled agricultural lands has been increasing up to a recent time, which means

that fiscal policies might not be sufficient to thoroughly deal with the problem (Arika & Mazure, 2017).

Another way in which the state has been trying to curb the issue of abandonment is the conversion of low-fertility agricultural lands into forestry or pasture lands. This practice is theoretically advanced as an option to make the economically nonviable agricultural land fruitful by afforesting it or livestock production (Arika & Mazure, 2017). Also, the Latvian Bioeconomy Strategy 2030 strives to promote the added value created by the bioeconomy sectors, which include sustainable land management practices that consider the balance between the productivity and the environmental development (Valujeva *et al.*, 2022).

The housing policy and regulatory frameworks in Latvia are part of the larger urban development and land-use policies. These structures are defined by a set of laws and regulations such as Cabinet Regulation No. 496 that regulates the classification of real estate use and procedures of changing these classifications. This policy allows the landlords to change agricultural land into other forms of use, including construction, which in turn affects the land-use processes in urban and rural settings (Arika & Mazure, 2017).

Urban housing policies in Latvia are influenced by demographic trends, economic factors, and regional development strategies. The Latvian state has focused on improving housing affordability and availability, particularly in urban centres, to counteract the rural–urban migration trend and the associated abandonment of rural areas. The regulatory framework includes provisions for supporting housing development through various incentives and subsidies, aimed at making housing more accessible to different segments of the population.

Rasnaca (2017) highlights the significant challenges faced by vulnerable social groups in Latvia in accessing adequate housing. The study emphasises the multi–dimensional nature of housing quality, which includes technical, emotional, and social aspects. Covering the period from 2011 to 2015, marked by economic recovery, the analysis focuses on persistent issues of housing deprivation despite improvements in housing quality indicators such as the availability of sewerage and hot water.

Latvia's housing policy has been shaped by historical transitions, including privatisation and economic crises, which have left lasting impacts on housing availability and quality (Rasnaca, 2017). The document discusses the concept of the "housing trap," where high rental costs, limited homeownership options, and inadequate social housing stock leave many residents, particularly in urban areas, struggling to secure decent housing. Despite gradual improvements in housing amenities, significant disparities remain between urban and rural areas, with rural residents facing greater challenges in accessing basic housing facilities (Rasnaca, 2017).

Social housing in Latvia is primarily managed at the municipal level, with local authorities responsible for providing housing assistance to low–income households (Rasnaca, 2017). However, the social housing stock is minimal, representing only a small fraction of the national housing market. This limited provision is concentrated in larger cities, leaving many rural and vulnerable populations inadequately served. Rasnaca (2017) underscores the need for more robust public intervention and investment in social housing to address ongoing issues of housing deprivation and improve living conditions for all citizens, particularly the most disadvantaged.

The regulatory framework for social housing in Latvia is grounded in the country's Constitution, which aims to fulfil the right to housing for all citizens, especially low–income groups. The primary objectives of Latvia's housing policy include improving housing quality and affordability, providing a legal base for efficient management of residential buildings, creating rented housing stock in local territories, and supporting energy–saving measures in residential buildings (Lisa, 2020). Key laws include the Law "On the Management of Residential Buildings" and the Law "On Apartment Property" (Lisa, 2020). These are supplemented by regulations covering aspects such as sanitary maintenance, documentation procedures, maintenance activities, and energy efficiency requirements.

The reuse of abandoned properties, particularly agricultural land, is addressed through policies promoting renewable energy production and other sustainable land uses. Establishing short rotation woody crops (SRWC) on abandoned agricultural lands is one initiative. Studies show approximately 75,530 hectares of abandoned agricultural land in the Latgale region are suitable for SRWC, contributing significantly to Latvia's bioenergy balance (Abolina and Luzadis, 2015). Policies also include incentives for afforestation and bioenergy crop production, though socio–economic factors often hamper their effectiveness.

The strategic goal of Latvia's housing policy, as per the Constitution, is to fulfil the right to housing for all citizens, focusing on low–income groups (Lisa, 2020). Objectives include improving housing quality and affordability, providing a robust legal framework for residential building management, and supporting energy–saving measures in residential buildings. The main principles guiding Latvia's housing policy are the continuity of administration processes, selection of optimal management methods, preservation and improvement of the residential environment, and ensuring safety and health standards in housing.

Key Legislative Measures

To achieve these strategic goals, Latvia has enacted several significant laws, such as the Law "On the Management of Residential Buildings" adopted in 2009, and the Law "On Apartment Property" (Lisa, 2020). These laws are supplemented by various rules developed by the Department of Housing Policy, including sanitary maintenance requirements for residential buildings, procedures for documentation storage and updates, maintenance, repair, renovation, and reconstruction activities, and minimum energy efficiency requirements.

Administrative and Implementation Framework

The implementation of housing policies in Latvia involves multiple state bodies responsible for different aspects of the housing sector:

a) Economic Functions:
   - Ministry of Finance
   - Ministry of Economics
   - Bank of Latvia
   - Competition Council
   - Public Service Regulatory Commission (PSRC)
   - State Revenue Service

b) Legal Functions:
   - Ministry of Justice

c) Social Functions:
    - Public Services Regulatory Commission
    - State Labor Inspectorate
    - State Social Insurance Agency
    - Ministry of Health
    - Ministry of Education and Science
    - City Councils and Committees
    - Ministry of Welfare
d) Environmental Functions:
    - Ministry of Agriculture
    - Ministry of Environmental Protection and Regional Development
e) Technical and Security Functions:
    - Cabinet of Ministers
    - State Construction Control Bureau
    - Certification Centre of the Latvian Academy of Sciences
    - State Construction Inspectorate
f) Informational Functions
    - Public Services Regulatory Commission
    - City Councils and Committees

Challenges and Future Directions

Despite the detailed regulatory framework that has been developed, there are still significant issues that have affected the achievement of housing affordability and access among all citizens. The major issues include land acquisition, which is speculative, incentives of afforestation which are against other land use priorities, socioeconomic factors like rural depopulation and aging of the population. Housing affordability depends on economic signs such as prices of houses, mortgage rates, and real income, which are decisive (Lisa, 2020).

Latvia has many socioeconomic factors affecting housing market among them being demographic changes, income levels and urbanisation trends. A decrease in the rural population, overpopulation in urban areas, and the unequal distribution of income are all factors that complicate the situation with population housing shortages in cities and the insufficient use of housing resources in the country (Geipele *et al.*, 2022). These problems should be solved with the help of the overhaul of the policy, the economic motivation, and the social programmes aimed at the creation of the equal development in the country.

To solve these, the future policies should consider improvement of economic policies on housing development and individual housing building and address social and economic problems with innovative solutions. The works by Geipele *et al.* (2022), Rozentale (2014), and Stepina (2022) are useful in understanding the many facets of the Latvian regulatory system and can be used practically to consider the existing issues. These results highlight the significance of a strong and flexible policy framework that will be able to react to the changing needs of society and facilitate sustainable development. The following recommendations should be taken into consideration:

a) The introduction of different taxation in accordance with the quality of the land and its potential value.
b) Strengthening the support of young and small-scale farmers.
c) Enhancing education and outreach improvement of land management practices.
d) Economic incentives to property developers in the rural areas.
e) Introducing social housing schemes for low–income families.
f) Embracing intelligent city development plans to even-out development regions.

According to Geipele *et al.* (2022), some of the most important steps that can stabilise the housing market are the introduction of economic incentives to property developers in rural locations, introduction of social housing plans to families with low incomes, and the implementation of smart urban planning strategies. These actions are meant to provide a balanced housing market that serves all groups of the population, and this should provide equitable development throughout the nation.

It is also an important point to modernise the family law and educational content in the Latvian regulatory framework. There is a need to include legislative changes that present societal shifts and family structures. It involves legalizing partnerships beyond marriage and sex education at school (Rozentale, 2014).

The management of degraded areas is one of the important parts of the regulatory framework of Latvia about the reuse of property. The problems are the lack of a consistent policy and the necessity of sustainable land-use. An integrated regulatory framework to bind degraded regions is suggested, which includes environmental cleanup, economic motivation, and participation by locals (Stepina, 2022).

Latvia has a strong regulatory and policy system on social housing and property reuse that is associated with a number of issues related to its implementation. To combat these issues, legislative changes, economic incentives, and community involvement can be used. Through this modernisation of the family law, sustainable use of land, and specific social programmes, Latvia can establish a just and healthy housing market that satisfies the needs of all the citizens of the country.

The theoretical framework adopted in this chapter facilitates the conceptual basis required to come up with a systematic approach towards property reuse implementation towards age-friendly social housing in Latvia.

1.3. Theoretical Approaches to Social Housing and Property Reuse

When properties are renovated holistically for reuse there is a potential for accumulated benefits including energy efficiency, energy performance, sustainable mobility, integrated infrastructure and sharing programmes (bicycles, laundry) (Banister, 2008). In short, many modern ideas about urban life—including equity, environmental sustainability, ecological footprints, communal life and the sharing economy—align well with the underlying principles of housing estates, offering a glimmer of hope for a productive future for housing estates (Hess & Tammaru, 2019).

Theory Selection Rationale and Integration Mechanism

The eight theories were identified in a systematic search of the literature on housing and built environments, depending on three variables, namely (1) relevance to physical property transformation, (2) applicability to social housing provision, and (3) the demonstration of application in European properties reuse settings. Other frameworks (e.g., neoliberal housing theory, pure market-based models) were omitted because they do not focus on non-profit, social goals which are the focus of this study.

The theories operate through an integrated mechanism with three interconnected layers.

- Layer 1 - Physical assessment: Building lifecycle and Obsolescence theories determine the properties that can be reused by determining the structural quality and functional ability.
- Layer 2 - Transformation Process: The conversion process is guided by the adaptation and Performance theories that ensure that the buildings are of modern standard and are resource efficient.
- Layer 3 - Social-Environmental Integration: The Sustainable Development, Urban Regeneration, Social Equity and Adaptive Reuse theories are aimed at providing community benefits, environmental sustainability, and social inclusion through a project.

This stratified process works in series: property that is deemed outdated and in great structural conditions (Layer 1) passes through the process of adaptation planning (Layer 2) to develop socially useful and eco-friendly housing (Layer 3). Each of the theories brings on board certain assessment tools and criteria which together make implementation of property reuse systematic.

Multiple theoretical frameworks elucidate the relationship between social housing integration and property reuse, as illustrated in Figure 1.8.

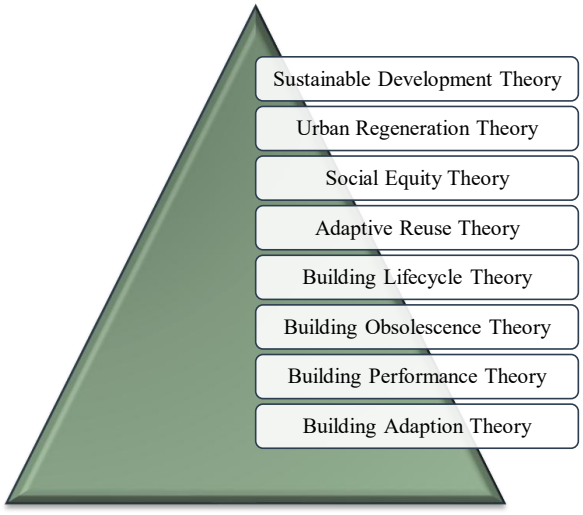

Figure 1.8 Theoretical frameworks underpinning the integration of social housing and adaptive property reuse (developed by the author).

Sustainable Development Theory: Sustainable development theory emphasises the need for development that meets present needs without compromising the ability of future generations to meet their own needs. In the context of social housing and property reuse, this theory advocates for practices that balance economic, social, and environmental considerations. Reusing existing properties for social housing aligns with sustainable development by reducing the environmental footprint of new construction, preserving urban heritage, and promoting social equity.

Urban Regeneration Theory: Urban regeneration theory focuses on the revitalisation of urban areas that have experienced decline or neglect. This theory supports the reuse of vacant or underutilised properties as a means to rejuvenate neighbourhoods, attract investment, and improve living conditions. Social housing can play a pivotal role in urban regeneration by providing affordable housing options that contribute to the socio–economic diversity and vibrancy of urban communities.

Social Equity Theory: The social equity theory aims at ensuring that all people in the society access resources and opportunities equally. It underscores the crucial role of social housing in making the marginalized groups affordably but adequately provided with housing. The reuse and re-purposing of the old properties into social housing curbs inequity in the provision and provision of dwelling and this therefore guarantees the accessibility of safe and more affordable conditions to every individual.

Adaptive Reuse Theory: Adaptive reuse theory specifically addresses the practice of repurposing existing buildings for new uses. This theory highlights the benefits of preserving architectural heritage, reducing construction waste, and maintaining the cultural identity of urban areas (Lanz & Pendlebury, 2022). In the context of social housing, adaptive reuse can transform obsolete or vacant buildings into affordable housing units, contributing to the sustainability and resilience of urban environments. It has been argued that adaptation is inherently environmentally sustainable because adaptation of existing buildings involves less material use (i.e. resource consumption), less transport energy, less energy consumption and less pollution during construction (Johnstone 1995, Bullen 2007).

Building Lifecycle Theory: Building lifecycle theory emphasises the stages a building undergoes from conception to demolition, which includes planning, design, construction, operation, maintenance, and eventual disposal or renewal. In the context of social housing and adaptive property reuse in Latvia, this theory is crucial for understanding how to extend the useful life of buildings through adaptive reuse. As Latvia faces challenges with outdated housing stock, implementing lifecycle thinking can optimise resource use and minimise environmental impact by repurposing existing structures for social housing needs (Khasreen *et al.*, 2009).

Building Obsolescence Theory: Building obsolescence theory addresses the decline of a building's usefulness due to physical wear, functional inadequacy, or economic factors. In Latvia, many social housing buildings are approaching obsolescence, necessitating strategies for adaptive reuse to prevent abandonment and decay. By identifying the obsolescence factors, stakeholders can prioritise renovations and functional upgrades that align with contemporary social housing demands, thus revitalising communities and maximising the value of existing properties (Shipley *et al.*, 2006).

Building Performance Theory: The building performance theory focuses on the degree of fulfilling the demands of a building in terms of energy efficiency, comfort to the occupants and functional sufficiency of a building. Regarding the social housing of Latvia, the systematic evaluation of building performance is an unavoidable element of the process that should guarantee that the refurbished homes provide enough living conditions and meet the modern demands. Performance assessment and testing can also be used to inform the adaptive reuse programs by determining necessary improvements in insulation, heating, ventilation and the general envelope, and thus enhance sustainability and habitability of the social housing units (Preiser & Vischer, 2005).

Building Adaptation Theory: Building adaptation theory involves modifying existing buildings to meet new requirements or improve performance. In Latvia, the adaptation of underutilised or obsolete buildings into social housing offers a sustainable solution to housing shortages. This theory supports the idea that through strategic design interventions and repurposing, buildings can be transformed to meet current and future social housing needs, thus preserving architectural heritage and reducing environmental impacts associated with new construction (Douglas, 2006).

These theories form a cohesive framework where each element addresses specific aspects of property reuse while contributing to the overall system for developing age-friendly social housing through adaptive reuse.

Synthesis: Toward an Integrated Framework

The aforementioned theories work separately and do not focus on how reuse of property can be used systematically to help in the development of age friendly social housing within the particular welfare settings. The sustainability development theory focuses on environmental gains but does not have a mechanism of realizing them in social housing. The Urban Regeneration Theory is concentrated on the regeneration of neighborhoods but does not look at the needs of the aging population. Adaptive Reuse Theory has technical solutions but does not integrate with social housing policy frameworks.

This theoretical gap is bridged in this thesis through the creation of a combined framework that links these two rather different aspects together, forming a unified method, which is specifically oriented towards the situation in Latvia after the socialism. The framework integrates property reuse strategies and age friendly design approaches and takes into consideration the constraints of residual welfare systems and scarcity of public resources - creating a new theoretical contribution that outgrows current literature.

The theoretical framework established in this chapter provides the foundation for analyzing specific factors influencing property reuse, which will be examined in detail in Chapter 2.

2. ASSESSMENT OF FACTORS INFLUENCING PROPERTY REUSE FOR SOCIAL HOUSING DEVELOPMENT

Chapter 2 explores the complicated aspects of creating age-friendly social housing by reusing already existing properties. It examines the key social, economic, environmental, and adjustability circumstances that affect such initiatives. With the help of a detailed analysis of stakeholders, the study explains the roles and views of various actors including policymakers and developers, as well as the ageing population, involved in the process. Chapter provides a comprehensive overview of existing practices, issues, and opportunities of providing sustainable and inclusive living conditions to older adults. The chapter, implementing a mixed-methods approach, combining a quantitative study with the qualitative perspective, aims to provide a more complex idea about the difficulties connected to the idea of repurposing properties as age-friendly social housing, focusing specifically on the Latvian context.

The evaluation framework that will be used in this doctoral thesis integrates various methods of analysis to obtain a comprehensive understanding of the determinants that will control the reuse of properties to social housing that is age friendly. This mixed approach approach also allows the triangulation of results and provides a strong basis of policy suggestions. As a result, the assessment allows the thesis goal to proceed directly, recognizing and confirming the main variables that need to be considered when developing an effective methodological solution to the implementation process of property reuse.

2.1. Conceptual Analysis and Theoretical Assessment of Age-Friendly Social Housing

The world ageing population is a serious problem and is associated with an equal opportunity to urban planners and housing developers. The need in age-friendly housing solutions grows in line with the fact that the population of people aged 65 and above is expected to triple by 2050. Age friendly housing is not limited to accessibility, but it involves the intentional development of environments that comprehensively cater to the physical, social and emotional health of the aged. This chapter examines determinants that affect repurposing of properties to develop age friendly social housing and highlights the need to work together to innovatively meet the diverse needs of an ageing population.

The stakeholder analysis defines the key roles that are played by the range of actors, such as the state agencies, privately developed developers, the community organisations, and the ageing population itself. Stakeholder relations are effective in making sure that the housing solutions developed are practical and responsive to the needs and preferences of older adults. The given collaborative paradigm will not only make the housing projects even more relevant and accepted but also allow taking advantage of various expertise and resources which will eventually lead to the overall success of the project (Sousa, 2012; Sturge *et al.*, 2023).

The market of the age-friendly housing is high, and the current level of supply is significantly lower. The current gap between the demanded 30,000 units a year and the 8,000 units under construction currently highlights the need to put more emphasis and more resources into this industry (BDP, 2021). Quality, age-friendly homes have numerous advantages, such

as reduction of the social isolation effect, increased living choices, and decreased emergency transfers to the long-term care. Moreover, the homes are important in the urban renewal as they transform underused areas into multi-generational communities (BDP, 2021).

The social, environmental, and economic variables with their respective considerations and sustainability programs are vital elements in the design of the age-friendly housing. These projects can be made affordable and possible through the use of cost-effective design and construction methodologies, including modular construction and prefabrication. State policies and financial incentives also become inevitable facilitators to such developments. Also, the green practices implemented into the mix, including energy efficiency and the use of green materials, will reduce environmental impact and enhance the sustainability of the housing projects in the long run (Treija & Bratuškins, 2019; Hess & Tammaru, 2019).

The effective implementation of age-friendly housing requires a thorough grasp of the policy frameworks and models, the role played by the main stakeholders, their behavioural intentions, the needs that older adults have and market dynamics. This does not only require the provision of physical and accessibility needs but also strategic location of the homes within the close vicinity of the necessary services and community facilities. These factors are broken down in the chapter with a sharp focus on the significance of inclusive design and need to incorporate social and community spaces to facilitate the well-being of the aged (World Health Organization, 2007).

The primary and secondary sources were included in the data collection of this chapter. Amassing of secondary data was done using exhaustive literature review using academic journal articles, state and non-state reports, policy documents and case studies. Primary data was collected through the formulation of a structured questionnaire, which was circulated to the elderly people, potential elderly people, housing authorities, policy makers, developers and the architects. The questionnaire consisted of closed ended questions based on Likert scale and open-ended questions to gain both quantitative and qualitative feedback.

The quantitative data analysis involved descriptive statistics and the exploratory data analysis. Correlation and multiple regression analysis (MLR) were employed to evaluate the relationships between the significant variables as well as to predict factors that determine the possibility and success of the property reuse to age-friendly social housing. Thematic analysis was used to analyze qualitative data obtained after answering the open-ended questions to determine salient themes and patterns that led to a deeper understanding of personal experiences and recommendations presented by the respondents (Braun & Clarke, 2006).

Considering all these aspects in their entirety, plus the results of the data analysis, which can be found in this chapter and the following one, it is hoped that this will provide the framework of developing sustainable, inclusive, and responsive age-friendly social housing. Such a holistic approach is necessary to formulate environments that allow older adults to live freely and with dignity thus improving their quality of life and strengthening the overall resiliency and wellness of urban communities.

Secondary Data Collection and Analysis: Literature Review

A literature review was done to explain the available scholarly corpus on the age-friendly housing, property reutilisation and building social housing. This was aimed at outlining prominent determinants, barriers, and best practices that influence the transformation of properties into age-friendly social housing.

The review covers theories, empirical studies, and case studies related to adaptive reuse, age–friendly environments, and stakeholder engagement in the context of social housing.

The literature search was conducted using the following databases and sources:

1. Academic Databases: Scopus, Web of Science, PubMed, ProQuest, JSTOR, and Google Scholar.
2. Specialized Journals: Sustainable Cities and Society, International Journal of Environmental Research and Public Health, Journal of Housing for the Elderly, Building and Environment, and Gerontology and Geriatric Medicine.
3. Organizational Reports and Grey Literature: World Health Organization (WHO), European Commission, United Nations (UN), and policy papers from the Centre for Ageing Better.

Search keywords and phrases:

The search strategy utilised a combination of the following keywords and phrases (see Figure 2.1 and 2.2), derived from the provided articles:

Table 2.1

Keywords Used for Literature Search (developed by the author)

Core Concepts:	Broader Concepts:	Related Concepts:
"Property reuse"	"Built environment"	"Sustainable housing"
"Adaptive reuse"	"Urban redevelopment"	"Urban ageing"
"Age–friendly housing"	"Environmental interventions"	"Thermal comfort in housing"
"Social housing"	"Inclusive design"	"Demographic change"
"Housing adaptability"	"Universal design"	"Elderly housing"
"Stakeholder analysis"		"Community participation"

Search strings used for the literature search included: "Property reuse AND age–friendly social housing", "Adaptive reuse AND sustainable housing development", "Stakeholder engagement AND age–friendly housing", "Housing adaptability AND elderly populations", "Community participation AND social housing development", "Urban ageing AND housing design".

The search echoed a carefully edited set of keywords to ensure that there was comprehensive coverage of relevant literature on the issues of age-friendly social housing and repurposing the property. These lexical items were classified into core concepts that would be directly relevant to the research purpose, enlarged concepts that provide background details and related concepts that would contain overlapping themes. A pictorial representation of the keyword distributions in the forms of a word cloud is used to show their relative importance as well as interconnections.

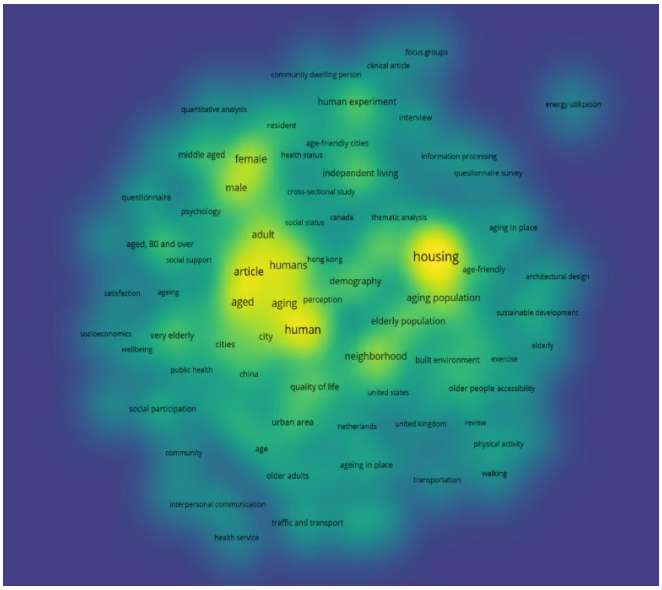

Figure 2.1 Keywords word cloud (developed by the author)

To be able to maximize the effectiveness of the literature search, the keywords were pooled together with the help of Boolean operators to obtain certain search strings. These combinations helped to capture the multidimensional nature of age friendly social housing studies and made sure that the relevant studies were not excluded. These search strings can be visualized in the network form that shows the connection between the main concepts.

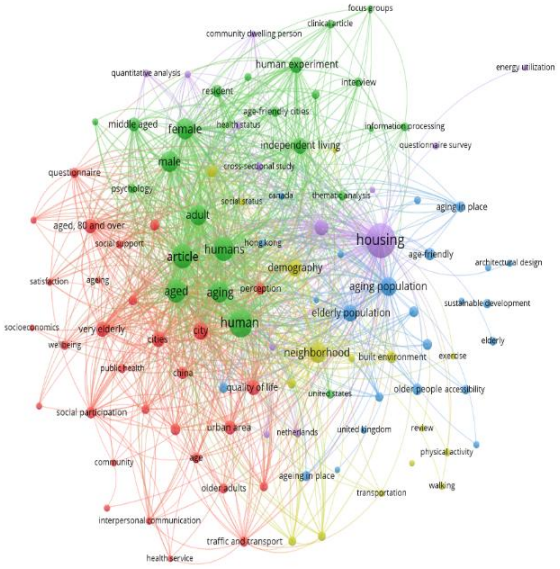

Figure 2.2 Keywords search strings (developed by the author).

The systematic approach to keyword selection and search string construction enabled a thorough exploration of the existing literature. This methodical process helped identify relevant studies across multiple disciplines while maintaining focus on the core research objectives. The comprehensive search strategy formed the foundation for the subsequent analysis of factors influencing property reuse for age-friendly social housing development.

Inclusion Criteria

Articles were included based on the following criteria:

1. Time frame: Published between 2000 and 2024 to capture recent developments and trends.
2. Language: Available in English, Latvian and other European languages.
3. Relevance: Focuses on property reuse, age–friendly housing, social housing development, and stakeholder perspectives.
4. Type of studies: Empirical studies, literature reviews, case studies, theoretical papers, and policy reports.
5. Geographical scope: Studies from diverse geographical locations, with an emphasis on Europe, North America, and Asia, to ensure a comprehensive understanding of the global context.

   Accessibility: Full–text availability to ensure comprehensive data extraction.

Exclusion Criteria

Articles were excluded if they:

1. Lacked focus: Do not specifically address property reuse or age–friendly housing.
2. Publication type: Are opinion pieces, editorials, or non–peer–reviewed content.
3. Redundancy: Duplicate studies or those with overlapping findings already covered by other included articles.
4. Geographical limitation: Focus solely on regions with distinct housing policies that are not generalizable, such as small island states.

Most important information including the study objectives, methods, results and conclusions was isolated. The information was synthesized to determine the themes, which were not addressed in the literature, and the possible areas of subsequent studies. The articles were classified according to the themes of adaptive reuse, age-friendly design, stakeholder engagement, and housing sustainability. To provide transparency and reproducibility, the search strategy, including databases used, search terms and selection process was recorded. The synthesis of the chosen literature was complete, elaborating on the factors considered to have impact on the development of age-friendly social housing through reuse of property.

This well organized systematic review of the literature ensured a solid ground towards the understanding of factors that affect reuse of property in the development of age friendly social housing in a stakeholders perspective.

Aspects of Age–Friendly Social Housing

Stakeholder analysis involves a scientific identification and understanding of the needs, interests and impacts of various stakeholders involved in a project or an initiative. Under the age-friendly cities, a guided analysis of the housing elements included can be used to ensure that the housing needs of the elderly population are met sufficiently. These elements include accessibility, affordability, safety and security, the accessibility to essential services, the social

connectivity, adaptability, health and wellness facilitation, maintenance and repair, and ease of integration with technology.

Positive health outcomes and housing

As acknowledged by the World Health Organization (2018), housing has a strong effect on a variety of favourable health outcomes, especially due to the growing urbanisation, the ageing population, and the climate change. The WHO recommendations cover such serious problems as poor living conditions, non-optimal indoor temperatures, risk of injuries, and accessibility (Kazak *et al.*, 2017). Along with the accessibility, the notion of egressibility is also important; it is necessary to determine whether a paramedic will be able to carry an older person on a stretcher in case of an emergency (van Hoof *et al.*, 2018). It is important to note that housing is amongst the eight domains of the age friendly communities model (World Health Organization, 2007). The structural design, location, and personal choice are emphasized as important in its contribution to safety and well-being, as provided in the WHO age-friendly communities guidelines. The WHO has revealed that the quality and access of appropriate housing and community and social services is crucial towards the quality and independence of older adults. It is well known that such supportive housing and services are of value to the ageing population to live comfortably in the community (World Health Organization, 2007).

Spectrum of age–friendly housing

Age-friendly housing is a rather wide-ranging concept that includes not only mainstream housing but also social housing and specialized housing, or care homes (Park & Porteus, 2018). The spectrum of mainstream housing covers adapted homes, lifetime homes, and wheelchair-accessible homes; the sheltered retirement, co-housing, retirement villages, and extra care of specialized housing; and dementia care homes, nursing home, residential care homes, and hospices. These are also residential units typical of the United Kingdom, which have equivalents in other global regions (Chao, 2018; van Hoof *et al.*, 2019; Rusinovic, Bochove & Sande, 2019; Rusinovic *et al.*, 2020). In a review of more than fifty age-friendly housing pilot projects in the Netherlands, France, Ireland and Poland, Sengers & Peine (2021) observed that the majority of innovations were social or conceptual, as opposed to material or technological. Age-friendly housing design is usually close to strict requirements, e.g. flat floors and wide halls. According to Chao (2018), the traditional principles of planning might not be applicable across the board in the ageing society, and he provides an example of Hong Kong and Tokyo where the absence of large floor space does not lead to age-unfriendly living because of the urban-friendly living conditions.

Importance of housing design

The World Health Organization (2007) emphasises the importance of housing built with adequate materials, structural soundness, even surfaces, lifts in multi–level buildings, appropriate bathroom and kitchen facilities, sufficient space for movement, adequate storage, and wide passages and doorways to accommodate wheelchairs. Given the prevalence of wheeled walkers and mobility scooters over wheelchairs, housing should be adapted accordingly. Various studies, guidelines, and handbooks have extensively explored these design measures (Park and Porteus, 2018; van Hoof, Kort & van Waarde, 2009; van Hoof *et al.*, 2010a). National building codes and architectural preferences influence home modifications,

highlighting the limited universality of design solutions and the importance of involving older adults in participatory design activities (Brookfield *et al.*, 2020; van Hoof *et al.*, 2021).

Necessity of home modifications

In addition to housing design, the WHO (2007) stresses the need for home modifications to enable older adults to live comfortably at home as their health declines. Environmental interventions, including object modifications, task simplifications, assistive devices, and home modifications, can address functional limitations and benefit formal and informal caregivers (van Hoof *et al.*, 2010b; van Hoof *et al.*, 2013). Home modifications should be implemented as needed to avoid stigmatisation or ageism. The feasibility of modifications depends on the home's design, layout, materials, and financial considerations, as well as landlord cooperation.

Accessibility and affordability

Affordable housing must be accessible to older adults in every city, irrespective of socio–economic development (World Health Organization, 2000). Housing costs, availability, adequacy, and affordability of essential services like electricity, gas, and water significantly impact older adults' quality of life and their ability to move to more suitable housing. National initiatives addressing fuel and energy poverty among older adults, alongside improving housing sustainability, can enhance their financial stability (Boerenfijn *et al.*, 2018). Older adults have distinct lighting and thermal needs compared to younger individuals, as detailed by studies on indoor environmental quality (Aarts & Westerlaken, 2005; Soebarto *et al.*, 2019; Bennetts *et al.*, 2020).

Maintenance challenges

Maintenance is also a highly crucial aspect of housing care among the aged people. Health defects and resulting physical constraints often make the maintenance of residential properties, especially the garden tending, a tedious task. Such maintenance activities may also be hindered by economic constraints. Maintaining shared areas, which is monitored by caretakers or concierge professionals, is also an important aspect of cleaning (World Health Organization, 2007). Many older people state that they would prefer to receive in-home services, including cleaning, general repair, and medical attention rather than be moved to another housing system. Van Hoof *et al.* (2013) recommended residential designs that comply with people with dementia and built with caregiver provisions and accessibility-based design of bathrooms. The closeness to the basic services and facilities, including shopping centers and religious institutions, is also another well-being determinant of the aging population.

Architectural and technical barriers

In addition to the realities of day to day maintenance of the house, architectural and technical barriers are major setbacks. With the increasing percentage of people with disabilities among the post-working-age population, it is necessary to provide easily accessible housing to maintain their activity level (van Hoof *et al.*, 2021). Empirical evidence proves that as age advances, the tendency to shift to apartments that will accommodate mobility needs decreases significantly (Przybyła, Heldak, & Kurtyka-Marcak, 2019). The surveys that explore household adaptations, i.e., bathroom adaptations or wall railings, point to the fact that many older adults who have age-friendly adaptations in place do not feel that they need them, unlike those who do not have such adaptations (Kurtyka-, Heldak-, & Przybylak, 2019). This inconsistency underscores the fact that there is still a lot of uncertainty regarding the best way to design

apartments to suit older adults. One of the possible solutions could be found in comprehensive adoption of universal design principles.

Community and social networks

Familiar surroundings and a strong sense of community significantly enhance a city's age–friendliness and contribute to older adults' reluctance to relocate. The local community can play a pivotal role in creating age–friendly housing. For example, van Hoof and Boerenfijn (2018) described a project in a small village in the Netherlands where group housing for older adults was developed through active community participation. In contrast, Versey *et al.* (2019) examined the effects of gentrification in New York neighbourhoods and found that it could lead to displacement of older adults due to rising housing costs and the erosion of the neighbourhood's unique character and social identity.

Housing preferences and options

The choices made by older adults regarding the housing option are not determined solely by the difference in the prices between the urban and the rural regions but also by taking into consideration the social networks. It is important to provide a wide range of housing products in neighbourhoods to suit changing needs as it has been suggested by World Health Organization (2007). Regrettably, there are still very few specific residential services of older adults, which leads to long queues. New housing designs, like co-housing (Rusinovic *et al.*, 2019) and group living (van Hoof & Boerenfijn, 2018), could provide shelter and social life to older adults. These housing models may be achieved by building new residence, or by re-fitting the existing empty real estate. Indicatively, Singapore has propagated programs that urge families to house together in these forms of flats so as to create multigenerational living and strengthen extended families (Chong *et al.*, 2016). Since ageing population heterogeneity creates a diverse range of housing needs, the need to develop new typological forms of housing is quite obvious to cater to both residential and social needs of the population.

Safety and security

Lastly, the feeling of safety and security in the home of the older adults is another important aspect of age-friendly housing. Some of the older adults complain of having fears regarding lonely living conditions thus highlighting the importance of security measures in age friendly housing design (World Health Organization, 2007).

The effectiveness of property reuse initiatives depends on having a deep understanding of the multi-faceted interaction between various stakeholders. The following discussion examines the roles, interests, and comparative strength of major stakeholders in the age friendly social housing development.

2.2. Stakeholder Engagement and Building Reuse Determinants

Stakeholder analysis in the housing sector is a very important process that involves the systematic approach of establishing the interest and impacts of various groups and individuals who have a stake interest in housing projects (Sousa, 2012). This process is required to identify the inte

rests of actors, whose interests are to be voiced, as well as to make sure that these interests conform to the particularities of the discussed property. Stakeholder engagement can

represent a continuum of approaches, which run across the high-level strategic planning processes to daily management operations (Sturge *et al.*, 2023).

The clear identification of the stakeholders is one of the key elements of the stakeholder analysis. The stakeholders can be any type of group or an individual who can be impacted by, or have the means to impact, the goals and activities of a housing organisation (Sousa, 2012). Additional inclusiveness is on state agencies, international organisations, including WHO and the EU, community organisations, individual developers, and residents. As an example, when coming up with plans of a housing complex, the stakeholders could include neighboring communities, future residents and state planners, thus making sure that all views are factored in such that future challenges could be avoided at the initial stages.

The systematic stakeholder analysis process normally incorporates four stages that are interconnected:

1. Elaboration of the problem or objective,
2. Determination of the stakeholders,
3. Their relevance was determined, and
4. Working with them towards attainment of desired goals (Sousa, 2012).

This methodological process enables the step-by-step recognition and assessment of the relative importance of the stakeholders hence making sure that their inputs are well incorporated into the project. In illustration, the application of a power/interest matrix may be able to help evaluate relevancy of each stakeholder and direct the necessary engagement strategies (Sousa, 2012).

Interaction of stakeholders in the housing projects does not only help to meet the various needs of the various people but it also increases the likelihood of the project succeeding. With the strategic engagement of stakeholders, housing projects are likely to build trust and enjoy wider acceptance among other communities living in the immediate neighbourhood. This kind of involvement also has composite skills and knowledge, which will play a critical role in ensuring that the housing properties are developed and managed effectively. An example of this is in the first case of a public to cooperative conversion in Canada, the stakeholder analysis played a significant role in a successful conversion, and the main stakeholders in this case were the residents and the state agencies (Sousa, 2012).

The creation of age-friendly social housing requires the cooperation of various stakeholders, whose input is characterized by diverse ways of thinking and resources to invest in the project (World Health Organization, 2015a; 2018). The roles and contributions made by these important actors should be understood in order to implement such initiatives successfully. Van Hoof *et al.* (2021) also note how crucial the stakeholders are when developing the age-friendly social housing and the significance of the cooperation between the public, nonprofit, and third-sector organisations to deliver the environments that address the needs of older adults.

The stakeholders are also essential in the mobilisation of resources and the implementation of age-friendly initiatives. Buffel, Handler & Phillipson (2019) note that urban areas and communities should establish strong partnerships in various sectors to make them age-friendly. These partnerships include municipalities, architects, urban planners, designers, computer scientists, businesses, gerontechnologists, transport specialists, and geographers thus leveraging change as well as obtaining desired results.

Significance of collaboration

The importance of multi-sectoral collaboration as a key factor in the success of policies and practices aimed at making the city age-friendly is highlighted (Garon *et al.*, 2014). The success of these initiatives often depends on the involvement of various stakeholders, who bring their different opinions and resources (van Hoof & Boerenfijn, 2018). Also, strong political leadership is listed as the necessary factor to ensure the support of such policies at a local and regional level (Moulaert & Garon, 2018; McGarry, 2018).

Age-friendly initiatives assessment and new action plan development should be done along with older citizens, as recommended by the World Health Organization (World Health Organization, 2015a, 2018). Finally, the involvement of the community residents is also a significant part of the effectiveness of age-friendly plans and programmes. Without their commitment and involvement, an age-friendly world would just be the promise, and the activities of the policymakers will be rather tokenistic, and new models and frameworks will become outdated as soon as they are issued (van Hoof *et al.*, 2021).

"Building bridges amongst a range of stakeholders, including public, private, and third–sector organisations, as well as multiple levels of government (state) and NGOs, is essential for the success of age–friendly initiatives" (van Hoof *et al.*, 2021, p. 19). Therefore, this section outlines the main stakeholders involved in property reuse for age–friendly social housing development, focusing on state institutions and policymakers, housing developers and contractors, and the ageing population and community groups (Table 2.2).

Table 2.2

Stakeholder Analysis Matrix (developed by the author)

Stakeholder	Role	Interest	Influence	Engagement Strategy
State agencies/ Policymakers	Create and enforce policies, provide funding and incentives, ensure compliance with regulatory standards.	Ensure housing meets the needs of aging population, align with broader social and economic policies.	High – Can shape the landscape of age–friendly housing through policies and funding.	Collaborate with policymakers, developers, and community organizations; 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, leverage state incentives.	High – Critical in implementing age–friendly features and ensuring project feasibility.	Engage with government agencies for incentives and compliance; consult with aging population for design feedback.

Table 2.2 Continued

Community organizations	Advocate for the rights and needs of older adults, provide support services, engage 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 policymakers.
Aging population	Provide insights into their needs and preferences, participate in consultations and decision–making processes.	Secure housing that meets their 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, set global standards, offer best practices, and facilitate funding and technical assistance.	Promote global standards for age–friendly environments, support healthy aging, and enhance quality of life for older adults.	High – Influence global standards and provide resources and support for local initiatives.	Collaborate with local state agencies, developers, and community organizations; provide guidelines, funding, and technical assistance

The stakeholder analysis matrix outlines roles, interests, influences and engagement strategies of key stakeholders involved in the development of age friendly social housing. The matrix recognises four major stakeholders including state agencies, private developers, community organisations and the ageing population. All the stakeholders will lead to the successful implementation of housing projects that will be based on the requirements of older adults.

To begin with, state agencies play a central role in policy frameworks building and implementation, furnishing financial assets and incentives, as well as regulatory adherence. They have a significant power due to their ability to set the environment of age-friendly housing with the help of strategic plans and supportive frameworks. Secondly, real estate developers, also very powerful, should take responsibility of designing, constructing and maintaining such projects and ensure that they include basic accessibility, safety and comfort features. Thirdly, community organisations promote rights and needs of older adults through support services, community planning and thus, affect policy formulation and housing solutions. Fourthly, the ageing population can contribute to getting the valuable insights of their needs and preferences, being involved in the consultations and the process of decision-making, which will serve as the guarantee of the housing developments being relevant and effective. Lastly, the international organisations and their policy frameworks and models are important in shaping the property reuse. The strategies to engage all the stakeholders focus on collaboration, consultation,

advocacy, and active participation in order to synchronize the efforts and reach the common purpose of providing inclusive, age-friendly housing.

State institutions and Policymakers

At every level such as the local, regional and national, governments are critical in the development of the age-friendly social housing landscape. Some of their duties include formulation and implementation of policies, funding and incentives as well as ensuring that housing projects comply with the regulations. Furthermore, the governments play a key role in setting long-term strategic goals of ageing populations and aligning them with the overall social and economic policies (Sengers & Peine, 2021; Luciano, Pascale, Polverino, & Pooley, 2020).

Governments are very essential in the development of the age-friendly housing with particular reference to policy initiatives and frameworks that are meant to support the unique needs of an ageing population. These policies are supposed to ensure that housing is accommodating and helpful. The stakeholder analysis shows that the interests of various stakeholders, particularly in non-market based housing, cannot be fulfilled without government intervention in the housing policy (Sousa, 2012).

The Affordable Housing Initiative is one of the programs in the Renovation Wave strategy being implemented in the European Union to ensure double the rates of renovation, energy efficiency, and improved living standards of the residents, including the elderly (Sengers & Peine, 2021; Eurostat, 2018). The United Kingdom has developed particular requirements concerning accessible and adaptable housing (Categories M4(2) and M4(3)) and the housing developments created on the new premises will address the needs of the ageing population (GOV.UK, 2019). The policy initiatives currently underway in Latvia focus on incorporating age-friendly concepts in the planning and development of the urban areas to respond to the increasing demands of the elderly population (Eurostat, 2018).

Funding and incentives

Government funding is crucial for the development of age–friendly housing. This includes direct investment in housing projects, subsidies, and tax incentives for private developers who undertake such initiatives. For example, the UK Network of Age–friendly Communities provides resources and support for local governments to implement age–friendly policies (Centre for Ageing Better, 2021).

Governments can provide financial support through grants, loans, and subsidies to encourage the construction and maintenance of housing that meets the needs of older adults. Financial incentives can be offered to developers who include accessible and adaptable features in their housing projects, thus promoting the creation of age–friendly environments (Sousa, 2012).

Innovative funding mechanisms, such as public–private partnerships, can leverage private investment to support public housing initiatives. These partnerships help bridge funding gaps and ensure that housing projects are both economically viable and socially beneficial (Vakil & Colistra, 2020).

For instance, according to the Ministry of Economics of Latvia (2023), a new European Union Structural Fund support programme has been developed for municipalities to renovate and construct social housing. Approved on 19 September 2023, the programme aims to improve municipal social housing stock and reduce waiting times for housing assistance. The total

planned funding is 60.9 million euros, with 51.765 million euros from the European Regional Development Fund and 9.135 million euros from municipal co–financing. The programme is expected to provide housing for at least 1,865 individuals by the end of 2029.

Regulatory and compliance roles

Governments control the housing projects to adhere to standards encompassing accessibility and safety of aged adults. This implementation relates to the imposition of building codes, systematic inspections, and the support of community consultations to include the input of the residents. At the European Union level, such regulatory frameworks as Age-Friendly Cities and Communities of the World Health Organization model help municipalities to shift toward creating age-friendly environments (Torku *et al.*, 2020; Löfqvist *et al.*, 2017).

Regulatory frameworks set by the government ensure that age friendly housing is in line with the stipulated standards and guidelines. These standards include sizes like accessibility, protection, and supportive amenities in residential estates. The Quality of the housing furnished is monitored and followed up by governmental agencies to ensure that it meets the requirements (Sousa, 2012).

Also, rules often demand integration of society input in the planning and development procedures. These participatory processes would make sure that the housing is projected as being in line with the needs and preferences of the targeted occupants, thus positively increasing the quality of housing, and an ownership and community feeling amongst the residents (Vakil & Colistra, 2020).

Policy frameworks generally involve a wide range of stakeholders, such as governments, international organisations, local communities, housing developers, and healthcare providers, to build a complex approach to housing older adults. These models are supposed to combine housing and other ancillary services, including healthcare and social services, which would ease ageing in place among older adults (Vakil & Colistra, 2020).

Housing Developers and Contractors

The developers and contractors in housing are key players in the development of age-friendly housing. They are required to design, build, and maintain the homes, which meet the particular requirements of the elderly. By incorporating the elements that promote accessibility, safety, and comfort, these professionals will ensure that the built environment is able to promote healthy ageing. Developers and contractors will be needed in the translation of policy and regulatory frameworks into practical, habitable spaces of older adults (Buffel, Handler, & Phillipson, 2019).

The major agents who will physically implement age-friendly housing are the housing developers and contractors. They are responsible in planning, designing as well as building of buildings that can accommodate the needs of older adults. The developers will be required to consider the aspects of accessibility, safety, and the integration of social spaces that will encourage community interaction (Sengers & Peine, 2021; Luciano *et al.*, 2020).

Design and construction practices

Creative design initiatives are an inevitable part of the development of age-friendly houses. The developers are increasingly adopting the concept of universal design that ensures accessibility by all occupants regardless of their age or functional ability. In the European context, pilot projects have shown a range of creative solutions, such as retrofitting of the

existing buildings and adoption of smart-home capabilities to enable self-sufficiency (Sengers & Peine, 2021; Luciano *et al.*, 2020).

Figure 2.3 illustrates how contemporary design and construction methodologies in age-appropriate housing emphasise the development of environments that offer accessibility, adaptability and safety for elderly residents.

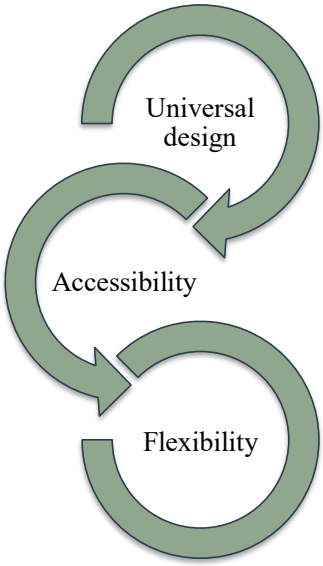

Figure 2.3 Design and construction practices for accessible and adaptable age-appropriate housing environments (developed by author).

Universal Design: According to Steinfeld & Maisel (2012), this paradigm ensures that the built environments are accessible, by default, to all people, regardless of the age or disability, and thus, do not require any adaptive or specialised interventions

Accessibility: Adding things like step-free doors, extensive corridors, and grab bars to the bathrooms can be used to ease the use of the mobility aids and curb the risks of falls as (Imrie, 2006) contends.

Flexibility: Pynoos, Nishita, & Perelma (2003) have identified the notion of spaces that are easily modified to suit the changing requirements of the residents such as adjustable work spaces in the kitchen and the ability to remove cabinet openings to allow access by wheelchairs.

These strategies should be adopted so as to ensure that housing is befitting to the current occupants and at the same time meets the adaptable needs of these occupants as they age.

Collaboration with stakeholders

Engagement with stakeholders: The effective creation of age friendly housing will depend on the cooperation between a heterogeneous group of stakeholders, including developers, government institutions, healthcare organisations, communal organisations, and residents themselves. Initial consultation with these groups in the planning process will allow builders to suit the heterogeneous needs of older adults to the built environment and also meet the regulatory requirements. This type of collaborative praxis also allows gaining access to

funding streams and overcoming bureaucratic barriers (Eurostat, 2018; Centre for Ageing Better, 2021).

Figure 2.4 demonstrates how stakeholder collaborations facilitate continuous feedback mechanisms, community engagement, and strategic partnerships.

Figure 2.4 Stakeholder collaboration framework for feedback and community engagement (developed by the author).

Community Consultations: Community consultations entail the interaction with local communities to tap the input thus making sure that the housing design fits the needs and preferences of the potential residents (Buffel *et al.*, 2019).

Partnerships: It forms partnerships with the healthcare providers and social services to combine housing with supportive services which creates a more holistic living environment among the older adults (Pynoos *et al.*, 2003).

Feedback systems are also put in place to give avenues through which the residents can give continuous feedback to ensure the continued enhancement of the design and operation of age-friendly houses (Imrie, 2006).

Age-friendly housing can be developed by developers and contractors in a more effective and sustainable way through working with stakeholders.

Challenges and opportunities

Figure 2.5 delineates the principal challenges and opportunities encountered by developers and contractors in age-appropriate housing development.

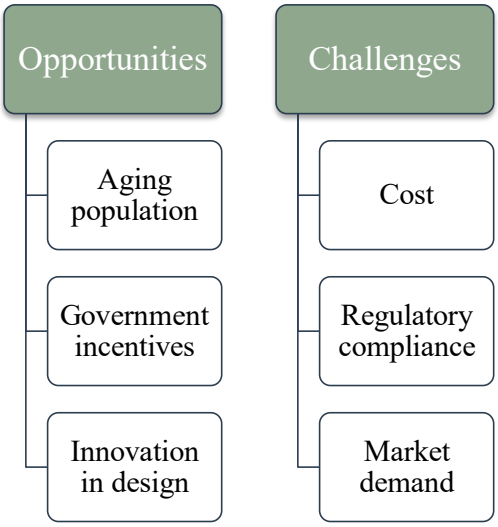

Figure 2.5 Analysis of challenges and opportunities in age-appropriate housing development (developed by the author).

Cost: The age-friendly implementation is linked to high construction expenses, which constitutes a possible barrier to the developers working in markets with low profit margins (Golant, 2014).

Regulatory Compliance: This takes place due to the complex web of local, regional and country regulations, which subjects developers to challenges that they have to be aware of the current standards and best practices (Imrie, 2006).

Market Demand: The lack of awareness and demand of age-friendly housing by consumers can make the investment by developers risky unless there is a guarantee of returns (Golant, 2014). However, the increasing demand of such accommodations brings significant market opportunities. Government stimulus and an ageing client base resulting in a growing number of clients is an opportunity to the developers. Finally, both in the United States and in the United Kingdom, there has been an apparent shift towards the creation of mixed-use communities, where residential units are combined with healthcare, shopping, and recreational amenities (GOV.UK, 2019; Centre for Ageing Better, 2021).

Nevertheless, there still exist important opportunities.:

Aging Population: The demographic transition that has led to increased ageing population increases the demand of age-friendly housing thus forming a significant market opportunity to developers (Health & Places Initiative, 2015).

State Incentives: There are various state funded programmes and incentives to reduce the costs involved in the development of age friendly housing and this makes such projects more viable to the developers (Pynoos *et al.*, 2003).

Innovation in Design: Technological and design developments are increasingly making it easier to integrate age friendly features in new and existing residential properties that can be more cost effective (Steinfeld & Maisel, 2012).

Aging Population and Community Groups

The ageing population is a significant factor in the planning and execution of the age-friendly housing and community program. The chronologically advanced adults are very important in providing valuable experience that can be used to inform the development of housing projects to be much more consistent with what the residents need. Their participation makes the housing solutions relevant, efficient and sustainable. Moreover, the participation of the older adults in the communal activities helps to feel belonging and improve the overall quality of life (World Health Organization, 2015b; Buffel, Handler, & Phillipson, 2019).

The elderly population is the key beneficiaries and the key stakeholders in the development of age-friendly housing (Löfqvist *et al.*, 2017). Based on this, planning and development of housing projects should be guided by their needs and preferences. The representation of older adults in groups could provide useful information about the most salient features and services (Torku *et al.*, 2020; Centre for Ageing Better, 2021).

Engagement and participation

The engagement and involvement of the older adults in the planning and development of the housing projects is invaluable. Involving older adults in consultation and decision-making processes is an efficient way to learn deeper about their preferences and needs and it helps developers and policymakers to comprehend them better. This collaborative model does not only improve the relevance and quality of housing solutions, but also gives older adults power, building agency and community ownership (Lehning, Scharlach, & Dal Santo, 2010; McGarry, 2018). Structured participation in participatory design workshops and focus groups gives the residents a chance to express their preferences and concerns in making the design decisions. Indeed, in Latvia, community-led approaches have seen the successful incorporation of the views of older adults in urban planning (Eurostat, 2018).

Involving the elderly in the planning process would provide assurance that the housing will address the needs of the older adults and make them feel that they own the place. This kind of involvement is essential in creating the environment that truly serves the ageing groups, resulting in increased satisfaction and utilisation of the ensuing housing (Buffel *et al.*, 2019).

Advocacy and support

The community organizations are critical in ensuring that the needs and rights of older adults are advocated. These organisations also act as the bridges between the ageing populations and the policy makers making sure that the voices of older adults are heard and they are taken into consideration when making the policies. They also offer basic support structures like healthcare, social activities and teaching programmes that is essential to the well-being of older people. The organisations in the United Kingdom such as the Centre for Ageing Better facilitate becoming age-friendly and help communities become more inclusive (Centre for Ageing Better, 2021). They close service gaps and promote ageing in place (Buffel *et al.*, 2019; Gonyea & Hudson, 2015).

Community organizations are not only promoting policy changes but they are also working directly with older adults. It involves sharing information on resources available, providing a chance to interact socially, and accessing the needed services (Buffel *et al.*, 2019).

Age-friendly social housing is a multifaceted process, and it takes the concerted actions of various parties to be developed. The stakeholders can come up with the housing solutions through collaboration to ensure that older adults live healthy, independent, and fulfilling lives.

International Organizations: Policy initiatives

As major organizations in the international arena, the World Health Organization and the European Union have a considerable role in establishing policies and frameworks that enable age friendly environments amongst individuals, urban and the entire community in general. These organisations make use of their international presence to spread various programmes and policy tools that are meant to strengthen the health of the ageing population. They also give critical policy information and share best-practice models of how age-friendly environments should be built (World Health Organization, 2000, 2007, 2018; European Union, 1999). Their institutional frameworks are driving local governments and communities towards effective age-friendliness strategies development and implementation.

In this chapter, the chapter analyzed the regulatory and governance framework of the social housing and property reutilisation in Latvia (see Chapter -1). In this context, the policy initiatives and frameworks that are produced by international organisations such as EU and other global organisations are examined. The article by Buffel, Phillipson, and Rémillard-Boilard (2019) offers a detailed explanation of the emergence of the concept of age-friendly cities and communities as a result of a series of policy initiatives introduced by the World Health Organization at the beginning of the 2000s. The core of these efforts is the idea of active ageing (Buffel et al, 2019) that was initially expressed in the Year of Older People organized by the United Nations in 1999 and further developed by the European Union (1999) and WHO (2000). The WHO defines the active ageing as the ability of people to continue participating in social, cultural, civic, spiritual and economic life processes as they grow older (World Health Organization, 2002). The active-ageing policies and programmes implementation requires a wide range of interventions to improve not only the social but also the physical milieu (Buffel *et al.*, 2019).

In 2006, the WHO broadened these ideas by establishing the project, the Global Age-friendly Cities (World Health Organization, 2007). The project involved older adults, caregivers, and providers of services in 33 cities of 22 countries and focused groups, where the determinants were identified, which make urban environments more age-friendly. It defined an age friendly city as such that facilitates active ageing through maximising opportunities to stay healthy, participate, and stay secure to improve the quality of life as individuals get older (World Health Organization, 2007, p. 1). The resultant guideline outlined the important characteristics of the age-friendly social housing in three primary spheres namely the services provision, the physical environment, and the social aspects (World Health Organization, 2007). The guide has emerged as a reference on the promotion and assessment of age-friendliness (Rémillard Boilard, 2018).

In an effort to spur the implementation of the recommendations of the 2006 project, the WHO created the so-called Global Network of Age-friendly Cities and Communities (the Network) in 2010 (van Hoof *et al.*, 2021). Since the beginning of its establishment, the Network has grown significantly to include over 1,100 cities and communities by 2021. The mission of the Network is to help its members to be more age-friendly through information, knowledge,

and experience sharing, motivate change, and create new solutions that could address the needs of older adults. It brings more than 1,100 cities and communities in 44 countries and 14 affiliates on eleven countries, and national or regional governments, civil society organisations, and research organisations (van Hoof *et al.*, 2021).

The WHO carried out systematic literature reviews and expert consultations and pilot studies that included more than 50 communities in 25 countries between 2012 and 2015 (van Hoof *et al.*, 2021). The results of this work were published in the form of a report in 2015, which described a framework and indicators to monitor and evaluate age-friendliness. The indicators are concentrated on equity, physical environment accessibility, and inclusiveness of social environment, thus offering the basis of developing age-related social housing metrics, which are locally relevant but internationally comparable (Buffel *et al.*, 2019).

Several age-friendly organisations have supported the works of the WHO and the Network, including the international NGOs like the International Federation on Ageing (Buffel and Phillipson, 2018). Some of the major advocates in North America include the Livable Communities Initiative of the American Association of Retired Persons (AARP) and the Livable Communities Initiative of the National Association of Area Agencies (Buffel *et al.*, 2019). In Europe, Age Platform Europe has been at the forefront of advocacy of age-friendly policies by, among others, arranging the campaign, Towards an Age-Friendly EU by 2020, and the AFE-INNOVNET Thematic Network, age-friendly environments innovation (2014-16), which is also funded by the EU (Buffel *et al.*, 2019).

The WHO in 2018 included a reflection on the Network (World Health Organization, 2018), comprising eleven case studies of Network cities, and summarising a decade of progress towards age-friendliness. Future interventions, such as the minimization of inequalities, the increase in inclusivity, the establishment of new collaborations, and the advancement of the evidence base with older people and communities were outlined in the report as well. The WHO has reaffirmed its support to Network in the Global Strategy and Action Plan on Ageing and Health (World Health Organization, 2017) and the Decade of Action on Healthy Ageing (2021-2030) (World Health Organization, 2020).

Policy frameworks and models

The foremost framework for creating age–friendly cities and communities is the WHO's Age–friendly cities model, introduced in the Global Age–Friendly Cities – A Guide (World Health Organization, 2007). This guide was designed to address questions regarding urban ageing and living in cities, drawing from the results of a worldwide research initiative. Considering that older adults can maintain independence and good health for as long as possible when support is provided across various aspects of daily life, the WHO identified eight domains where cities face challenges and need to implement actions (World Health Organization, 2007). These eight domains are:

- Outdoor spaces and buildings;
- Transportation;
- Housing;
- Social participation;
- Respect and social inclusion;
- Civic participation and employment;

- Communication and information; and
- Community support and health services (Figure 2.6).

Figure 2.6 WHO model of age–friendly cities in 2007 (developed by the author based on WHO, 2007).

The Checklist of Essential Features of Age–Friendly Cities (World Health Organization, 2007) lists an extensive list of features which is consistent with the eight domains that are considered as fundamental to age-friendly communities. In this context, the built environment is covered in a specific way with a number of subdomains, such as outdoors and buildings, transportation, and residential.

WHO emphasizes the interdependence of various aspects of life in the city (World Health Organization, 2007). Achieving an age-friendly community thus requires a multi-dimensional approach to the issue that focuses on the everyday life of the older population. This would require the interaction between several municipal policies and services to foster the understanding, reinforcement, and take up (World Health Organization, 2007). In this regard, the age-friendly cities and communities agenda cannot be achieved without collaboration and cross-departmental teamwork to address each of the domains separately (Chao, 2018).

Two relationships are particularly relevant in this context:

Firstly, homes should be situated in areas safe from natural hazards and near services, other age groups, and public attractions to promote community integration and keep older adults active (World Health Organization, 2007).

Secondly, transportation services and infrastructure must be well–connected to social, civic, and economic opportunities, as well as health services (World Health Organization, 2007).

These two relationships underscore the necessity of interdisciplinary action and collaboration across various domains to achieve the goals of the age–friendly agenda. The WHO acknowledges this importance. In 2018, the WHO identified several knowledge gaps concerning age–friendly cities and communities, highlighting the need for a multisectoral approach to reduce inequities (World Health Organization, 2018). The WHO emphasized that "guidance and tools are needed to support cities and communities to make decisions around which actions are most likely to ensure these outcomes and not leave any groups behind in the process of development" (World Health Organization, 2018, p.18).

It is crucial to recognize that outdoor spaces, buildings, transportation, and housing are not the only elements relevant to the built environment. The success of the built environment in supporting age–friendly cities and communities also depends on other domains such as social participation, respect and social inclusion, and community support. These should be incorporated into the design, operation, and management of the built environment.

In response to the necessity for multisectoral collaboration, Fulmer *et al.* (2020) introduced the concept of an age–friendly ecosystem (Figure 2.7). In this ecosystem, diverse age–friendly initiatives can establish alliances and promote interactions to address the challenges of ongoing population aging. Their vision encompasses the lived environment, social determinants of health, a public health system focused on prevention, and the healthcare system itself (Fulmer *et al.*, 2020).

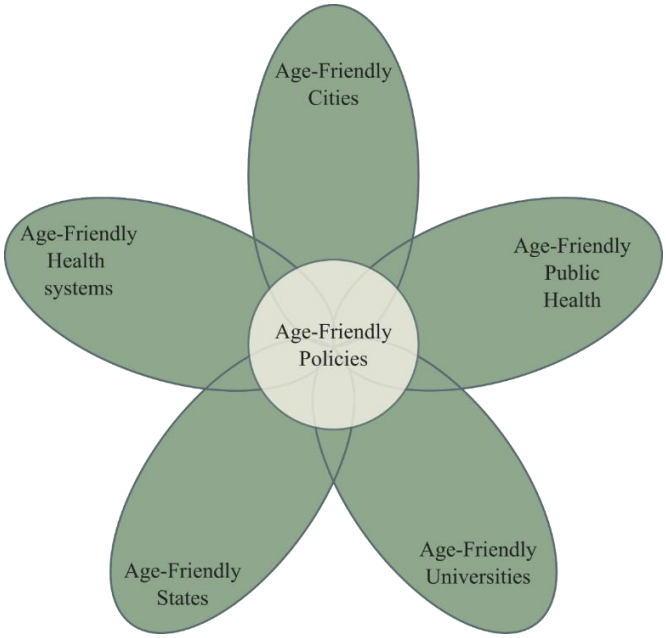

Figure 2.7 The age–friendly ecosystem (developed by the author based on Fulmer *et al.*, 2020; van Hoof *et al.*, 2021).

Before Fulmer *et al.*'s proposition, Marston & van Hoof (2020) introduced a new ecosystem, highlighting the significant oversight of technology in the existing scientific and grey literature on age–friendly communities (Figure 2.8).

Marston & van Hoof (2019) further advocate for the integration of technology into the age–friendly living environment in its broadest sense. This includes incorporating information and communication technologies, as well as considering these elements in evaluating the age–friendliness of cities and communities.

Figure 2.8 The smart age–friendly ecosystem (SAfE) framework (developed by the author based on Marston and van Hoof, 2020; van Hoof *et al.*, 2021).

Focusing on the built environment in the context of age–friendly communities, Chao (2018) developed the Ageing Well Urban Planning Model, which is grounded in the principles of a healthy city. Chao (2018) highlights that several domains of the WHO Age–Friendly City Model, including transportation, outdoor spaces and buildings, and housing, have explicit spatial requirements.

It is easy to overlook the spatial needs of various social–service domains, often leading to an underestimation of the necessary urban planning approaches. For instance, the domains of civic participation and employment might necessitate the development of community centers and suitable work environments. Therefore, spatial needs can be systematically identified for all eight domains of the WHO model (Figure 2.9), which categorizes spaces into four levels based on their degree of publicness: public, semi–public, semi–private, and private. The spatial

scales for older individuals range from their homes to city–level public areas, creating both friendly and unfriendly environments.

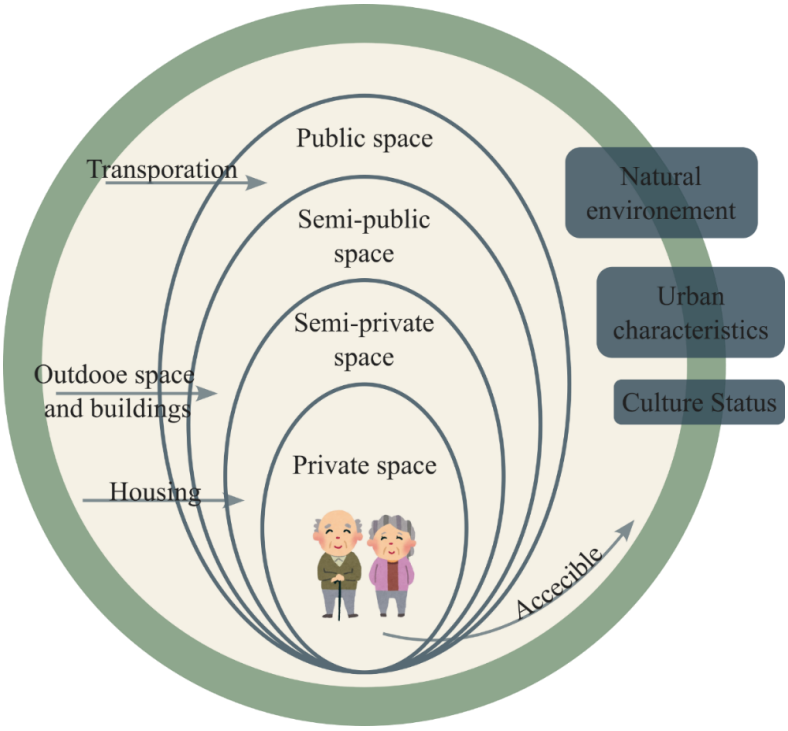

Figure 2.9 The ageing well urban planning model (developed by the author Chao, 2018; van Hoof *et al.*, 2021).

Chao (2018) highlights that "the priority of the planning principle should be accessibility and preferably walkability between different scales, and usages should echo the core concept of ageing–in–place" (p.39). However, it is important to acknowledge that there is no single, unified solution for appropriate urban density due to cultural diversity (Sim, 2020).

Marston, Shore, & White (2020) introduced a novel, innovative, and theoretical age–friendly framework (Figure 2.10), building on previous frameworks (Marston & van Hoof, 2020) and incorporating an ecological perspective.

The 'Concept of Age–friendly Smart Ecologies' (CASE) framework, proposed by Marston *et al.* (2020), integrates various outer and inner spheres related to sustainability, environmental, and accessibility factors. Technology is prominently featured within the inner quadrants, reflecting its interconnected role within this framework.

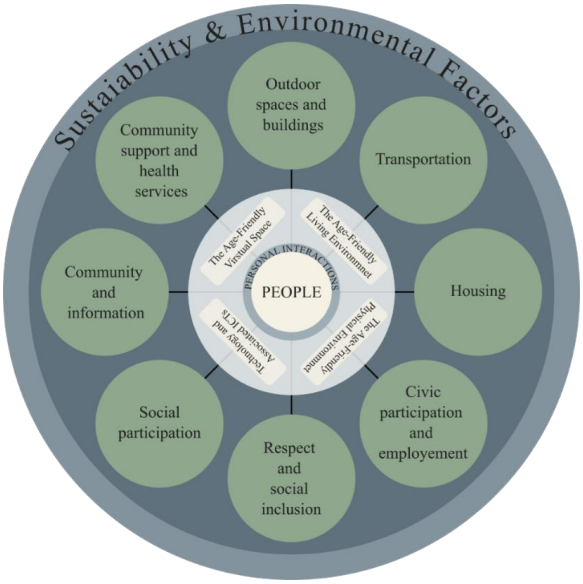

Figure 2.10 The CASE framework (developed by the author based on Marston *et al.*, 2020).

The CASE framework (Figure 2.10) is unique in its potential to represent a district or suburb within a city or town. The eight centrally located hubs within the framework vary in size (small, medium, or large) based on the positive and negative impacts specific to the district. For instance, well–connected public transport and well–represented services would be depicted by a large circle, whereas poorly supported community support and health services would be illustrated by a smaller circle.

Factors Influencing Reuse of Buildings for Social Housing

The stakeholder analysis was fundamental in establishing the factors that determine adaptive reuse of properties in the social housing projects age-friendly. The analysis provides a wide-ranging information about the multifarious factors that define property reuse by systematically defining and analyzing the interests, influences, and roles of stakeholders.

First of all, the role of state agencies and policymakers within the creation of the regulatory milieu is crucial. Their support in the form of legislative acts, incentive policies and monetary structures can either promote or hinder adaptive reuse of properties. With some understanding of their priorities and restrictions, practitioners will be able to work around legal and regulatory issues.

Then, real-estate developers and contractors make their contribution to the pragmatic knowledge about the possibility of reuse of extant structures. Their evaluation of construction expenses, design versatility as well as market demand sheds light on economic and technical determinants that influence property reuse. Interaction with these actors will allow identifying new opportunities in innovative design and cost-efficient construction practices and increase the feasibility of the adaptive reuse.

The community organisations and the older population group provides invaluable information on social determinants. Their comments will ensure that repurposed properties can meet the desired requirements and interests of older adults, including accessibility, safety and

social connectedness. This type of engagement will help recognize the problems connected with social acceptance and the opinion of the population, which is paramount to the success of age-friendly housing programs.

The world health organization (WHO) and the European Union (EU) are international bodies that provide necessary policy direction and set standards of age-friendly environments around the world. These organizations prepare policy frameworks and models that often include best practices and evidence-based guidelines that assist the local governments and developers in realizing viable age-friendly housing solutions. The partnership with such organisations can also improve credibility and visibility of local initiatives and thus find more support and investment.

The stakeholder analysis not only clarified the roles and influences of key actors but also uncovered a wide range of factors—social, environmental, economic and adaptability—that are vital for the successful reuse of properties for age–friendly social housing.

Social Factors

In the context of age–friendly social housing, several social factors significantly influence the design, implementation, and success of these initiatives. Figure 2.11 illustrates the critical demographic and societal factors influencing age-appropriate housing development.

Figure 2.11 Analysis of key demographic and social factors affecting age-appropriate housing initiatives (developed by the author).

It is true that the so-called second demographic transition triggered deep social shifts in society since the 1960s and transformed different spheres of life in most of the nations. The major consequences of this transformation are a rise in immigration, heterogenised family organization and not the least, an ageing population due to the extended life expectancy and reduced fertility. The implications of this demographic shift to the market sectors include the real estate, technology, healthcare, and financial services sectors. The ageing population is also a challenge as well as an opportunity in healthcare; ageing patients are usually in need of more medical care, hence creating a high demand of health care, long-term care centres, and age-specific pharmaceuticals.

Industries are changing in response to such demographic trends. Healthcare market, in particular, is experiencing a booming business in geriatric-oriented products and services,

including mobility aids and health-related monitoring devices. Diseases that are common among the aged such as cardiovascular and Alzheimer diseases are also being targeted by pharmaceutical companies as the demand of such treatments grows.

What is more, the demographic change leads to significant questions in city planning and the creation of real-estates. It becomes important to design spaces that enable various needs of different generations to be met. Adjustment to these changes presupposes the need not only to cover the urgent healthcare requirements but also to determine the consequences of these changes on society in the long run.

In conclusion, the ageing population is a disruptive trend in various industries, which stimulates innovation and change in accordance with demographic trends and changing customer behaviour.

Aging population and household characteristics

The nature of the ageing population is a very important and crucial social factor that determines the age-friendly social housing needs and design. The condition of aging of the world population has led to the increase in demand of housing that will meet the particular requirements of elderly people, i.e., the requirements associated with physical well-being, mobility, and social interconnectivity.

In most of the countries, the ageing population is growing at high rates causing a high demand of age friendly social housing. Recent studies in the European Union have showed that there are specific household traits of the elderly population, including reduced household sizes and increased single-person households (European Commission, 2022a). These trends have also been reflected in Latvia, where the percentage of older adults residing alone is very high, which justifies the need to offer housing solutions that consider their particular needs (Reine *et al.*, 2023). Also, housing should be age-friendly so that it has accessibility features and access to other necessary services needed by older adults to improve the quality of life (World Health Organization, 2021). Such population trends require specific housing policies that have the potential to address the individual living options and preferences of the ageing population.

The household factors, including living conditions and family set ups, also play a significant role in determining the housing requirements of the elderly. A large number of elderly individuals would like to age in place and continue to live in the same home or communities where they have built social support and feel familiar with them (Oswald *et al.*, 2002). Nevertheless, the transformations in the family structure (the rise of single-person living and multigenerational cohabitation) demand more adaptable housing options, which are capable of supporting the various household structures (Golant, 2015). As an example, houses that have flexible attributes can be used to accommodate older adults living alone or with their families to help them live freely and yet have access to the services they need.

Housing design and location play a significant role in the process of meeting the social and health requirements of the ageing population. Age friendly housing must be fitted with features like single storey designs, large door frames as well as grab bars to improve safety and easy accessibility (Lawton & Nahemow, 1973). There is also a need to be close to healthcare facilities, transport services, and other community services to make sure that the elderly can easily exploit the available facilities (WHO, 2007). Embarking these aspects into the housing

design not only enhances the living standards of the aged adults but also encourages socialization and lessens the cases of isolationism which is an issue of concern among the aged.

Buffel & Phillipson (2019) examined the processes of ageing communities in gentrifying neighbourhoods and noted how distinct issues are experienced by long-term older residents who tend to be stuck in the neighbourhood because of a lack of resources and no other option. This is opposed to the more optimistic concept of aging in place which implies a stable and enabling environment. Gentrification is found to upset this stability by raising housing prices and changing the social structure, displacing older and lower-income residents, especially those who are single, widowed, or unhealthy. Nonetheless, the authors focus on the strengths and capacity of the elderly to overcome the obstacles and remain resilient as they take an active part in community projects and promote age-friendly policies. This interaction enables to overcome feelings of being marginalized and a sense of belonging is created. The paper highlights the necessity to focus on the particular needs of the elderly to develop inclusive and age-friendly cities during urban transformation.

In addition, social connectivity is also very critical in age-friendly housing. Social programmes and community spaces are essential in promoting the sense of belonging and community among the older adults (Buffel & Phillipson, 2019). These programmes reduce the vulnerability of loneliness and social isolation, which are harmful to mental and physical wellbeing through allowing normal social interactions and community participation. Hence, housing environments that facilitate the physical and social lifestyles of the older adults is the foremost in facilitating successful ageing and raising the overall health of the ageing population.

Community needs and engagement

Community needs as a social factor in the age-friendly social housing consider different aspects that increase the well-being, inclusion and quality of life of the older adults. These factors comprise social inclusion and engagement, which is supported by community areas and structured events (Buffel & Phillipson, 2019). This is guaranteed by accessibility and mobility through the provision of transportation services and barrier-free design (WHO, 2007). The health and well-being are anchored by the accessibility of healthcare facilities and support services to the daily living activities (Golant, 2015). Safety and security are important, and there is a need to establish a safe environment and community support (Lawton & Nahemow, 1973). The economic and financial stability is achieved through provision of affordable housing and the financial assistance programmes (Oswald *et al.*, 2002). Involvement and empowerment are encouraged through making residents to be part of decision-making and having their voices heard in the community planning (Sixsmith & Sixsmith, 2008). Finally, social cohesion and support across age groups in educational programmes help in nurturing intergenerational relationships and community integration, which enables the communities to support each other (Phillipson, 2012). These social factors play a vital role in establishing a setting that will make older adults live well, stay independent and have a high quality life in an understanding and affirming society.

The community engagement and involvement of the stakeholders are also important in the process of developing age-friendly social housing. The involvement of local communities in the planning process helps make the housing projects relevant to the real needs and preferences of old people (Rawson *et al.*, 2022). Government agencies, non-profit

organisations, and individual developers are the stakeholders that have a central role in advancing these initiatives (Vakil & Colistra, 2020). When it comes to the case of Latvia, it has been shown that a multi-stakeholder partnership can result in more innovative and sustainable housing solutions (Krišjāne *et al.*, 2019). Moreover, a more positive and effective housing outcome may be achieved by including feedback by the aged residents in the planning and implementation stages (van Hoof *et al.*, 2021). This participatory nature guarantees that the developments that are to be made are not only practical but social and cultural too.

Social acceptance and public awareness

The success of age-friendly social housing projects depends on social acceptance and awareness of the people. The attitude of the population to the housing of the elderly can have a great impact on the introduction and maintenance of such works (Liepa-Zemeesha & Hess, 2016). The need to have inclusive housing that encourages aging in place has been gaining momentum in most European countries (Buffel, Phillipson & Rémillard-Boilard, 2019). Social acceptance and support of age-friendly housing initiatives can be developed through campaigning and educational programmes that would create awareness among people on the benefits of such housing. The improvement of the community support of the social housing projects has been demonstrated in Latvia where people have been made more aware of the needs of the elderly (Fabisiak *et al.*, 2021). Stakeholders can also develop a more conducive environment to the creation of such vital housing solutions by dispelling misconceptions about it and reminding people about its beneficial effects.

Economic Factors

Economic factors play a crucial role in the assessment of property reuse for age–friendly social housing development. These include costs, financing, behavioral intention and market dynamics. Figure 2.12 shows the economic determinants that influence property reuse initiatives for age-appropriate social housing development.

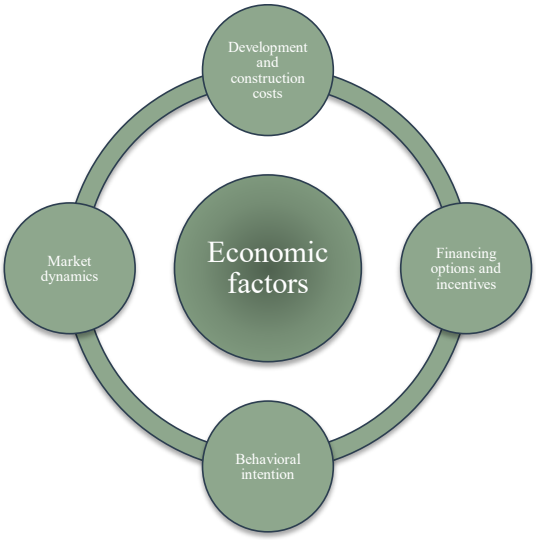

Figure 2.12 Economic factors affecting property reuse for age-appropriate social housing development (developed by the author).

Expenses incurred in terms of land purchase, construction and maintenance are some of the key factors that determine the viability of a project. The current studies in the European Union show that high initial expenditures may become a major obstacle, and often, social-business alliances are required to ensure that financial liabilities are reduced (Smith & Jones, 2023). Additionally, economic soundness of these projects is usually determined by the presence of subsidies and grants that can cover the initial costs and hence make them more appealing to investors (Brown, Orr & Luo, 2006).

The success of age-friendly housing projects is focused on development and construction costs. Latvian research has demonstrated that it can be less expensive to modernise existing buildings, to make them age-friendly, than to build new ones (Rasnaca, 2017; Tsenkova, 2023). These expenses include the accessibility changes, including the installation of elevators and ramps, and the security of adherence to safety standards. Moreover, sustainable building practices can have an impact on prices, but also provide a payoff in the long term due to energy efficiency (Treija and Bratuškins, 2019; Krišjane *et al.*, 2019; Hess and Tammaru, 2019). Therefore, the cost-benefit analysis should be carried out strictly to substantiate the investment in age-friendly housing retrofitting of property.

The source of funding and incentives are very important in the establishment of age-friendly social houses. These projects are also supported by a number of financial instruments such as low-interest loans, tax incentives and market grants. The European Regional Development Fund (ERDF) has within the EU been very helpful in availing the necessary funds in such initiatives (European Commission, 2022a). In Latvia, developers receive subsidies on classifying age-friendly features into their programs within specific government programmes (Lihtmaa, Hess & Leetmaa, 2018). Not only do these financial incentives help to lower the initial financial strain, but they also lead to an increased engagement of the developers in developing inclusive housing solutions (Hess & Tammaru, 2019).

Behavioral intention is an important economic element that determines the reuse of buildings to social housing which is age-friendly. It entails the goodwill and devotion of the stakeholders: developers, investors, and the policymakers, on the matters that they are willing and committed to support and invest in such projects. According to the Theory of Planned Behaviour, an action attitude, subjective norms, and the perceived behavioural control jointly determine the behavioural intentions (Ajzen, 1991). Whenever the stakeholders have positive attitude towards building reuse to house age-friendly buildings, feel that the social norms are favorable, and think that they have the ability to successfully implement them, they tend to devote more resources and efforts towards such projects. This is a promise that cannot do away with the financial and logistical obstacles that come with adaptive reuse projects.

Behavioral intention is also an important economic consideration which affects the reuse of buildings as age friendly social housing as viewed by the older adults. This aspect involves the initiation and dedication of the elderly people to transform their homes according to the changing demands. Wang, He, & Zhang (2023) determined that perceived effectiveness, cost perception, and subjective norms have a direct influence on older adults behavioural intentions towards home modification. According to the study, the more the older adults believe that the changes are effective and affordable, the more willing they are to invest in the changes.

This perception is critical, since it will influence how the financial resources will be allocated to the adaption of the available buildings to make them age-friendly.

The cost perception of older adults is of great importance to the viability of reusing buildings as housing where the elderly can live comfortably. Wang *et al.* (2023) found that aged patients do not usually have a full budget of money, which downplays their readiness to implement alterations in the home. The paper points out that the influence of government subsidies and financial aids on these behavioural intentions is crucial in reducing the economic cost of change. Without proper economic incentive and encouragement, the chances of older adults adopting these changes are reduced, thus sabotaging the overall success of the age-friendly housing initiatives.

The important role of subjective norms in behavioural intentions is also critical in age-friendly housing projects in determining their economic viability. The influence of the family, friends, and the community at large on decision-making processes of older adults when it comes to making decisions on home modification is an important factor. Wang *et al.* (2023) note that positive subjective norms would promote the behavioural intention to invest in home alterations since the elders tend to engage in home modifications when they have the support of their social groups. This kind of support can help to alleviate the economic issues and persuade the older adults to invest in the usability and security of their households, thus facilitating the reuse of the building as age-friendly housing.

The behavioural intentions of prospective investors and developers play a significant role in determining the economic viability of age-friendly housing in the reuse of buildings. Studies have shown that money (tax breaks, grants, and subsidies) can have a positive effect on the behavioural intentions of these stakeholders (Chan, Bachmann & Haas, 2020). The intention to invest in the adaptive reuse of buildings increases when the developers feel that there is a favourable economic climate just in place with state policies and financial incentives. This, on the one hand, can result in the increased funding and successful realization of age friendly housing initiatives, which would allow providing the required infrastructure to sustain the ageing population and secure sustainable urban development.

In addition, the economic feasibility of such projects is influenced by the behavioural intentions of residents and communities as well. The social housing that is age friendly needs to be approved and supported by the community to ensure the proper implementation and sustainability. In situations where communities show positive intentions on behavioural intentions towards such projects, it makes the project implementation process easier and increases the chances of occupancy and utilisation of the housing units (Smith *et al.*, 2018). This acceptance may be developed through community engagement programs and educational programs that highlight the value of age-friendly housing. In the end, effective behavioural intentions by all stakeholders may propel economic success of adaptive reuse projects, which would satisfy the needs of the ageing population as well as the general economic and social well being of the community.

Market dynamics

Age-friendly housing market is multifaceted, and the multiple difficulties and opportunities determine the supply and demand of the appropriate environment of older adults. One of the major issues is the growing median age of the population that increases the demand

to find the housing that will suit the needs and preferences of many people. According to Wigglesworth (2017), the locality, socio-economic status, and genetics of the aging population are heterogeneous, and their housing needs differ significantly. Such heterogeneity forces the offer of a gamut of housing options based on the level of mobility, health, and social activity.

A salient market issue is found in the lack of congruency between present stock of age friendly housing and the actual needs and preferences of the older adults. Though 80 percent of the older people state that they want to downsize, only 30 percent actually do so (Wigglesworth, 2017). This lack can be partly explained by the fact that there is a lack of properly designed, quality and appealing to the eyes units located in appropriate locations. Most elderly people delay moving until a crisis arises that forces them to move and this may lead to poor decision making and dissent with the new living conditions. Furthermore, new residential properties, particularly new apartments, often have significantly smaller floor areas than the older residential properties, which puts would-be downsizers off.

The economic aspect is very central in the dynamics of age- friendly housing market. Wigglesworth (2017) notes that the policy framework in the United Kingdom favours consumer demand by putting it above supply solutions. Affordability is also a significant barrier especially to the squeezy middle- the people who have limited equity. Many seniors cannot afford to purchase a home unless there are large subsidies, a new form of financial arrangements, like shared ownership arrangements or older person mortgages. Moreover, shortage of units with subsidies would weaken the choices of individuals who are not financially flexible. Empirical research indicates that an upstream investment into the built environment may also result in downstream savings in cost of healthcare and social services which can ultimately improve the overall welfare of a community, by creating a healthier and healthier community that is more able to withstand adversity.

The urgency of the need to address the demandsupply gap in age-friendly housing in the context of global demographic ageing and rising chronic morbidity in older adults is highlighted in the research brief titled Reimagining Age-Friendly Living (BDP, 2021). The short-term projects which will be equivalent to 30,000 units annually by 2040, though the supply is only 8,000 units per year. It outlines the advantages of age-friendly housing, such as the decrease in social isolation, housing choice, and decreased crisis relocation to long-term care centers. The report proposes that underused city spaces ought to be redeveloped into multi-generational and lively neighbourhoods and encourages more affordable methods in construction, in particular modular construction (BDP, 2021). It also demands an increase in policy attention and prolonged investment to make age-friendly housing embedded in the wider city planning policies (BDP, 2021).

The elderly population has a significant impact on the real-estate industry. According to Luciano *et al.* (2020) and Yalmanian (2024), the need in age-friendly housing, such as retirement communities, assisted-living residents, and single-story houses with accessibility elements, grows. Urban housing with ease of access to healthcare services and social services in general therefore increases in demand and developers in turn consider integrating such factors in their development work. On the other side, downsizing or moving older homeowners to assisted living could increase supply of suburban homes and this can influence the price of

properties and the demand behavior of a particular area. These developments pose challenges and opportunities to the real-estate investors and developers.

The trends in the real-estate market and affordability of houses have a significant impact on the viability of age-friendly social housing development. Recent empirical data suggest that there has been an increasing demand of such housing due to the demographic ageing and shift towards inclusive urban development (Liepa-, Zemeesha & Hess, 2016). Market forces in the European Union jurisdictions have been observable through the rise in the costs of housing, hence bringing about the challenge of affordability (Frayne *et al.*, 2022). Specific policy tools and incentives, including rent control and affordable housing quotas, can help to alleviate the price growth and make housing more available to the elderly (Kholodilin, 2020).

Retirement planning and wealth management is increasingly becoming the future of financial services. It is the growing focus of the ageing population group on saving and deriving a stream of consistent income over risky and high-paying investment plans (Yalmanian, 2024). This behavioural change encourages the financial institutions to develop products that are specially designed to meet these requirements such as annuities, reverse mortgages and long-term care insurance. Also, there has been an increased level of focus on advisory services that focus on the estate planning, optimisation of taxes and management of healthcare costs (Yalmanian, 2024). Companies that effectively respond to these conditions will be in a position to obtain a large market share.

The largest generation of workers in the contemporary labor market is the millennial generation, which translates to the period between 1981 and 1996. Their unique preferences and behaviours are changing the nature of the market in various industries (Yalmanian, 2024). Millennials are characterized by strong technological savvy, value-driven consumption and an experiential consumption of goods as opposed to materialism. Unlike the previous generations, most millennials prefer renting to buying because of financial reasons, mobility, and flexibility that renting provides. As a result, the rental market has grown, and especially in urban zones where the closeness to employment, human amusements, and transportation is the primary factor. To those who do buy, smart homes that use the latest and greatest technology, energy saving items and eco-friendly building materials drive the demand of millennials. On the one hand, the developers and investors of real states who follow such trends can obtain a competitive edge.

It is important to note that, ageing population and millennial preferences intersect in several ways, thus creating different market opportunities. As an example, the growing so-called silver economy promotes innovation in services that are of interest to each of the two generations, including telehealth platforms and wellness apps that are accessible to older adults and accepted by millennial health enthusiasts (Yalmanian, 2024). Also, the millennial focus on the concept of ESG (environmental, social, and governance) and sustainability affects the older generations to incorporate these concepts into their investment choices (Yalmanian, 2024). This cross-generational relationship creates a wider market overhaul in the sense of more responsible and sustainable business practices.

The demographic patterns, namely ageing of the population and unique investment behaviour of millennials, are powerful forces that are changing market dynamics. The ageing populations increase the demand of healthcare services, age-friendly housing and retirement

planning, but millennials trigger digital transformation, sustainable investment, and fluid living structure. Companies and investors that understand those demographic transformations and adjust to them will be able to position themselves in an ever-changing market environment. The opportunities of growth are enormous, and by meeting the special needs and demands of these powerful categories, organisations may gain competitive advantage.

Environment Factors

The environmental factors play a very significant role in the design of age-friendly social housing, especially in terms of sustainability, resource-saving, and green construction (Hanafi *et al.*, 2018). The combination of these factors lowers the environmental effect but enhances the quality of life of residents. Policymaking and societal pressure in the European Union have contributed to a significant change toward the use of sustainable practices in housing projects, both in regulatory requirements and in social demand (European Commission, 2022b). The given change also contains the measures that should enhance the water use optimization, energy-saving, green building, and sustainable materials application, all of which will lead to the future sustainability and affordability of housing programs (Treija & Bratuškins, 2019). Figure 2.13 gives a discussion on the determinants that have the greatest impact on the development of age-appropriate social housing.

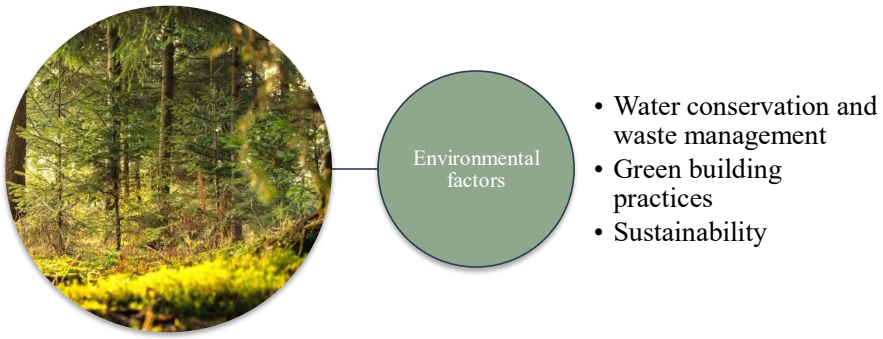

Figure 2.13 Factors influencing age-friendly social housing development (developed by the author).

Water conservation and proper waste management are also inseparable aspects of sustainable and age friendly housing development. There has been an increased focus on the adoption of water-saving solutions and effective waste management systems in housing developments in the EU (Treija & Bratuškins, 2019). The low-flow fixtures, greywater recycling, and rain water harvesting are some of the methods of minimizing water use and securing sustainability. Furthermore, recycling and composting, as a part of the thorough waste management practices, are necessary to reduce the environmental impact (Treija & Bratuškins, 2019). These practices make sure that housing developments are more than only environmental friendly but also sustainable to future challenges of resource scarcity.

The past few years saw the creation of a large number of scholarly papers on green building practices and property reuse as a possible solution to sustainable urban development (Van Hoof *et al.*, 2017a). The green building practices involve designing, building and managing of buildings in a manner that helps to reduce environmental impact and improve the health and wellbeing of occupants. Among the practices are energy-saving systems, eco-friendly materials, and new technologies that help decrease the amount of resources used and waste (Kibert, 2016).

Green building is composed of energy efficiency as one of its main components. High-performance insulation, efficient windows, and renewable energy facilities like solar panels can greatly cut down the consumption of energy by a building (Berardi, 2013). Green buildings are also more often than not fitted with water-efficient fixtures, rainwater harvesting, and eco-friendly landscaping to minimize the consumption of water and the efficient use of storm water (Malmqvist *et al.*, 2011).

When age-friendly housing is combined with green building practices, the latter can also increase the quality of life of its residents by contributing to the better quality of indoor air and thermal comfort, as well as access to green areas (Van Hoof *et al.*, 2017b).

The integration of green building and reuse of property as an age-friendly social housing is associated with many benefits. Adaptive reuse may also be less costly than new building, especially in the light of the increasing land and material prices (Yung & Chan, 2012). On the environmental level, the reuse of existing structures will reduce the number of raw materials and minimize the waste of construction materials and contribute to the achievement of sustainability goals (Yudelson & Meyer, 2013).

On the social front, such projects help in conserving cultural and historical importance of buildings and hence, serve as a source of community identity and heritage. Moreover, these projects could be developed to provide welcoming, inclusive spaces to older adults to promote social cohesion and reduce the impact of isolation.

The urban development of sustainability includes environmental, social and economic aspects. The element of reusing existing properties to create age-friendly social houses is a strategic choice as it goes hand in hand with the vision of sustainability as it saves resources, minimizes environmental effects, and ensures social inclusiveness. The sustainability issues and evaluation standards of property reuse concerning the age-friendly social housing development are discussed in the paper.

The reuse of the existing buildings also reduces the need to build new construction materials, hence, less carbon footprint and less consumption of resources (Bullen & Love, 2011). Adaptive reuse is also able to reduce the waste and gather embodied energy on the existing buildings (Thomsen & van der Flier, 2011). One of the prerequisites is the use of sustainable materials and building methods to reduce the ecological footprint of the age-friendly social housing. According to the recent research conducted by EU, recycled steel, reclaimed wood, and environmentally friendly concrete are among the materials that should be used due to their low environmental impact. In addition to saving on waste, these materials are also very durable and energy saving. Moreover, another way in which environmental impact can be significantly reduced is by embracing the construction methods that will reduce the amount of resources utilised as well as the quantity of waste produced through modular construction and

prefabrication (Moore & Doyon, 2023). Such strategies are essential in the generation of sustainable, resilient and cost effective housing alternatives to the ageing population.

On economic front, property reuse may be economical by not incurring the cost of demolition and building new properties (Langston, 2012). Moreover, preservation of heritage buildings may help to increase property values and bring investment, which contributes to economic liveliness in communities (Yung & Chan, 2012). Reuse of existing buildings is usually cost effective compared to building new ones because it will decrease material usage and labour expenses. Moreover, adaptive reuse projects are also usually less time-consuming, which is another argument to note by social housing developers.

Social sustainability is realised through the development of social housing that will cater to the needs of the ageing population. The elderly are also guaranteed of these features in age-friendly housing: access, safety and social connectedness, which are vital factors in the wellbeing of the elderly living in the accommodations (Buffel *et al.*, 2012). The reuse of the properties in the already existing communities maintains social networks and culture thus forming a part of the social texture (Phillipson, 2012). This will support aging in place whereby older adults are allowed to live in their communities as they grow old thus maintaining their independence and quality of life.

In the assessment of the reuse of the property, the viability of the reuse depends on the structural stability of the buildings and their adaptation to new purposes. The structural analysis reveals how far the buildings can be adjusted to accommodate the modern requirements and the expectations of the older generations (Conejos *et al.*, 2013).

The accessibility properties should be appraised to provide the amenities of movement like ramps, lifts, and broad doorframes to keep the aids of movement. This is done through safety considerations that provide handrails, non-slip flooring and sufficient lighting (WHO, 2007).

Energy efficiency evaluations are concerned with the possibility of retrofitting the buildings with energy-saving technologies that include, but are not limited to, better insulation, energy-efficient windows, and renewable energy sources. These will help to minimize the cost of operation and environmental effects (Power, 2008). By retrofitting the old constructions with energy saving technologies, it is possible to greatly decrease the energy costs and operations costs. This entails the installation of efficient insulation, energy saving windows, and solar panels. Furthermore, by introducing renewable sources like solar and wind power, not only the reliance on fossil fuels is minimized but also leads to long-term advantages of the economy, in the form of decreased utility bills (Blanco Ferrando & Ferri, 2020).

Re-use of properties within the community is essential in the development of social networks and provision of the community with the basic services and facilities. One of the major factors in evaluating the appropriateness of locations as an age-friendly housing location is proximity to healthcare, public transport and recreational facilities (Smith *et al.*, 2004).

Adaptability: A Multidimensional Factor

Building adaptation potential for reuse is determined by the synergies of building occupants' attitude, housing obsolescence, prospective impacts stemming from building adaptation, and building sustainable performance (Teo & Lin, 2011). The arguments for and against building adaptation have been posited by many researchers and are often categorised

under the headings ‘social’ (Bromley *et al.* 2005, Bullen 2007), ‘economic’ (Shipley *et al.* 2006, Bullen 2007) and ‘environmental’ (Johnstone 1995; Bullen 2007) factors. Research also suggests that besides economic, social and environmental factors, we have to also consider political, technological, and legal factors (Štaube, 2013; Grizāns, 2015) which play a crucial role in the sustainable development of the real estate market, particularly in the context of reusing properties for age–friendly social housing (Askar, Bragança & Gervásio, 2021; Re Cecconi *et al.*, 2018).

The general understanding of adaptability involves a shift from viewing a building as a completed, unchanging entity to seeing it as a dynamic system encompassing construction, modification, deconstruction, and reconstruction processes (Askar *et al.*, 2021). Designing for adaptability addresses the issue of building obsolescence, which has clear environmental and economic repercussions due to resource use and material waste (Graham, 2005). The concept of adaptability in buildings offers a comprehensive framework and principles for creating a sustainable and resilient built environment. This adaptability applies to various aspects such as function, structure, space, components, systems, services, and size, and manifests in both active and passive responses (Pinder *et al.*, 2016). Literature connects adaptability to concepts such as "Open Building" (Kendall, 2015), flexibility (Pinder *et al.*, 2016; Hudec & Rollová, 2016), resilience (Re Cecconi *et al.*, 2018), "Circular Economy" principles (Foster, 2020), and design for change (Kamara *et al.*, 2020). These foundational concepts and principles have gradually shaped the evolution of adaptability and facilitated the development of its strategies (Askar *et al.*, 2021). Figure 2.14 shows the multidimensional factors affecting adaptability in age-appropriate housing design.

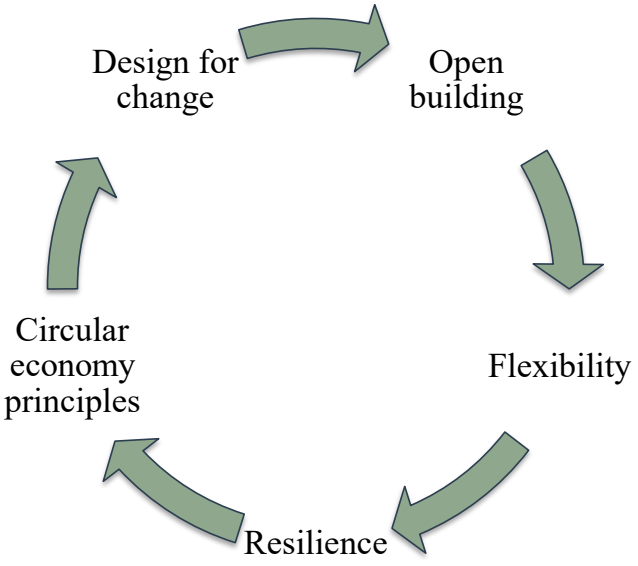

Figure 2.14 Multidimensional factors influencing adaptability in age-friendly housing (developed by the author).

"Open Building" is an architectural approach that distinguishes between the enduring, rigid structure of a building (the base building) and the more transient, flexible components (the infill) (Kendall, 2015). This methodology allows buildings to be modified over time to meet the evolving needs and preferences of occupants without significant structural changes. It was developed to overcome the constraints of uniform mass housing by granting occupants more control over their living spaces (Gijsbers, 2006; Habraken, 1962).

Flexibility in building design refers to the ability of a structure to accommodate changes in functional needs of users or owners of the structure by modifying the elements of the building easily (Pinder *et al.*, 2016). Despite often being mixed up with the idea of adaptability, the concept is mainly related to the restructuring of space in terms of items and building systems that enable the accommodation of new functions or use (Till & Schneider, 2005).

Resilience in the context of buildings and urban environments is the capacity to endure and quickly recover from various disturbances while maintaining essential operations. It is associated with adaptability and is a central theme in the Sustainable Development Goals (SDGs), particularly Goal 11, which aims to make cities and human settlements inclusive, safe, resilient, and sustainable (Re Cecconi *et al.*, 2018). Resilience encompasses both mitigation and adaptation strategies to address climate change and other stressors (Leichenko, 2011; Conejos *et al.*, 2017).

Circular Economy (CE) principles in building design promote shifting from a linear economy (take–make–dispose) to a circular model that focuses on closing the loop of product lifecycles through enhanced resource efficiency and waste minimization. This includes practices like reuse, recycling, and designing for disassembly. Circular buildings are created to support circular flows of materials and products, improving sustainability by reducing the consumption of raw resources and energy inputs (Ellen MacArthur Foundation, 2013; Geissdoerfer *et al.*, 2016).

Design for Change involves strategies that enable buildings to be modified, repurposed, or upgraded over time to meet evolving needs (Kamara *et al.*, 2020). This concept is closely linked to adaptability and flexibility, aiming to create structures that can easily accommodate future changes in use, function, or performance. The objective is to extend the useful life of buildings, thus reducing waste and promoting sustainability (Andrade & Bragança, 2019; Schmidt *et al.*, 2010).

Challenges and Barriers to Property Reuse for Social Housing

Older adults face various challenges, including limited mobility, social isolation, and financial constraints. The redevelopment processes of most suburbs involve the regeneration of existing assets without the easy illusion of radically replacing the public and private sections of the city. The challenge lies in the ability to redesign and upcycle what remains of assets that are clearly obsolete but are still characterized by a value that makes their demolition and reconstruction unlikely (Bullen & Love, 2010; Mangialardo & Micelli, 2020). Some of the key challenges are tabulated below:

Table 2.3

Problematic areas of the development of age–friendly social housing (developed by the author)

Problematic area	Description
Accessibility and mobility	Making housing and the outside world conducive to older adults, to allow them to move freely, as well as to make the outside world completely available, is an essential task.
Integration with services and amenities	The unhindered access of health facilities, recreation, and social services is one of the main priority issues.
Financial constraints	There is a need to address expensive financial obligations that come with renovations, compliance with the regulations, and maintenance.
Regulatory and policy barriers	Overcoming a complicated set of regulations and legislations that might hinder the adaptive reuse is also a challenge.
Social Inclusion and community engagement	Developing strong sense of community and strong social support networks is important in reducing the dangers of isolation amongst older populations.
Technological integration	The introduction of smart technologies and, at the same time, an ability to assure that older adults can make use of these systems will be a significant new priority.
Environmental Sustainability	Having the needs of both age-friendly design and green building practices is one of the strategic necessities.

The considerations between the demands of the age-friendly design and environmental sustainability are crucial (Bullen & Love, 2010). Renovation of the building must be done with sustainable building practices and material so as to reduce the environmental footprint. These measures include improvement of the level of energy efficiency, reduction of waste, and incorporation of green spaces. However, such sustainable strategies are often associated with extra expenses and logistical difficulties (Mangialardo & Micelli, 2020).

According to Collaton & Bartsch (1996), there are various critical barriers to successful reuse of the former industrial sites, which are commonly known as brownfields. They argued that the property reuse system must be tailored and deployed in such a manner that it streamlines the development of age friendly social housing against the following problems: Environmental Contamination. Environmental pollution is the major challenge when it comes to recycling of industrial premises. Hazardous substances are often found in brownfields making them not appealing to potential developers since remediation costs and legal liabilities are high.

1. Economic Barriers: The process of cleaning up and redeveloping the contaminated sites is too costly. Many property holders desert such sites because of the high remediation expenses. Moreover, financial institutions tend to be unwilling to finance projects that entail the use of polluted properties due to the liability risk that they have to bear under

the regulation systems and this makes the redevelopment project even less viable financially (Collaton & Bartsch, 1996).

2. Legal Complexities: The legislation of the brownfield sites is complex and often antagonistic. The liability problems that are enforced by regulatory authorities present a lot of legal and regulatory hitches, which discourages investment in such properties.
3. Physical and Social Deterioration: Unoccupied industrial areas are usually left in poor conditions in their long run, causing structural issues to increase the redevelopment expenses. Vandalism and dumping are also likely to occur on these sites to further contaminate the site and provide more hindrances to reuse. Abandonment of industrial sites has negative impacts in the local economy and community as it leads to loss of jobs, low value of property, and loss of tax revenue. In addition, the existence of the contaminated sites is a source of health hazards to the local residents which disproportionately affects the low-income and minority groups (Collaton & Bartsch, 1996).

Collaton & Bartsch (1996) successfully shed light on the complex issues of redeveloping brownfield land with the focus on the interaction between the environmental, financial, legal, and social aspects. The authors are quite persuasive in their view that, regardless of these challenging factors, the advantages of reusing these sites tend to outweigh the challenges. They support the idea of the simultaneous actions of the federal, state, and local governments, developmental organizations, and personal entities so that to overcome these obstacles.

The sophistication of regulations and policies can be a big challenge. The adaptive reuse of the properties into age-friendly housing may not be supported by zoning laws, building codes, and other controlling bodies. The synchronization between the policymakers, developers, and community stakeholders is needed to overcome such legal and bureaucratic challenges (Mangialardo & Micelli, 2020).

Modern technologies can be used to assist aging in place, including smart-home or health-monitoring devices, which can improve the quality of life of older residents (Mangialardo & Micelli, 2020). Nevertheless, retrofitting of the properties already in existence can prove to be a complicated and expensive endeavor. Also, it remains a challenge to make older adults comfortable working with these technologies and be able to use them.

The success or failure of property reuse programs to age-friendly social housing is largely influenced by the perception and opposition of the same to the people. These are important factors that should be understood by policy makers and developers who want to develop inclusive and sustainable housing solutions to older adults.

The acceptance and implementation of age-friendly housing can significantly be influenced by the perception of the age-friendly housing by the people. The positive perceptions have been commonly associated with the appreciation of the advantages that such housing offers like better quality of life among older adults and a healthier community (Kim *et al.*, 2022). Nevertheless, negative perceptions may be caused by misconceptions and ignorance about the needs of the aging population concerning the particular needs. As an example, age-friendly housing may be linked to higher tax rates or a shift in the local dynamics, which may promote resistance among the members of the community (Luciano *et al.*, 2020).

The unwillingness to reuse properties to social housing including age-friendly housing is usually as a result of numerous socio-economic and cultural factors. The Not in My Backyard (NIMBY) syndrome is one of the biggest causes of resistance since local residents tend to resist development projects within their neighborhood even though they are aware of the overall benefits of such projects to the society (Bullen & Love, 2010). The reasons behind this resistance are usually the fear of lowering property prices, the increase of traffic, and alteration of the character of the neighborhood.

Also, other stakeholders like developers and policymakers could encounter opposition because of the financial risks and regulatory challenges that may be experienced in changing existing properties into age-friendly houses. Economic uncertainties and the lack of finances might result in stakeholders being afraid to invest in such projects due to the fear that the profit will not be adequate (Abolina & Luzadis, 2015).

These challenges need an integrated approach that would involve provision of housing alongside provisions of healthcare, social services and social interaction opportunities. It is also imperative to make them affordable because most older adults are on fixed income and they might have trouble paying house rent (Eurostat, 2018; Centre for Ageing Better, 2021). Effective communication and community involvement is necessary in order to reduce resistance and improve the perception of the masses. The support may be promoted by educating the population about the advantages of age-friendly housing and discussing the issues they have raised in an open manner. Moreover, the engagement of members of the community in the planning and decision-making might contribute to the fact that the developments will satisfy the needs and preferences of these members, hence decreasing resistance (Van Hoof & Boerenfijn, 2018).

2.3. Methodology for Assessing Factors Influencing Property Reuse for Age–Friendly Social Housing Development

Research Design

The chapter follows a case study methodology, and the method is quite appropriate to explore the intricate phenomena in the real life situation. Yin (2014) argues that this practice is particularly useful in studying complicated phenomena in their respective contexts, when the boundary between the phenomenon and the context might not be determined. This method is particularly beneficial in the context of age-friendly social housing studies since it allows to thoroughly grasp a certain situation and can shape a local practice and policy. In earlier studies, most of the research has focused on expert and policymaker research and opinions but the current study aims at getting the experience of the ageing population.

Case study research methods are particularly useful in situations where the boundary between the environment and the phenomenon being studied is not clearly defined (Yin, 2013; Stake, 2006). Previous research on the implementation of age–friendly changes has shown that the context in which an age–friendly initiative operates significantly influences its structure (Eales, Keefe & Keating, 2008; Lui, Eeringham, Warburton, Cuthill, & Bartlett, 2009). This phase of the study aims to examine key factors—social, environmental, economic, and adaptability—that are essential for the successful repurposing of properties into age–friendly

social housing. Given the complexity and interconnectedness of these factors, and based on a thorough review of the literature and the conceptual model for developing age–friendly social housing, employing a case study method is deemed appropriate

The research is divided into two main phases: secondary data analysis (comprehensive literature, see section 2.2) and primary data collection.

In addition to gathering secondary data and evidence on the main factors affecting property reuse for developing age–friendly social housing, primary data was also collected to address the following research questions:

Research Question 2: What are the key factors influencing the feasibility and success of a property reuse system for age–friendly social housing in Latvia?

Research Question 3: How can the perspectives of the aging population (65+ years) be effectively incorporated into the design and implementation of age–friendly social housing developments?

Primary data collection: questionnaire with closed and open–ended questions

Questionnaire design: A structured questionnaire was developed to collect primary data, with each domain directly derived from key themes identified in the Chapter 1 literature review, specifically affordability, sustainability, accessibility, safety, community integration, energy efficiency, and resilience (Luciano *et al.*, 2020; Van Hoof & Boerenfijn, 2018; Kim *et al.*, 2022; WHO, 2007). The questionnaire consists of 40 closed–ended items and 15 open–ended questions, covering seven domains in two languages, Latvian and English (see Appendices 1 & 2).

The questionnaire comprises three parts:

1. Demographic section: Collects information on participants' age, gender, occupation, location, and years of experience in relevant fields.
2. Quantitative section: Consists of 40 closed–ended items rated on a 5–point Likert scale, measuring respondents' attitudes, perceptions, and satisfaction levels regarding various aspects of property reuse for age–friendly housing, including accessibility and design features, safety and security, community and social engagement opportunities, and affordability and economic considerations.
3. Qualitative section: This tool consists of fifteen open-ended questions aimed at providing subtle knowledge of personal experience and suggestions of respondents. The questions are aimed at specific needs and preferences related to age-friendly housing, outline problems that are faced in the current residential setting, and request suggestions to improve the age-friendly housing development.

Sampling: The questionnaire was to be provided to the following groups as population:

- Senior citizens who are already living in social houses
- Potential aged residents
- Housing agents and policymakers
- Architects and developers of age friendly designs

A stratified random sampling technique was used to ensure representation across different demographics and regions.

Data Collection Process

Survey Distribution: Questionnaire distribution involved a combination of distribution channels, which includes online platforms, mails, and personal contact in community centres and residential homes.

Data Analysis

Quantitative Analysis: The quantitative data obtained under the Likert-scale items were examined with the assistance of the Python programming language that was complemented with the statistical techniques, including:

- Descriptive Statistics: to provide a summary of the data.
- Correlation analysis: to determine the relationships between the key variables.
- Multiple Regression Analysis: To examine how various economic, social, environmental, specific factors and services and spatial factors as well as challenges and barriers collectively influence the feasibility and success of property reuse systems for age–friendly social housing in Latvia, providing a comprehensive understanding of the multifaceted relationships impacting these outcomes.

Qualitative Analysis: Qualitative data from the open–ended questions was analysed using thematic analysis (Braun & Clarke, 2006). Key themes and patterns were identified and coded to understand the main factors influencing property reuse for age–friendly social housing.

2.4. Analysis of Stakeholder Perceptions and Factor Assessment Outcomes

The analysis of the data revealed several important patterns and correlations between essential variables that affect reusing of properties as age-friendly social housing. The subsequent findings include both quantitative data, which is based on statistical tests, and the qualitative data of statistics that are gained by interviewing the stakeholders, thus providing an in-depth picture of the factors, which lead to the successful implementation.

This section presents the results of survey data analysis related to the feasibility and success of a property reuse system for age–friendly social housing in Latvia. The primary focus is on understanding key factors influencing such a system and how the perspectives of the aging population (65+ years) can be effectively incorporated into the design and implementation of these developments.

Descriptive Statistics

The descriptive statistics provides a comprehensive summary of the data, including demographic information and measures of central tendency. These statistics help to understand the general characteristics of the variables involved in the study.

The age distribution in the dataset is quite varied, with individuals categorized into five age groups (Fig. 2.15).

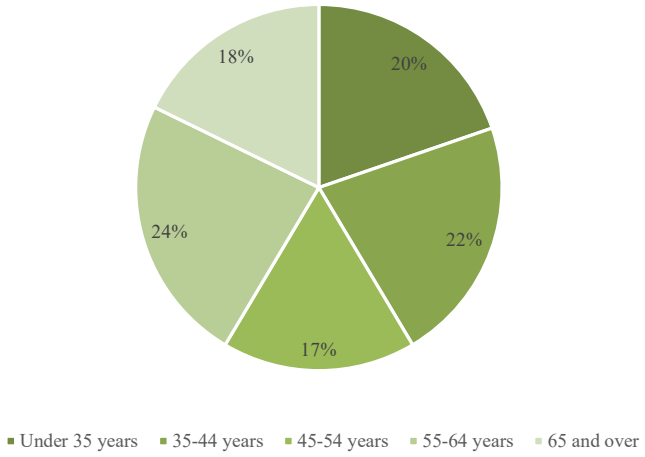

Figure 2.15 Age distribution (developed by the author).

The most populous age group is 55–64 years, with 36 individuals. This is followed closely by the 35–44 years age group, which includes 33 individuals. The 'Under 35' age group has 30 individuals, while the '65 and over' group comprises 27 individuals. The smallest group is 45–54 years, with 26 individuals. This spread shows a balanced representation across different age ranges, with a slight tilt towards older age groups.

A look at the gender breakdown of the data reveals that there were more females compared to males (Fig. 2.16).

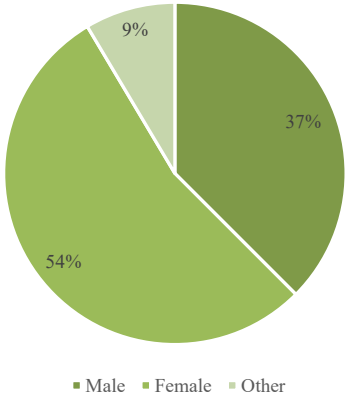

Figure 2.16 Gender distribution (developed by the author).

The total sample size consisted of 82 females, 57 males, and 13 others. Such distribution suggests a skewed gender ratio towards the female gender, which can potentially affect gender-specific analyses obtained out of the dataset.

The dataset includes individuals from various occupational backgrounds is shown in fig. 2.17.

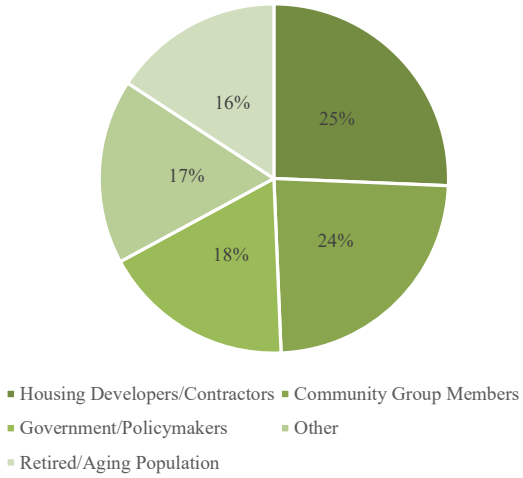

Figure 2.17 Occupation distribution (developed by the author).

The largest group, with 39 individuals, is comprised of Housing Developers/Contractors. Community Group Members follow closely with 36 individuals. There are 27 Government/Policymakers, 26 individuals categorized as 'Other,' and 24 individuals identified as Retired/Aging Population. This diversity in occupations offers a broad perspective on professional experiences and the potential impact of occupational backgrounds on other demographic variables.

The dataset includes people speaking two primary languages (Fig. 2.18): Latvian (*Latviešu*) and English.

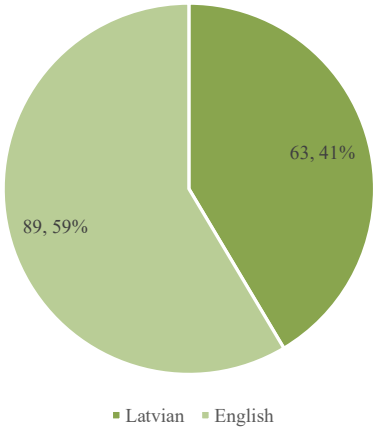

Figure 2.18 Language distribution (developed by the author).

Most of the respondents comprising 89 of the respondents speak Latvian with the rest of the 63 respondents speaking English (United States). This sampling highlights a high percentage of the Latvian speakers in the sample that might measure a specific focus on a territory of demographics in which the language is predominant.

The sample size is mostly provided by urban and suburban locations, where 72 people are urban residents and 58 are suburban ones, as Figure 2.19 shows.

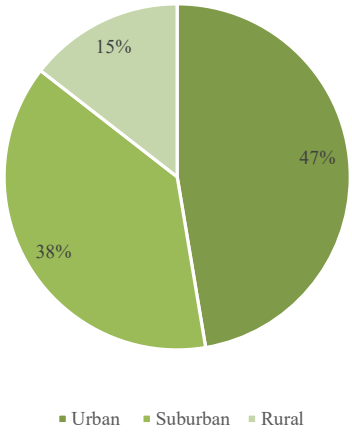

Figure 2.19 Location distribution (developed by the author).

The depiction of rural areas is not too extensive, and only 22 people are reported. This distribution suggests a strong clustering of the respondents in urban and suburban milieus, which could be reflecting the demographic focus of the research or the places in which the data could most easily and relevantly be gathered.

The levels of proficiency of the participants in the respective fields are highly subject to variation (fig. 2.20).

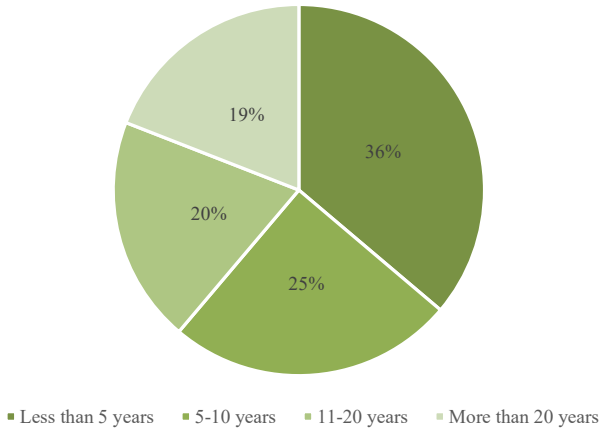

Figure 2.20 Experience distribution (developed by the author).

The largest group consists of individuals with less than 5 years of experience, totalling 55. Those with 5–10 years of experience number 38, while individuals with 11–20 years of experience and more than 20 years of experience are 30 and 29, respectively. This range of experience levels indicates a diverse set of professional backgrounds, potentially contributing to varied perspectives and expertise across the dataset.

Descriptive statistics included measures of central tendency, such as the mean and standard deviation, for all the questionnaire items are shown in table 2.4.

Table 2.4

Descriptive statistics (developed by the author)

	Items	**Mean**	**SD**
EF1	Development and construction costs are a significant barrier to the development of age–friendly social housing.	3.35	1.03
EF2	There are sufficient financing options and incentives available for property reuse projects in Latvia.	2.91	1.26
EF3	Real estate market trends currently support the affordability of social housing developments.	3.13	1.09
EF4	Development and construction costs influence the feasibility of age–friendly social housing.	3.16	1.19
EF5	The financial incentives provided by the government are adequate for promoting property reuse for social housing.	3.14	1.09
SF1	The aging population in Latvia is adequately considered in social housing policies.	3.07	1.16
SF2	Community engagement is crucial for the success of age–friendly social housing projects.	3.35	1.04
SF3	Public awareness and acceptance are major challenges in implementing property reuse for social housing.	3.11	1.20
SF4	The household characteristics of the aging population are well–understood by policymakers.	3.13	1.13
SF5	The community's needs are effectively addressed in the design of age–friendly social housing.	3.22	1.15
En1	Energy efficiency measures are well–integrated into current social housing projects.	3.12	1.15
En2	There is a need for better water conservation and waste management practices in social housing.	3.39	1.11
En3	Sustainable materials and construction techniques are prioritized in property reuse projects.	3.32	1.03
En4	The integration of renewable energy sources is a priority in the development of social housing.	3.21	1.17
En5	Environmental sustainability is a key consideration in the planning of age–friendly social housing.	3.34	1.09
SDI1	The distribution and accessibility of social housing meet the needs of the aging population.	3.22	1.12
SDI2	Urban planning and land–use policies support the development of age–friendly social housing.	3.23	1.12
SDI3	Spatial inequality is a significant issue in the development of age–friendly social housing.	3.33	1.11

Table 2.4 Continued

SDI4	Public buildings and spaces are accessible to people of different physical abilities.	3.32	1.15
SDI5	Conveniently located emergency care centers are available to older adults.	3.17	1.14
CandB1	Regulatory and legal hurdles significantly impede property reuse for social housing.	3.26	1.15
CandB2	Technical and logistical challenges are major barriers to implementing property reuse projects.	3.44	1.11
CandB3	Public perception and resistance hinder the success of property reuse for social housing.	3.09	1.15
CandB4	The implementation of a property reuse system requires significant changes in current policies.	3.29	1.14
CandB5	Property reuse for social housing is perceived positively by the general public.	3.43	1.00
IOI1	The proposed property reuse system will significantly improve the affordability of social housing.	3.24	1.13
IOI2	The proposed system will enhance the sustainability of social housing projects.	3.49	1.05
IOI3	Energy efficiency will be a key benefit of the property reuse system.	3.33	1.15
IOI4	The property reuse system will ensure better accessibility for the aging population.	3.28	1.06
IOI5	The proposed system will foster community integration and resilience.	3.28	1.08
SFS1	Sidewalks are in good condition and accessible for wheelchairs or other assistive mobility devices.	3.09	1.17
SFS2	Public transportation is accessible and convenient for older adults.	3.38	1.12
SFS3	Affordable housing options are available for adults of varying income levels.	3.24	1.16
SFS4	Well–maintained parks with enough benches are available in the community.	3.38	1.10
SFS5	Health care facilities are well–maintained and conveniently located.	3.36	1.10
SFS6	Social and cultural activities are geared specifically toward older adults.	3.34	1.03
SFS7	Affordable health and wellness programs are available for older adults.	3.20	1.14
SFS8	There are adequate job training opportunities for older adults who want to learn new skills.	3.24	1.06
SFS9	Maintenance services for housing are affordable and reliable.	3.20	1.18
SFS10	The community is well–informed about available local volunteer opportunities.	3.19	1.10

The means of the scores related to economic variables, including affordability and economic feasibility, are close to the middle of the Likert-type scale, which indicates a moderate level of consensus in the opinion and the satisfaction of the respondents. The averages of the social variables such as community participation and the social cohesion are also placed at the

middle of the scale indicating a moderate agreement on the significance of the factors. The means and median of accessibility, healthcare, and community facilities were increased which means that respondents attach significant weight to these features in the context of age-friendly housing. The overall average of the scores on integration and the overall impact is slightly better than average, which highlights the recognition of the respondents on the importance of the same to the success of the housing programs. The challenges and barriers scores are in the moderate range, which means that although the respondents are aware of the problems, they do not see them as controlling factors. The mean values of spatial design and inequality exceed the average values, which proves that the participants value well-planned spatial arrangements as important and are still aware of housing disparities. Environmental variables like sustainability and accessibility have high mean and median, which implies that the variable has a high priority of the respondents in housing projects.

Correlation Analysis

The correlation analysis was conducted to test the interrelationships among the different variables that were available in the dataset. This explanation of these correlations would be essential to identify the main determinants which influence the viability and effectiveness of age friendly social housing in Latvia.

A Spearman correlation table was developed to examine the relationship between all variables in the data. This was done using Spearman rank-correlation coefficient (rho) since it measures the intensity and the direction of the relationship between two ordinally ranked variables making it suitable in the mixed ordinal and continuous type of data in the study. The correlation matrix identified several strong correlations between variables, indicating potential underlying factors that influence the feasibility and success of the property reuse system.

The visualisation of the correlation matrix between the different factors in your dataset is given in the heatmap (Appendix 3). It is explained in a formal, academic manner as follows:

- Colour Scale: The intensity of correlations is stored in colour intensity, darker colour reds depicting stronger positive associations and darker blues depicting a negative association.
- Correlation Coefficients: The numerical numbers presented in each row and column are the correlation coefficient of the respective pair of variables. A value close to either +1 or -1 implies a very high linear relationship of two variables, whereas values close to zero indicate an insignificant relationship.

Key observations

Positive Correlations: It was found that there were positive correlations between the separate groups, such as environment factors (En1-En5) and economic factors (EF1-EF5), which suggested that the increase in one of the aspects (e.g., sustainability) could positively affect the other aspect (e.g., economic feasibility).

Negative Correlations: The data shows that there are only moderate negative correlations, and none of them is of significant strength. This trend indicates that improvements in one field can lead to a moderate decrease in the results of another, but the overall impact is insignificant in the current data set.

Cross–Category Relationships: Inter-category relationships: between economic factors and social factors, between environmental factors and challenges or barriers, etc., can shed light on the areas of focus that can be and are, at the same time, most likely to enhance several results.

Implications:

Policy and Planning: A subtle comprehension of such correlations can be used to prioritise the set of interventions that influences the most cumulative effect. As an illustration, the enhancement of environmental conditions, e.g., energy efficiency, is likely to bring about collateral benefits to economic and social results.

The correlation analysis provides an inclusive representation of the interdependences of the diverse factors that determine the success of age-friendly social housing in Latvia. With such relationships clarified, the stakeholders can be in a better position to develop and execute housing solutions which can not only be economically viable but also socially supportive.

Multiple Linear Regression

In order to model and understand the association between a single dependent variable, and several independent variables, Multiple Linear Regression (MLR) was used. This aimed to study the combined impact of a number of predictors, which would provide information on the major elements that can determine the feasibility and success of property reuse systems to provide age-friendly social housing.

Dependent Variable: The dependent variable represents the outcome or response variable that we seek to predict or explain. In this analysis, examples include various social factors such as community participation and social cohesion (e.g., SF1 – SF5).

Independent Variables: The independent variables, or predictors, are the factors hypothesized to influence the dependent variable. These include economic factors (e.g., EF1 – EF5), environmental factors (e.g., En1 – En5), and other relevant variables like spatial design and inequality (e.g., SDI1 – SDI5).

The multiple linear regression model is expressed by the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \epsilon \quad \ldots (1)$$

Where:

- Y represents the dependent variable (e.g., SF1 – SF5).
- β_0 is the intercept of the model.
- $\beta_1, \beta_2, \ldots, \beta_n$ are the coefficients associated with each independent variable.
- $X_1, X_2, \ldots, X_n$ are the independent variables.
- ϵ denotes the error term.

The multiple linear regression model was used to test the following hypotheses by examining the relationships between different factors (economic, social, environmental, etc.) and the outcomes. This approach allows for assessing the impact of each predictor on the dependent variables.

The analysis involved evaluating coefficients, p–values, and R–squared values to determine which independent variables significantly impacted the dependent variables.

Significant predictors were identified based on their statistical significance and contribution to the model.

MLR facilitates the simultaneous analysis of multiple predictors, providing a comprehensive view of how different factors collectively influence the outcome variable. The model provides coefficients that quantify the strength and direction of the relationship between each predictor and the dependent variable, allowing for detailed interpretation of the effects. R–squared values and other metrics were used to evaluate the model's ability to explain the variability in the dependent variable, ensuring the adequacy of the regression analysis.

The regression analysis revealed which predictors had a significant impact on the outcomes, based on their coefficients and p–values. Key predictors were identified for each hypothesis, shedding light on their roles in influencing the dependent variables.

Model Fit

The R–squared values provided an indication of how well the models explained the variability in the dependent variables. These values reflect the effectiveness of the regression analysis in capturing the relationships between the predictors and the outcomes.

Table 2.5

Model Fit–R–squared values (developed by the author).

Tested Variables	Significant Predictors	R–squared Range
EF1–EF5 vs. SF1–SF5	EF2, EF4 (positive impact)	0.218 – 0.320
CandB1–CandB5 vs. SF1–SF5	CandB3, CandB5 (positive impact)	0.217 – 0.265
IOI1–IOI5 vs. SF1–SF5	IOI2, IOI5 (positive impact)	0.215 – 0.226
SFF1, SFF2 vs. SF1–SF5	SFF1 (positive impact)	0.124 – 0.183
En1–En5 vs. EF1–EF5	En1, En2 (positive impact)	0.216 – 0.294
En1–En5 vs. CandB1–CandB5	En1, En4 (positive impact)	0.340 – 0.398
En1–En5 vs. IOI1–IOI5	En1 (positive impact)	0.194 – 0.224
En1–En5 vs. SFF1, SFF2	En1, En4 (positive impact)	0.192 – 0.272

Hypothesis Testing

The research question, “What are the key factors influencing the feasibility and success of a property reuse system for age–friendly social housing in Latvia?” guided the development and testing of the research hypotheses:

1. Economic Factors (EF1 to EF5) vs. Social Factors (SF1 to SF5)

Economic factors, such as affordability and financial viability, significantly influence social outcomes in age–friendly housing. Higher economic stability and affordability are associated with increased community participation and social cohesion.

Tested Variables: EF1–EF5 vs. SF1–SF5

Significant Predictors: EF2 (availability of financing options) and EF4 (development and construction costs) were significant predictors of social outcomes.

R–squared Range: 0.218 – 0.320

The hypothesis is supported by the analytical results, which indicate that the economic factors, namely, EF2 and EF4, have considerable influence on the enhancement of community involvement and social integration in the age-friendly housing settings.

2. Challenges and Barriers (CandB1 to CandB5) vs. Social Factors (SF1 to SF5)

Existence of problem and obstacles creates a powerful impact on social assimilation and results in age-friendly housing settings. All these barriers have to be overcome to promote the effective community inclusion and stimulate social engagement.

Tested Variables: CandB1–CandB5 vs. SF1–SF5

Significant Predictors: CandB3 (technical/logistical challenges) and CandB5 (public perception) were significant positive predictors of social factors.

R–squared Range: 0.217 – 0.265

The results confirm the assumption that challenges and barriers, especially CandB3 and CandB5, have a significant effect on the social integration and participation. These issues are essential in order to enhance social results.

3. Integration and Overall Impact (IOI1 to IOI5) vs. Social Factors (SF1 to SF5)

The concept of property reuse systems and its overall effect are directly associated with the social outcomes of age friendly housing setting. Integrated implementation strategies serve to enhance better community initiatives and enhance achievement of social feature and services implementation.

Tested Variables: IOI1–IOI5 vs. SF1–SF5

Significant Predictors: IOI2 (enhanced sustainability) and IOI5 (community resilience) demonstrated a positive impact on social factors.

R–squared Range: 0.215 – 0.226

The findings support the hypothesis that successful integration and general impact is essential to impact social outcomes, and IOI2 and IOI5 are important in successful community integration.

4. Specific Features and Services (SFS1 to SFS5) vs. Social Factors (SF1 to SF5)

Certain aspects and amenities in older-friendly housing have a high correlation of social factors. Improving and incorporating these characteristics with the current social support systems can make housing projects significantly more socially viable and successful.

Tested Variables: SFS1–SFS5 vs. SF1–SF5

Significant Predictors: SFS1 (accessibility of sidewalks) was a significant predictor across all social factors.

R–squared Range: 0.124 – 0.183

The analysis proves that certain elements and services, in particular, SFS1, are critical in determining social outcomes. The social viability of age-friendly houses can be enhanced by enhancing these characteristics.

5. Environmental Factors (En1 to En5) vs. Economic Factors (EF1 to EF5)

An age-friendly housing is very much related to environmental factors and thereby, its economic viability. Affordable and sustainable places are likely to be cost effective hence towards the success of housing projects.

Tested Variables: En1–En5 vs. EF1–EF5

Significant Predictors: En1 (energy efficiency) and En2 (water conservation) showed significant positive impacts on economic factors.

R–squared Range: 0.216 – 0.294

The findings can confirm the hypothesis that environmental conditions, particularly En1 and En2, play a significant role in determining economic viability in which sustainable practices improve economic performance in age friendly housing developments.

6. Environmental Factors (En1 to En5) vs. Challenges and Barriers (CandB1 to CandB5)

The issues of environmental concerns significantly affect the difficulties and obstacles in age-friendly housing. The challenges may also be addressed through environmental aspects, to maximize the feasibility and success.

Tested Variables: En1–En5 vs. CandB1–CandB5

Significant Predictors: En1 (energy efficiency) and En4 (renewable energy integration) consistently showed significant positive impacts on challenges and barriers.

R–squared Range: 0.340 – 0.398

The discussion supports that it is possible to reduce challenges and enhance the feasibility of a project in the age-friendly housing through the emphasis on the environmental factors, including En1 and En4.

7. Environmental Factors (En1 to En5) vs. Integration and Overall Impact (IOI1 to IOI5)

Environmentally sustainable short terms housing investments have a lot of influence in integration and the overall impact of housing projects. Better social and economical returns to sustainable development practices are achieved, which explains the sensitivity of environmental factors to the success of the project.

Tested Variables: En1–En5 vs. IOI1–IOI5

Significant Predictors: En1 (energy efficiency) showed a consistent significant impact on integration and overall impact.

R–squared Range: 0.194 – 0.224

The findings support the hypothesis that the environment, in this case, En1 is critical to the success of integration and overall impact in an age-friendly housing project.

8. Environmental Factors (En1 to En5) vs. Specific Features and Services (SFS1 to SFS5)

Environmental factors are significantly related to the effectiveness of specific features and services within age–friendly housing. Designing environments that align with existing social support structures enhances the impact and functionality of these features and services.

Tested Variables: En1–En5 vs. SFS1–SFS5

Significant Predictors: En1 (energy efficiency) and En4 (renewable energy integration) were significant predictors of specific features and services.

R–squared Range: 0.192 – 0.272

The analysis supports the hypothesis that environmental factors, particularly En1 and En4, significantly influence the effectiveness of specific features and services in age–friendly housing. Designing environments in line with social support structures enhances these features' impact.

Table 2.6

Summary of Hypothesized Relationships and R-squared Values Between Various Factors (developed by the author).

Factors	R–squared Range	Conclusion
EF1 (Economic Factors) vs. SF1 (Social Factors)	0.218 – 0.320	There are a set of economic variables which have a significant impact on social results.
CandB1 (Challenges and Barriers) vs. SF1 (Social Factors)	0.217 – 0.265	Basic problems and barriers have a significant influence on social performance.
IOI1 (Integration and Overall Impact) vs. SF1 (Social Factors)	0.215 – 0.226	The integration processes and their overall impacts show that they are strongly related to social outcomes.
SFS1 (Specific Features and Services) vs. SF1 (Social Factors)	0.124 – 0.183	Certain features and services that are offered have significant impact on social factors.
En1 (Environmental) vs. EF1 (Economic Factors)	0.216 – 0.294	Economic feasibility has a close relationship with environmental determinants.
En1 (Environmental) vs. CandB1 (Challenges and Barriers)	0.340 – 0.398	Environmental variables play a major role in challenges and barriers.
En1 (Environmental) vs. IOI1 (Integration and Overall Impact)	0.194 – 0.224	The integration and general impact are significantly influenced by environmental investments.
En1 (Environmental) vs. SFS1 (Specific Features and Services)	0.192 – 0.272	Certain features and service provisions are closely related to the environmental determinants.

The regression analysis provided significant insights into the factors influencing the feasibility and success of property reuse systems for age–friendly social housing in Latvia. The R–squared values ranged from 0.124 to 0.398 across different models, reflecting a moderate to substantial proportion of variance explained by the models. Higher R–squared values in some cases indicated a better model fit and stronger predictive power, demonstrating the effectiveness of the regression analysis in capturing the relationships between predictors and outcomes (Fig 2.21).

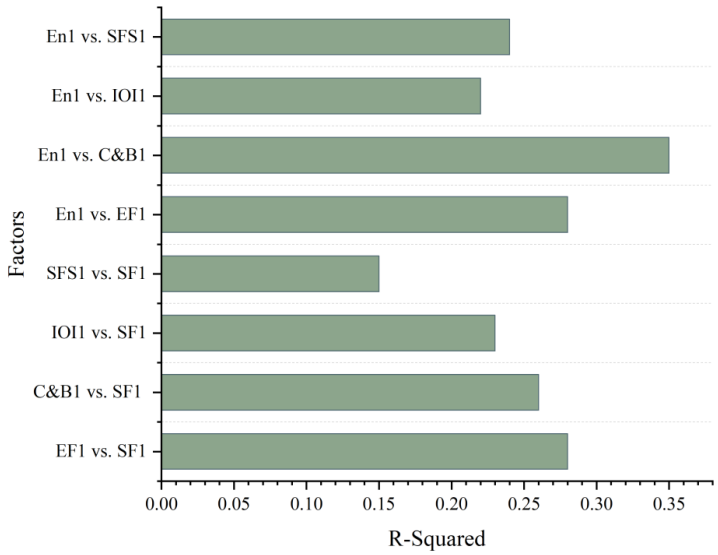

Figure 2.211 R-squared values of hypothesized relationships (developed by the author).

Interpretability: The coefficients and their significance allowed for a detailed understanding of the direction and strength of relationships between predictor variables and outcomes (Fig 2.22). This interpretability is crucial for comprehending how various factors—such as economic and environmental variables—impact the success of age–friendly housing projects.

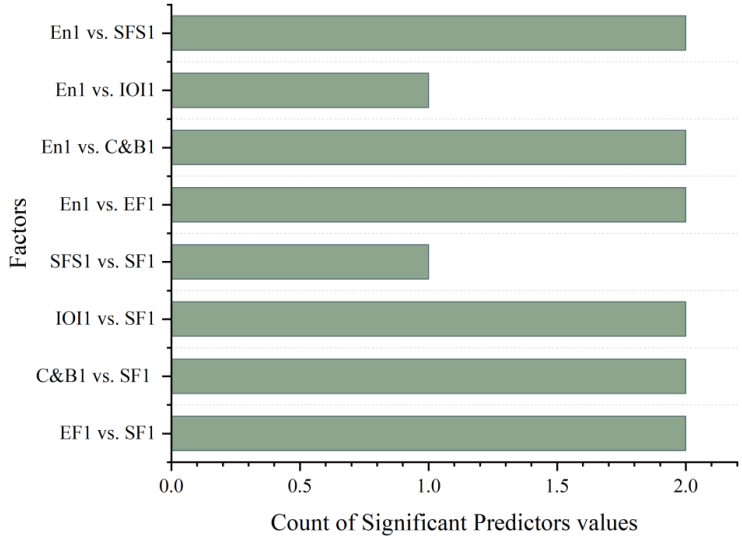

Figure 2.222 Significant predictors of hypothesized factors (developed by the author).

Key Findings

Economic Factors: Financing modalities and construction expenditures turned out to be the decisive factors affecting the effectiveness of age-friendly housing projects; the determination of these economic determinants is essential in augmenting the feasibility and financial viability of these projects.

Environmental Factors: The sustainability and energy efficiency as essential variables were highlighted in the analysis, not only because of cost cutting, but also in terms of overcoming the operational problems and improving social outcome. Strict environmental concerns would significantly increase the effectiveness of the projects.

Social Integration: The findings revealed that the need to address the issue of implementation and the necessity to guarantee a high level of community involvement are the core pillars of the successful implementation of age-friendly housing. Active community involvement and social integration are necessary in the promotion of positive results.

Certain Features and Services: The quality and type of services given to the needs of older adults are also crucial in ensuring the housing is not too expensive and operable. Specific characteristics and services have a determinant effect on the social results, which is why they are important to the overall success of the projects.

Through these key considerations, the policymakers and developers can boost the viability and efficacy of property-reuse regimes, and through this, more effective and sustainable age-friendly social housing in Latvia will be achieved. This comprehensive understanding of the given population assures that housing projects meet the requirements of the aging population at the same time and achieve economic sustainability and eco-friendliness.

Triangulation of Results: Addressing Research Questions

Research Question 2: What are the key factors influencing the feasibility and success of a property reuse system for age–friendly social housing in Latvia?

The descriptive statistics, multiple regression analysis, and qualitative data triangulation are a comprehensive description of the major factors in deciding the viability and efficacy of a property reuse system to establish age friendly social housing in Latvia.

Based on the descriptions statistics, one of the determinants of feasibility is the economic constraint which includes the cost of development and constructions that was noted to be a major constraint (mean values of concerned items were approximately 3.35). Also, environmental sustainability and community engagement, whose mean values lie within a moderate and high level, play a vital role in determining the success of such projects.

The multiple regression analysis also highlights the significance of the economic factors, specifically availability of financing options (EF2) and the effect of development costs (EF4), which were important predictors of social outcomes, which suggests that the economic issues are essential to the improvement of community participation and social cohesion. Moreover, such environmental conditions as energy efficiency (En1), integration of renewable sources of energy (En4) were discovered to reverse the challenges and enhance the viability and general effects of the projects.

These findings are corroborated by the qualitative analysis that reveals many themes that include economic and financial constraints, market trends, and sustainability as important to the project feasibility. The problem of getting long-term funding and high building costs was

also noted by respondents many times, which also corresponds to the focus of the quantitative data on economic barriers. Moreover, the sustainability and energy efficiency were proposed as a key to the successful housing projects in the long term and affordability, which supports the findings of the regression analysis.

Research Question 3: How can the perspectives of the aging population (65+ years) be effectively incorporated into the design and implementation of age–friendly social housing developments?

In Research Question 3, the triangulated information indicates that there are various means by which the needs of the aging population can be properly integrated in the social housing projects.

As the descriptive statistics showed, social factors: community involvement and access to services are very important to the respondents. This implies that the design and development of housing projects should put close consideration on the views of the aging population which mostly give importance to the accessibility and supportive nature of the environment.

The multiple regression analysis revealed certain characteristics and services (SFS1–SFS5), especially accessibility of sidewalks (SFS1) as predicting factors of social outcomes. This emphasizes the role of developing physically accessible and well-integrated housing that supports the aging population.

The qualitative analysis also expounds on these findings by locating the themes including active engagement and consultation, inclusive design principles, and sustainability. According to the respondents, the key role is to engage the older adult population in the community consultations, create advisory groups that are represented by older adults, and make sure that houses have accommodative designs and proximity to basic facilities. Such insights are consistent with the quantitative results, which emphasize the importance of using a participatory method and incorporate universal design principles to develop age-friendly environments.

These three data types triangulation provides a strong insight into the most important aspects in the feasibility and success of age-friendly social housing in Latvia and how the views of the aging population can be successfully integrated. Economic and environmental considerations will play the key role in guaranteeing the viability of these projects and active involvement, inclusive design, and sustainability are the key requirements to fulfilling the needs of the aging population and ensuring the successful housing developments in the long term.

Building on this triangulation of findings, Figure 2.23 presents an integrated conceptual framework that synthesises the multidimensional factors influencing property reuse for the development of age-friendly social housing.

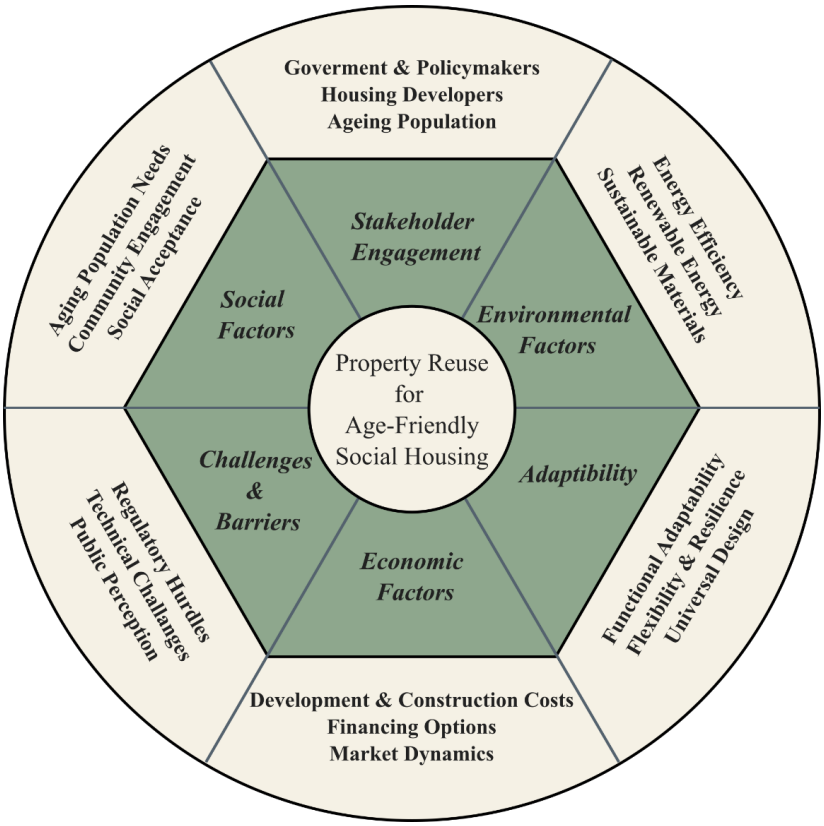

Figure 2.233 Conceptual framework for property reuse in age-friendly social housing development (developed by the author).

This framework illustrates the interconnection of the six critical dimensions identified through this research: social factors, environmental factors, adaptability, economic factors, challenges and barriers, and stakeholder engagement. At the centre lies the core concept of property reuse for age-friendly social housing, surrounded by these dimensions that collectively determine its feasibility and success. The outer ring details specific elements within each dimension that emerged as significant through both statistical analysis and qualitative assessment. The framework identifies the relevance of critical stakeholder groups since their joint involvement is necessary to the implementation process. This detailed description forms the basis of the methodological response that is expressed in Chapter 3 and that operationalises the joint determinants into actionable implementation plans that would result in the development of sustainable, inclusive and responsive social housing in age related housing within Latvia.

Summary

This chapter reviews the key considerations which determine the reuse of properties in order to develop the age-friendly social housing. It highlights the importance of stakeholder participation, economic factors, and market forces in the development of sustainable, inclusive, and responsive housing models among the older adults. The chapter also highlights the need to

incorporate the accessibility, sustainability and community aspects into the housing designs that will improve the living standards of the ageing population.

This chapter involved secondary data with respect to literature reviews and primary data which included structured questionnaires which were given to the concerned stakeholders. Quantitative data were analysed with the help of descriptive statistics, correlation, and multiple linear regression (MLR), and qualitative data were analysed with the help of thematic analysis to distinguish the salient themes and patterns.

The results of this chapter together with the results of the next chapter led to the creation of a holistic model of age-friendly social housing. The framework aims at meeting the various needs of the older adults so that they may live well, self-reliantly and in dignity within well connected and supportive surroundings. This new adaptive-reuse paradigm is a methodological resolution to putting in place a property-reuse system.

The proposed system attempts at fostering the growth of affordable, sustainable, accessible, and community based age friendly social housing throughout Latvia. It focuses on housing issues of the increasing number of elderly in the country by contextualizing multiple important activities. The framework is aimed at guiding the urban policy formulation in a manner that promotes sustainable reuse.

This chapter is an initial step towards the field of how adaptive planning strategies may be used to improve larger sustainability and resilience programs. The suggested framework will help to develop the urban policies providing the sustainable reuse of the properties, which eventually will contribute to the creation of age-friendly social housing that will satisfy the needs of the older adults and will also increase the resilience and sustainability of communities.

The factors identified and analysed in this chapter inform the development of the methodological solution presented in Chapter 3, which translates these findings into practical implementation strategies. The methodological solution builds upon the factors presented in **Chapter 2**. In other words, the findings from **Chapter 2** (such as stakeholder engagement, economic considerations, and accessibility) directly inform the development of the methodology in **Chapter 3**.

3. METHODOLOGICAL SOLUTION FOR IMPLEMENTING PROPERTY REUSE SYSTEM FOR THE DEVELOPMENT OF THE SOCIAL HOUSING

The entrepreneurial landscape is continuously evolving, so decisions related to adaptive property reuse for developing age–friendly housing should be analysed not only from the standpoint of state policymakers and real estate businesses but also from the perspective of the elderly and the impact of economic, social, environmental, political, legal and technological factors. This chapter proposes and presents a structured methodological approach for implementing adaptive property reuse system for the development of social housing in Latvia. The framework is subsequently assessed by expert consensus in Subchapter 3.6 through a structured three-round Delphi expert evaluation.

Building on the critical factors identified in **Chapter 2**, this chapter proposes a structured methodological approach for implementing property reuse systems. The results of the research related to stakeholder engagement, economic sustainability, and environment have been integrated into the methodological solution, therefore, making sure that these indispensable factors are taken into account in the practical implementation of adaptive reuse strategies.

The methodological framework outlined in this context satisfies the aims of the doctoral thesis by providing elaborate structure of enacting the property reuse that will enable the delivery of the affordable, sustainable, age friendly social housing in Latvia. The development of a methodological solution to implement property reuse systems requires careful consideration of multiple factors identified in the previous chapters. This solution integrates theoretical frameworks with practical considerations, stakeholder needs, and empirical findings to create a comprehensive approach to age–friendly social housing development. The following sections detail the components of this solution and provide guidance for its implementation.

Linking Empirical Findings to Methodological Framework

The methodological solution in the chapter directly responds to the essential considerations in Chapter 2 which were found through empirical analysis. Three complementary models were chosen using the information about the six critical dimensions (Figure 2.24) and stakeholder priorities:

- ARP Model: Addresses property assessment needs (Factor 5, mean=4.03)
- Adaptive reuse decision making model: Guides demolition vs. reuse decisions based on feasibility factors (factor 2).
- Four-Phase Methodological Process: Integrates all factors into systematic implementation approach

These models can be viewed as complementary: ARP is used to estimate the potential of reuse by considering seven obsolescence variables, the decision-making model is used to estimate feasibility, and the four-phase process is used to give the implementation structure. This unified method is a response to the complexity found in the cluster analysis, which illustrated three different groups of stakeholders that needed different methods of engagement.

3.1. Theoretical Foundation and Adaptive Reuse Model: A Framework for Social Housing Development

Adaptive property reuse which has traditionally been used in heritage buildings can be creatively addressed to satisfy the growing need of social housing by converting the existing buildings to new purposes without compromising the historical features. A methodological procedure may start with an evaluation of the potential of the buildings under consideration through analytical techniques like Adaptive Reuse Potential (ARP) model that evaluates systematically physical, economic, functional, technological, social, legal, and political features (Conejos, Langston, and Smith, 2011). Community involvement and strategic planning are necessary to plan the projects in accordance with the needs of the local communities and ensure the support of the population (Mérai *et al.*, 2022); at the same time, the principles of sustainable design such as structural integrity, material durability, flexibility, convertibility, and energy efficiency can improve the usability of the projects in the long term and reduce environmental impact. Law and regulatory compliance and approval is essential and must be negotiated and legal frameworks followed, and financial viability is required, which is achieved by carrying out economic feasibility studies, which are commonly pursued under public-private partnerships and grant programmes. Pilot projects/case studies will be applied to perfect adaptive reuse strategies and develop best practices. With these principles, the municipalities will be able to convert unused spaces into affordable social housing, which will help reduce shortages, achieve sustainability, and secure cultural heritage (Sanchaniya & Geipele, 2023).

In order to create a property reuse system on the social housing, a methodological approach based on the adaptive reuse of architectural heritage is very helpful. It involves the combination of multi-criteria decision models, mixed methods and assessment frameworks. To begin with, one should carry out a comprehensive analysis of the potential of the buildings using a range of models of property reuse based on the assessment of the architectural, historical, economic, social and environmental aspects (Li *et al.*, 2021). Participatory processes will entail the involvement of stakeholders in order to make sure that the reuse strategies are geared towards addressing the needs and expectations of the community. The practicability of reuse projects is enhanced even more with the introduction of sustainable design principles namely energy efficiency and structural integrity. Legal and regulatory compliance is important to the adaptive reuse process in which success is achieved. Through such methodologies, the cities can turn the underutilized properties into ethical social housing facilities, which can promote sustainable urban development and preserve the cultural heritage.

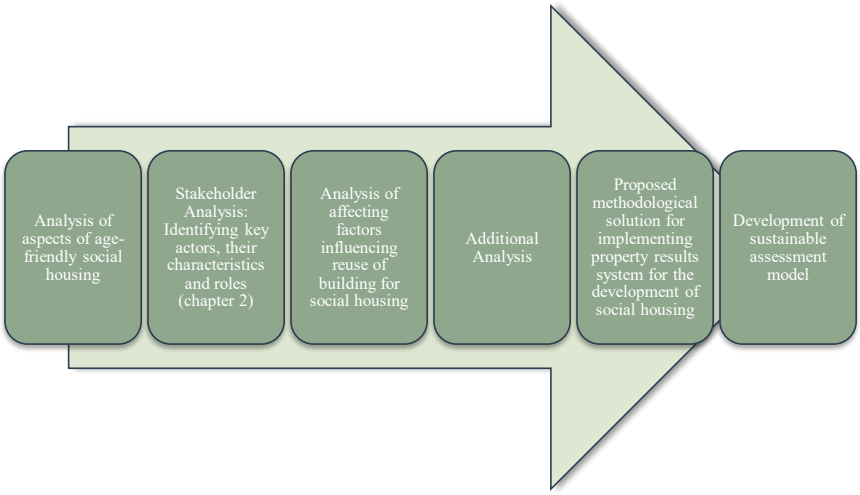

Figure 3.1 A structured methodological approach for the development of a sustainable assessment model (developed by the author).

Besides, the development of social housing requires a systematic methodology to put into practice a reuse system of the property (see Figure 3.1). Following the CLIC project approach, the key phases include an initial analysis of potential properties based on a multidimensional system of impact indicators that include economic, social, environmental, and cultural sustainability (Gravagnuolo *et al.*, 2021; Sanchaniya & Geipele, 2023). In the same way, an ex-ante analysis was used in this doctoral thesis. The methodology system encourages active decision making. The stakeholders are involved in the process by means of vibrant interoperability and feedback-like co-evaluation, thus various preferences and priorities are taken into account (e.g., through surveys). Such an in-depth strategy will allow policymakers and realtors within the government to transform currently underused properties to become viable sources of social housing, which will contribute to sustainable urban growth and improve the social welfare of people (Gravagnuolo *et al.*, 2021).

Comprehensive Literature Review

Prior to collecting primary data, a comprehensive literature review was carried out. The objective of the literature search was to identify and gather relevant scholarly articles, books, and other academic resources that address the implementation of property reuse systems for the development of social housing, with a specific focus on adaptive reuse models, sustainability, factors influencing site selection, property evaluation and feasibility analysis and policy frameworks, design and planning considerations for age–friendly housing developments, implementation strategies including civic stakeholder engagement, regulatory compliance, and project management, monitoring and evaluation by measuring the success and impact of the property reuse system, integration and scaling strategies for widespread adoption and sustainability.

The databases searched were Scopus, Web of Science, Google Scholar, ProQuest, ScienceDirect, JSTOR, IEEE Xplore, and Wiley Online Library.

Keywords and phrases: The keywords were selected based on the themes and topics highlighted in the collected articles (see Figure 3.2). The search queries were designed using Boolean operators to combine various keywords (Table 3.1). Below is an example of the keyword combinations used:

Table 3.1

Boolean operators for combining keywords (developed by the author)

Adaptive Reuse: "adaptive reuse" AND "historical buildings" "adaptive reuse" AND "social housing" "adaptive reuse" AND "underutilized buildings" "adaptive reuse" AND "sustainability" "adaptive reuse" AND "urban planning" “adaptive reuse” AND “cultural heritage” “adaptive reuse” AND “construction industry”	**Sustainable Development and Housing:** "sustainability" AND "sustainable housing” "sustainable housing" AND "urban development" "social housing" AND "energy efficiency" "green building" AND "adaptive reuse" "circular economy" AND "housing"
Urban Planning and Policy Frameworks: "urban planning" AND "social housing" "zoning regulations" AND "environmental conservation" "inclusive urban planning" AND "heritage buildings" "urban regeneration" AND "heritage buildings" "policy frameworks" AND "adaptive reuse"	**Key Performance Indicators (KPIs) and Assessment Models**: "key performance indicators" AND "building retrofits" "adaptive reuse potential" AND "evaluation models" "building adaptation" AND "KPI" "performance–based framework" AND "adaptive reuse" "decision–making" AND "adaptive reuse"
Community Participation and Cultural Heritage: "community participation" AND "cultural heritage management" "cultural heritage" AND "adaptive reuse" "community engagement" AND "heritage buildings" "public participation" AND "urban planning"	**Case Studies and Best Practices**: "case study" AND "adaptive reuse" "best practices" AND "adaptive reuse" "historic building" AND "adaptive reuse case study" "urban regeneration" AND "case study" "industrial heritage" AND "adaptive reuse"

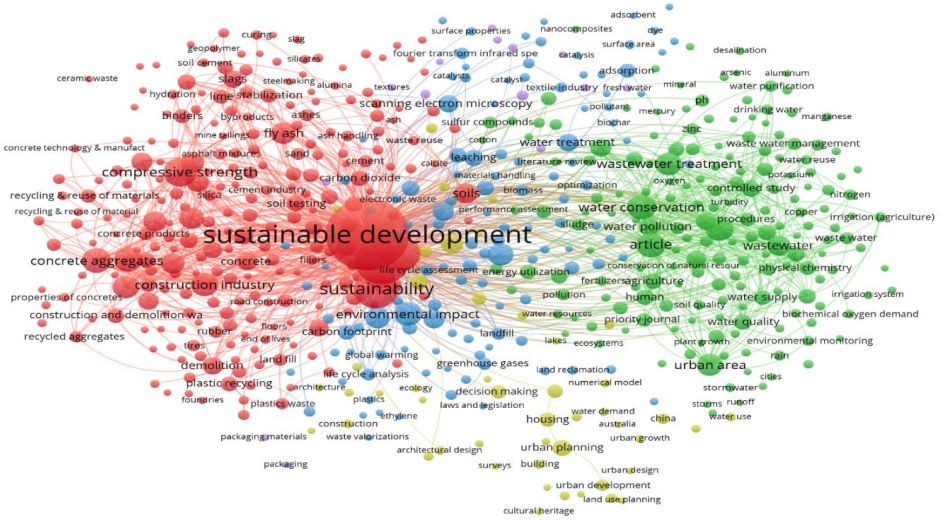

Figure 3.2 Word cloud for search words (developed by the author).

Inclusion criteria for the literature search were:

1. Relevance: Articles must directly address the concepts of adaptive reuse, social housing development, sustainability, or relevant legal and policy frameworks.
2. Publication Date: Articles published between 2000 and 2024 were included to ensure the inclusion of contemporary research and perspectives.
3. Peer–reviewed Sources: Only peer–reviewed journals, books, and conference papers were included to ensure the academic rigor of the sources.
4. Language: Articles published in English, Latvian and other European languages were included.
5. Geographical Focus: Studies that focus on adaptive reuse in various global contexts, particularly those with applications in urban settings, were included. Emphasis was placed on case studies from both developed and developing countries.
6. Methodological Approach: Articles that use quantitative, qualitative, or mixed methods to evaluate adaptive reuse, sustainability, or policy impacts were included.

Exclusion criteria for the literature search were:

1. Irrelevance: Articles that do not directly pertain to the reuse of properties for social housing or do not focus on adaptive reuse were excluded.
2. Publication Date: Articles published before 2000 were excluded unless they were seminal works referenced widely in the field.
3. Non–peer–reviewed Sources: Non–peer–reviewed articles, opinion pieces, blogs, and news articles were excluded.
4. Geographical Focus: Studies with a narrow focus on rural settings without applicability to urban development or social housing were excluded.

5. Methodological Weaknesses: Articles with unclear methodologies, insufficient data, or anecdotal evidence without scholarly rigor were excluded.

Number of Articles Collected:

Based on the search strategy and criteria, the search yielded a collection of 60 articles directly relevant to the research topic. These articles were selected for their relevance to adaptive reuse strategies, sustainability in social housing, policy implications, and methodological rigor.

Summary of Findings:

The literature search strategy has succeeded in finding a wide range of academic literature consequently enlightening on the application of property reuse systems in the social housing sector. The articles chosen are also very strong basis of the literature review which contains a variety of views, case studies and approaches to the issue. The wide search strategy will guarantee that the existing literature was thoroughly reviewed, and it will present information about the theoretical and practical aspects of adaptive reuse as the means of developing social housing.

The Adaptive Reuse Potential (ARP) Model

Recurring buildings that are either becoming useless or are on the verge of being demolished form one of the major sources of materials to be used in the future. According to the idea of urban ores suggested by Chusid, deteriorated buildings still have raw materials that are not inferior to those mined in mines (Chusid, 1993). Expanding on this fact Shen and Langston (2010) argue that adaptive reuse would offer a more effective approach as compared to direct material reclamation. Instead of breaking down and reusing the key materials, a more efficacious solution uses one that conserves the basic principle and texture of the building but renegotiates the use.

The Adaptive Reuse Potential (ARP) model is a methodological model that evaluates and measures the potential adaptability of the current buildings. It is especially meritorious in that it allows combining several assessment criteria thus providing decision-makers with a set of tools to assess the property reuse opportunities in a comprehensive manner. The model integrates the quantitative measures and the qualitative considerations, which makes it particularly relevant to the social housing setting. The ARP model also enables the development of a holistic assessment of the age-friendly social housing by considering parameters like physical condition, economic viability, functional adaptability, and social value in line with the cumulative requirements of the complex needs.

Adaptive reuse has been generally recognized as the foundation of urban conservation programs that address the process of urban sprawl reduction (Mustafa, 2023). However, the distinction between renovation, facadism, and adaptive reuse is a controversial and complex question. This distinction is a bargaining between destruction and conservancy, which deals with the problems of heritage and conservation policies. Here, old buildings are physical pathways to the past that helps to enrich the cultural heritage in terms of architectural beauty and their effect on the personality and size of the built space (Zaitzevsky & Bunnell, 1979).

The maintenance and rehabilitation of existing buildings significantly reduces the demand for new resources, energy, water, and construction materials. Adaptive reuse thus tackles issues of conservation and heritage preservation. It emerges as a viable solution for

reclamation sites as older structures often become inadequate for modern needs due to advancements in technology, politics, and economics outpacing those in construction practices (Mustafa, 2023).

Breathing new life into existing buildings not only brings environmental and social benefits but also helps safeguard our national heritage (Langston *et al.*, 2008). Historically, a focus solely on economic factors has led to premature destruction of buildings before reaching their physical lifespan. The Adaptive Reuse Potential (ARP) Model, developed by Langston & Shen (2007), provides a framework for evaluating the potential of existing buildings for adaptive reuse. This model quantifies their reuse potential, assisting in prioritizing buildings for conversion based on their adaptability to new uses.

Obsolescence is a key concept used to objectively shorten the expected physical life of a building to its expected useful life (Langston, 2011). A building becomes obsolete when it is no longer useful as an asset (Douglas, 2002). This obsolescence is understood as a function of time.

A discounting approach is used where the annual obsolescence rate across all criteria serves as the 'discount rate' that facilitates this transformation (Langston, 2011). An algorithm based on a standard decay (negative exponential) curve generates an index of reuse potential, known as the ARP score, which is expressed as a percentage (Figure 3.3). Existing buildings in an organization's portfolio, or across a city or region, can be ranked by their adaptive reuse potential at any given time.

The decay curve (Figure 3.3) can be reset through strategic capital investment during the renewal process by the current owner or a future developer at key points in the building's life cycle (Langston, 2011). Buildings with ARP scores above 50% have high adaptive reuse potential, scores between 20% and 50% have moderate potential, and scores below 20% have low potential. This division represents roughly one–third of the area under the decay curve in each category (Shen & Langston, 2010).

The term "potential" refers to the likelihood of achieving economic, social, and environmental benefits through adaptive reuse. The ARP score starts at zero, reaches its maximum at the building's useful life, and then declines back to zero as it approaches its physical life. When the current building age is close to but less than its useful life, the model suggests initiating planning activities (Shen & Langston, 2010).

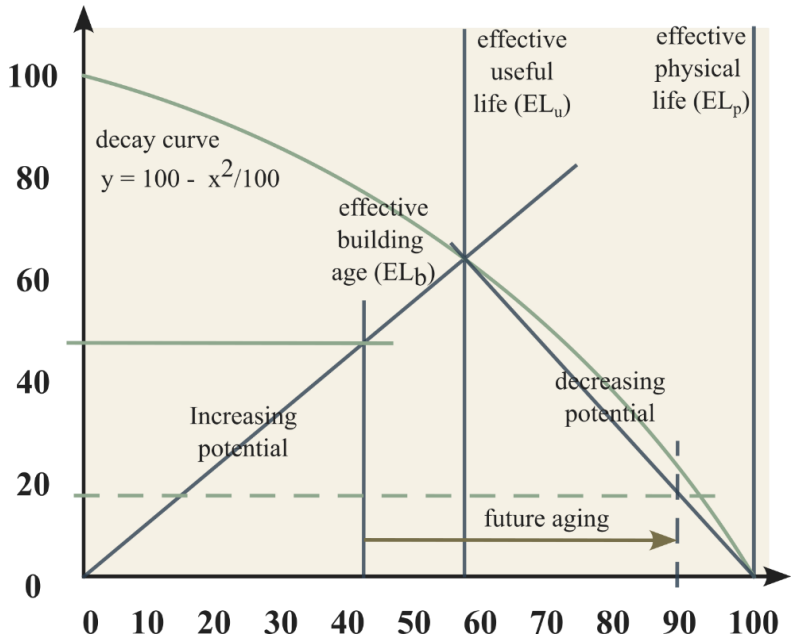

Figure 3.3 Adaptive reuse potential model (developed by the author based on Langston, 2008).

The ARP score helps in benchmarking (identifying low, moderate, or high reuse potential in individual buildings), timing (understanding the increase or decrease in reuse potential and prioritizing work) and ranking mutually exclusive projects (the higher the score, the greater the reuse potential) (Shen & Langston, 2010).

The ARP model identifies and ranks the potential for adaptive reuse in existing buildings, serving as an intervention strategy to maximize collective social value and plan for future redundancy (Shen & Langston, 2010).

Components of the ARP Model

The model involves calculating two main values: a building's useful life (Lu) and its adaptive reuse potential or ARP (Lacson, 2023).

- Useful Life (Lu): The useful life of a building (Lu) is the optimal point in its lifespan for repurposing. At this stage, the building has the highest potential for reuse (Lacson, 2023). To determine this, assessors need to estimate the following:
- Building's Physical Life (Lp): An estimated value representing how long the building is expected to last physically. Modern buildings are typically assigned a value of 100 years or less, but values of 150 and 200 years can also be used.
- Building's Age (Lb): The number of years from when the building was constructed to the current year or year of assessment.

For example, if a building is 14 years old and expected to last for 100 years, its useful life (Lu) is calculated somewhere within this range. According to the model, the adaptive reuse potential (ARP) of a building reaches its peak at Lu and then declines to zero as the building ages towards its physical life (Lp).

Calculating ARP

The model will calculate the ARP score through a test of six obsolescence variables, which are calculated in percentages of 0 to 20 per cent (Langston & Shen, 2007). Such variables include physical, economic, functional, technological, social and legal, which are measured separately. The percentages are not cumulative and each variable is provided an equal weight in the evaluation of the overall obsolescence of the building. In addition, an additional variable of obsolescence, numbered seven, was later added into the model (Wilkinson, Remoy, & Langston, 2014). In such a context, obsolescence refers to the point when a building becomes an inoperable asset. The description of the seven variables and their values is tabulated below (Table 3.2).

Table 3.2

Obsolescence Modelling and Determining ARP Scores (developed by the author)

Obsolescence Variable	**Description**	**Rating Scale**	**Max Rating**	**Min Rating**
1. Physical Obsolescence	Wear and tear based on maintenance policy	0% – High maintenance (budget)	20	0
2. Economic Obsolescence	Value influenced by the building's location	0% – High density location	20	0
3. Functional Obsolescence	Adaptability of the building's spatial layout	0% – Low conversion cost	20	0
4. Technological Obsolescence	Energy efficiency of the building	0% – Low energy demand	20	0
5. Social Obsolescence	Suitability of the building's function in the market	0% – Fully owned spaces	20	0
6. Legal Obsolescence	Compliance with building design and standards	0% – High quality design / compliance	20	0
7. Political Obsolescence	Community or public interest in the building	0% – Apathetic environment	20	–20

The above table can be interpreted as follows:

O1 = Physical Obsolescence (estimated by examining maintenance policy) 20% – low maintenance (budget) / 0% – high maintenance (budget)

O2 = Economical Obsolescence (estimated by location of a building) 20% – low density location / 0% – high density location

O3 = Functional Obsolescence (estimated by flexibility of building's spatial layout) 20% – high conversion cost / 0% – low conversion cost

O4 = Technological Obsolescence (estimated by building's use of operational energy) 20% – high energy demand / 0% – low energy demand

O5 = Social Obsolescence (estimated by relationship of building function and marketplace) 20% – fully rented spaces / 0% – fully owned spaces

O6 = Legal Obsolescence (estimated by quality of building design / compliance to standards) 20% – low quality design / 0% – high quality design

O7 = Political Obsolescence (estimated by community or public interest) –20% – supportive environment / 0% – apathetic / +20% – inhibiting environment (Lacson, 2023).

The methodology helps assessors determine the optimal time for repurposing a building, ensuring reuse decisions are made when the building's potential is highest. The key assumptions of this methodology are:

- High and Low Obsolescence: High obsolescence results in a shorter useful building life, while low obsolescence extends it.
- Zero Obsolescence: When all obsolescence factors decrease to 0%, the building's useful life (Lu) equals its physical life (Lp), but the reuse potential (ARP) drops to zero.
- Maximum Obsolescence (20%): When all obsolescence factors reach the suggested maximum of 20%, the useful life (Lu) is approximately 20% of the physical life (Lp).
- Total Obsolescence (100%): When all obsolescence factors increase to 100%, the useful life (Lu) drops to 0 years, and the ARP score rises to 100%.

These assumptions aid in planning and decision–making for adaptive reuse of buildings.

It is also applicable in keeping the obsolescence value at a minimum by ensuring that the building is well maintained, well located, flexible, energy saving, market relevant, and compliant and in promoting and maximizing the reuse possibilities.

Benefits of the ARP Model

The ARP model will enable a transformation of the conventional property stakeholder decision-making processes to be more sustainable in decision-making and the outcomes of decisions. The model can help the industry adopt sustainable development strategies by identifying and prioritising the existing buildings that have tremendous opportunities of adaptive reuse (Langston *et al.*, 2008). Besides, the ARP model is essential in changing outdated buildings providing a sustainable alternative to resource-absorbing methods of demolition and redevelopment (Langston, 2011; Langston, 2012).

Moreover, the ARP model contributes to:

- Lessening environmental effects through the reduced use of material and waste production (Langston *et al.*, 2008).
- Cultural heritage and historical value is preserved through the conservation of structures in existence (Mustafa, 2023).
- Improving the economy through the reduction of expenses related to new construction (Dyson *et al.*, 2016).

The above advantages highlight the relevance of the ARP model to sustainability and effective management of resources within the built environment.

Adaptive Reuse Decision–Making Model

Bullen & Love (2011) have created a model called the Adaptive Reuse Decision-Making Model that is intended to assist the practitioners in making decisions to reuse or demolish the existing buildings. The model presented in Figure 3.4 represents an entire framework that allows assessing whether buildings that exist should be re-used or torn down.

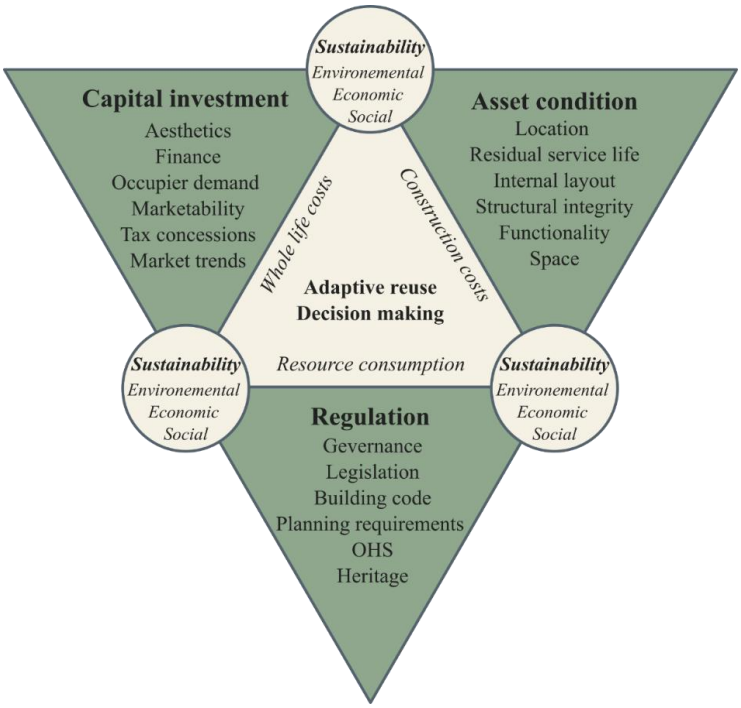

Figure 3.4 The Adaptive Reuse Decision–Making Model ((developed by the author based on Bullen & Love, 2011)

The model incorporates vital determinants that affect the decision making process and it starts with the economic impact of capital investment. It carefully examines the status of the asset, including an examination of structural integrity and compliance with the regulation, thus, making sure that adaptive-reuse projects comply with the necessary safety and legal norms. Zoning and environmental laws are some of the regulatory requirements that are at the center of this project feasibility and time schedule.

In addition, the model previews sustainability principles in the environmental, economic, and social aspects. On the ecological level, it highlights such positive results as minimized building waste and increased energy efficiency thanks to the reuse of existing buildings. The model economically evaluates life-cycle cost and potential sources of revenue based on the adaptive reuse in comparison to the new construction costs. In terms of social aspect, it explores the effects of communities, such as cultural heritage protection and neighbourhood regeneration, which highlights the ability of adaptive reuse towards sustainable urban regeneration.

Bullen & Love explain the relationships between these determinants visually in a model (Figure 3.4) based on a decision-making model that informs the stakeholders to make informed decisions in line with the sustainability goals and the needs of the local communities. By highlighting the overall benefits of adaptive reuse compared to demolition, the model promotes responsible urban development, which does not harm the environment by saving architectural heritage, but reduces footprints on the environment.

The Green Adaptive Reuse (GAR) Model

Green Adaptive Reuse (GAR) Model aims at implementing the concept of green building within the adaptive reuse of existing buildings to enhance environmental, social, and economic performance (Wijesiri et al., 2022).

It was created based on a qualitative inquiry, particularly, semi-structured interviews with the local and international experts that provided seven design principles: Physical (longevity), Economic (location), Functional (flexibility), Technological (energy efficiency), Social (sense of place), Legal (quality standards), and Political (contextual relevance) (Wijesiri et al., 2022). These requirements sum up particular design and construction techniques including the application of environmentally friendly products, the maintenance of structural integrity, support of flexibility, and combination of modern building systems without depriving the architecture and historical contexts of the structures.

The framework also deals with significant barriers to green adaptive reuse, which are divided into cost, safety, integrity, and other concerns regarding each design criterion (Wijesiri et al., 2022). The plans to fight these obstacles include government intervention, tax relief, awareness campaigns by the people and training of the professionals in the construction industry.

The GAR Model emphasizes the need to have a holistic approach to sustainability, balancing environmental protection with cultural protection, and offers a systematic model in the application of adaptive reuse of the buildings in line with the current green building principles. The model is ultimately expected to foster sustainable development by an extension of the lifespan of buildings, minimisation of waste, and reduction of resource consumption and carbon emissions (Wijesiri et al., 2022).

Adaptive Sustainable Reuse Model

The Adaptive Sustainable Reuse Model provides an excellent model of revitalising heritage and cultural landmarks in the modern urban environment. The model is grounded in the historical fortifications in the Strait of Messina, Southern Italy and incorporates advanced decision-making methods to assess and rank adaptive reuse plans (Della Spina, 2020). This technique deals with the multidimensional nature of conservation impulses and functional transformation, which is important to balance the historic preservation and modern urban requirements.

The model is participatory in design, and it involves the local stakeholders in decision-making. This inclusiveness will guarantee that the preferences and needs of communities shape the choice of reuse options, which will make the proposed strategies more sustainable and acceptable (Della Spina, 2020).

Such a combination of methodological solutions as the MacBeth method, the Analytic Hierarchy Process (AHP), and the Evaluation of Mixed Data (EVAMIX) allows to conduct a comprehensive evaluation of possible reuse scenarios and, thus, conduct systematic assessment of the economic, social, cultural, and environmental impacts to make an informed decision about heritage sites.

Sustainable–Driven Adaptive Reuse Model

The adaptive reuse model introduced by Despo Parpas and Andreas Savvides emphasizes the incorporation of the concept of sustainability in the reuse of old structures. The

model emphasizes the multidimensional advantages of the adaptive reuse such as economic rejuvenation, cultural preservation, and environmental management (Parpas & Savvides, 2018). By repurposing obsolete structures to fit contemporary needs, adaptive reuse extends the life cycle of buildings, reduces environmental impacts, and fosters community cohesion. The approach is rooted in empirical research from Cyprus, demonstrating that while economic factors are significant, successful adaptive reuse also relies heavily on understanding legislative, physical, and utilitarian aspects. This holistic evaluation ensures that projects not only meet current demands but also preserve historical and cultural values for future generations. Figure 3.5 shows all sustainable development goals.

Figure 3.5 The Sustainable Development Goals (SDGs) (developed by the author based on United Nations data).

The core of the model is the use of the multi-criteria analysis in the determination of the viability of adaptive reuse projects. This method presupposes taking into account a wide spectrum of variables, which includes construction material prices and the importance and state of the structure of the buildings. Parpas & Savvides (2018) applied multiple regression analysis to single out statistically important determinants, showing that such variables as material price indices and the time when the building was constructed have decisive effect on the results of adaptive reuse. Through the promotion of an integrated assessment framework the model will provide the decision-makers with a powerful tool that helps to make evidence-based decisions that meet the sustainability goals (Figure 3.5) and contribute to the long-term regeneration of a city.

Improved Entropy TOPSIS Method

Meng, Zhi, & Pang are the researchers who present a new approach based on Improved Entropy TOPSIS when studying the assessment of the adaptive reuse potential of industrial heritage. The authors point to the importance of urban redevelopment and sustainability of using industrial heritage through adaptive reuse and suggest a total assessment system that will combine several dimensions of potentiality. Using the Improved Entropy TOPSIS method, they

provide a quantitative model that can be used to establish the relative reuse potential of the different industrial parks and then rank them in terms of their adaptive reuse prospects (Meng, Zhi, & Pang, 2023). The approach to this methodology reduces the weakness of the previous qualitative appraisals by providing a more disciplined and objective methodology of analysis.

The results of the study highlight the feasibility of the Improved Entropy TOPSIS method in guiding the sustainable change of the industrial heritage sites. Eight industrial parks located in Beijing were assessed, and it was proved that the approach can be used to rank them in terms of the possibility of reuse with a high level of accuracy (Meng *et al.*, 2023). Findings have shown that structural reliability, architectural sustainability, and future socio economic benefits of reuse are major determinants of the adaptive reuse potential of industrial heritage. Furthermore, the model highlights the importance of considering the intrinsic value of the buildings and the urban context when they are being evaluated. The empirical research produces useful information and practical suggestions to urban planners and policy-makers, thus strengthening adaptive reuse approaches to industrial heritage and supplementing bigger goals of urban redevelopment and sustainable development (Figure 3.5).

After a long search through various models, such as the Adaptive Reuse Decision-Making Model, the Green Adaptive Reuse (GAR) Model, the Adaptive Sustainable Reuse Model, the Sustainable-Driven Adaptive Reuse Model, and the Improved Entropy TOPSIS method, the Adaptive Reuse Potential (ARP) Model by Langston and Shen was picked to be used in this doctoral thesis.

Adaptive Reuse Potential Model is a holistic model which is aimed at assessing the possibility of reusing existing structures. It offers a logical approach to deciding whether a building can be successfully reused in a new direction, like residential dwelling, and with the appropriate consideration of other factors, which are structural integrity, historical value, and environmental impact. Using this model, the stakeholders will be able to make informed decisions in terms of the adaptive reuse of the buildings hence ensuring that the chosen projects are feasible as well as sustainable. The widespread usage and the successful history of the model makes it a good fit when it comes to evaluating the adaptive reuse projects.

3.2. Property Selection and Evaluation Framework: Assessment Criteria for Age-Friendly Housing Development

The choice of locations to construct an age friendly social housing is informed by a myriad of reasons and the possibility of reusing the property deserves a careful consideration. Major determinants include geographical locations and zoning regulations, opportunities of integrating the community and security issues. In addition, the environmental as well as socioeconomic determinants, compatibility of the land use, and compatibility with objectives of urban planning should be subjected to strict evaluation.

Their integration requires the entire assessment of these mutually supporting factors to guarantee the best results to residents and the community in general. All the determinants are peculiar to the success of the development, which required a sophisticated analysis and planning during the site-selection process.

By incorporating these factors into the design, it is possible to develop sustainable and age-based housing that will meet the requirements of the elderly residents and support the unity of the community. This approach forms the basis of sustainability and social benefits. Figure 3.6 illustrates the key factors when it comes to choosing sites in the development of age-related social housing.

Figure 3.6 Site selection criteria for age-friendly social housing development (developed by the author).

Location and zoning: Considering the various factors influencing adaptive reuse, practitioners and stakeholders often struggle with determining where and how to start. As Shipley, Utz, and Parsons (2006, p. 508) note, "While conventional real estate development usually involves a use in search of a site, heritage development almost always features a site in search of a use." Heritage professionals must adopt a broader perspective to evaluate the numerous heritage sites that could benefit from adaptive reuse. Given limited resources and the multitude of potential sites, which ones should be prioritized by professionals and stakeholders? Site selection is a critical step in both real estate and heritage development (Lacson, 2023). Thus, the location of potential sites is a critical factor, emphasizing proximity to essential services such as healthcare and shopping centers. Additionally, access to public transport and a blend of occupancy usage with a modern image were identified as key contributors to the social sustainability of reuse projects (Bullen & Love, 2011). Research highlights that accessibility to these services significantly enhances the quality of life for older adults (Golant, 2015; Kim *et al.*, 2021).

Community integration: Choosing locations within existing neighborhoods promotes social inclusion and integration among older adults. Studies highlight that access to community centers, parks, and recreational facilities fosters a sense of belonging and supports active aging (Nguyen *et al.*, 2021; Vitman, Iecovich & Alfasi, 2014). This integration is vital for combating social isolation and loneliness, which are prevalent concerns in aging populations. Priority should be given to areas with high demand for age–friendly housing, based on demographic

trends, to effectively meet community needs (Institute for the Study of Labor, Braga & Palvarini, 2013; Schwanen & Ziegler, 2011).

Safety and Security: Ensuring the safety of elderly residents involves selecting neighborhoods with low crime rates and well–maintained infrastructure. According to recent research, safe environments contribute to better mental health outcomes and increased social participation among older adults (Ottoni *et al.*, 2021). Measures such as well–lit streets and community policing initiatives are effective in enhancing safety perceptions and reducing fear of crime.

Environmental and Socio-Economic Factors: A detailed evaluation of the possible environmental impact- including soil quality, flood risk and biodiversity are a must. They need to engage in sustainable practices related to the reduction of negative environmental impacts (Berke & Godschalk, 2009; Hanafi *et al.*, 2018). Similarly, the assessment of socio-economic factors, including the possibility of socio-economic improvement with the help of housing construction, employment, and the increase in the quality of life of residents, is also equally important (Fainstein, 2010; Sengers & Peine, 2021). We can conclude that sustainability principles such as environmental (such as energy efficiency, reduction of emissions, and conservation of resources), economic (including the whole life cycle costs, and construction costs), and social (including amenities, streetscape quality, community cohesion, and closeness to transportation hubs) are essential. These requirements must be part and parcel of the decision-making process (Bullen & Love, 2011).

The fact that reusing built assets preserves the embodied energy of the original buildings is one Significant Environmental Benefit of Reusing Built Assets: Retaining the embodied energy present in the original buildings is a significant environmental benefit of reusing built assets, which subsequently contributes to the overall sustainability of a project (CSIRO, 2023). New construction usually has significantly greater embodied energy than an adaptively reused building (Schultmann & Sunke, 2007). Therefore, reuse of building materials would provide significant savings in terms of embodied energy that would otherwise be lost (Bullen & Love, 2011).

Land Use Compatibility: The compatibility of proposed developments with adjacent land uses is a very important measure in ensuring harmonious development within the communities. The mixed-use developments with zoning practices that favour the variety of residential needs increase the cohesion of the neighbourhood and the sustainable development of cities (Arief and Thahir, 2020). Intense land-use planning would make sure that there is no interference with the current community dynamics by age friendly housing projects.

Urban Planning Goals: Age friendly housing projects have to be aligned with general urban planning goals to promote community revitalisation and economic growth. The urban planners promote the idea of inclusive zoning, which should focus on fair distribution of housing and other amenities among the population (Lemaire & Kerr, 2017).

Strategic Planning Initiatives: Strategic plans that support the development of vibrant and sustainable communities are a practical way of meeting the demands of ageing populations. Interventions of urban planning that should increase inclusivity can have various forms. To begin with, the idea of removing exclusivity in the present day planning practice can make a significant impression. This will involve the redesign of processes to ensure that it is easier to

acquire land rights in favor of populations residing there and to enhance spatial mobility of population groups that were previously marginal to the formal economy because of the geographical limitations. Also, the provision of health and social care should be strengthened to make certain that the informal care in question will not hinder the employment opportunities (Lemaire & Kerr, 2017).

Secondly, there is need to improve the outlay of information and knowledge sharing between the less privileged and the urban planners in order to make sure that the development does not favor only the privileged. Although stakeholder involvement is becoming a more and more regular aspect of the city-planning procedures, it is important to put into the first place the interests of the neglected or excluded population. Inclusive urbanisation does not only involve the stakeholders in the urbanisation planning processes alone but should be followed by actionable measures to be taken after such participatory processes in order to ensure that the groups involved attain meaningful development (DFID 2012 1).

Key Considerations for Energy and Water Efficiency

When making decisions regarding the adaptive reuse of built heritage for age–friendly housing, addressing energy efficiency is paramount. Social housing can have a detrimental impact on energy efficiency (Sanchaniya & Geipele, 2023). Therefore, this issue must be explicitly addressed before the implementation of any adaptive reuse project (Colic–Damjanovic & Sisovic, 2021; Velázquez Robles, Picó & Hosseini, 2022).

Adopting adaptive reuse strategies offers substantial advantages in enhancing energy efficiency and promoting sustainable urban development by repurposing existing buildings. The first critical step involves evaluating the building's current energy performance and its historical significance to determine the appropriate level of restoration (Dyson *et al.*, 2016; Vafaie *et al.*, 2023). Following the initial study, there is a pressing need to choose the right construction methods and to embrace the use of energy-saving strategies (Filippi, 2015; Vafaie *et al.*, 2023). Figure 3.7 shows the key factors that bring about the energy efficiency of adaptive-reuse projects.

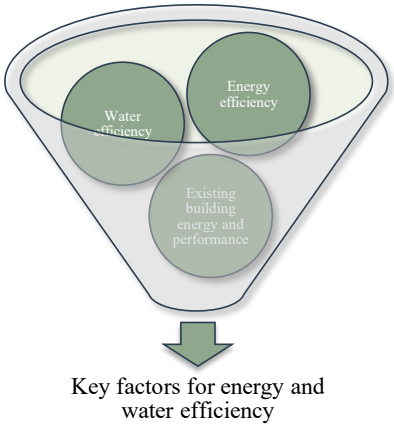

Figure 3.7 Key Contributing factors to energy and water efficiency in adaptive reuse projects (developed by the author).

Emphasizing the building's envelope and implementing effective thermal insulation measures (Passerini & Marchettini, 2018; Turanjanin, Vucicevic, & Jovanovic, 2016).

Optimizing the use of natural light and ensuring good indoor air quality through thoughtful design (Bullen and Love, 2010; Conejos *et al.*, 2014; Shipley *et al.*, 2006).

Existing buildings often experience performance degradations, changes in use, and unexpected faults over time, leading to inefficient operation and poor thermal comfort conditions. In sustainable adaptive reuse, performance assessments and diagnostics are used to benchmark energy use, identify operational problems, and discover energy conservation opportunities. Energy audits and surveys help identify energy use and costs, from which control measures can be implemented and reviewed (Pullen *et al.*, 2010).

Water efficiency is another critical consideration in the adaptive reuse of properties for age–friendly housing. Water efficiency encompasses conservation, storage, re–use measures, and water–sensitive urban design (WSUD) techniques (Pullen *et al.*, 2010). These measures can be applied at both the development scale and individual lot scale. Possible water efficiency measures include:

- Rainwater storage and re–use.
- Installation of water–efficient appliances.
- Application of WSUD principles.
- Greywater re–use.

Implementing these water efficiency measures can significantly reduce water consumption and enhance the sustainability of adaptive reuse projects.

Property Evaluation and Feasibility Analysis

Various factors influence property feasibility for reuse, including socio-cultural, legal, structural, economic, and zoning considerations. The significant determinants are presented in Figure 3.8.

Figure 3.8 Critical factors affecting property feasibility for adaptive reuse (developed by the author).

Any conversion of an existing building into a new functional structure would require careful consideration of several factors and structural integrity has become the most critical one as it has been pointed out by Bullen & Love (2011). The residual service life, spatial layout, location, and especially structural integrity are among the factors that have significant impact on the success of the adaptive reuse projects.

Careful checks of buildings should also be carried out to assess their appropriateness to be renovated or remodeled, and therefore, meet the current safety and construction regulations (Douglas, 2006; Tsenkova, 2023). This inspection involves checking of building status and stability, determining the gross defects or damage, assessing of building structural systems and material and taking into account their flexibility to the new use (Rabun & Kelso, 2009). Also, the process includes the degree of required intervention or change, cost, and risk related to it.

Old buildings often need to be upgraded, in order to meet current standards and to ensure that an appropriate level of safety is maintained by both the building and the environment. The prediction of the stresses caused by seismic activity on the structure (Aigwi *et al.*, 2020; Vafaie *et al.*, 2023), the reinforcement of load-bearing constructions, and the improvement of building envelopes with the help of renewable technologies (Douglas, 2006; Highfield & Gorse, 2009; Conejos *et al.*, 2017; De Berardinis *et al.*, 2017) are of paramount importance in reducing the technical and The preservation plans should also consider the possible effects on the artifacts and materials with cultural importance (Munoz Gonzalez *et al.*, 2020; Sanchaniya & Geipele, 2023; Vafaie *et al.*, 2023).

The role of expert analysis and assessment by the consultants is very crucial in estimating structural alterations in the old buildings, the level of intervention to be implemented, safety issues, and the preservation of the historical integrity which may be achieved by means of integration, insertion, or addition. These factors will make certain that adaptive reuse projects will adequately address the issues of preservation and functional contemporary demands.

Economic Feasibility

The time factor is critical in the construction process economically. A project based on adaptive reuse usually takes a shorter period to be completed as compared to a demolition and new construction project. This is a shortened redevelopment that helps to offset the inflation on construction cost, which is a major element of decision-making (Vafaie *et al.*, 2023). In addition, Highfield and Gorse (2009) & Douglas (2006) argue that modifications of a building are usually cheaper compared to dismantling and building a new one. Empirical data show that the conversion of a building is usually accompanied by a decrease in spending since a significant portion of building items and materials are left in place (Aigwi Egbelakin and Ingham, 2018; Bullen & Love, 2011; Douglas, 2006; Langston *et al.*, 2008; Shipley *et al.*, 2006). Savings of 10 to 12 per cent. can be achieved through reuse of old buildings instead of building new ones. However, the costs of original buildings might exceed those of new constructions when the structure is complicated or requires any special conditions due to historical listing or registration (Vafaie *et al.*, 2023).

Several studies (Aigwi *et al.*, 2018; Bullen & Love, 2011; Douglas, 2006; Langston *et al.*, 2008) have shown that successful adaptive reuse can add significant value to existing properties and their surrounding neighborhoods. The attractiveness of the location, including

good topography, is also vital for the economic success of reuse projects (Aigwi *et al.*, 2020; Shipley *et al.*, 2006; Vafaie *et al.*, 2023). Moreover, adaptive reuse projects can create job opportunities, generate income from tourism, and sustain themselves through new market uses, ultimately leading to benefits that outweigh the costs (Shipley *et al.*, 2006; Vafaie *et al.*, 2023).

Economic feasibility should be assessed by estimating the refurbishment costs against potential economic benefits, including long–term financial viability and stakeholder advantages (Garcia & Kwon, 2021; Armstrong *et al.*, 2023; Myers, 2013).

Legal Considerations

One of the aspects of adaptive reuse projects is legal considerations, which cannot be ignored. They include regulatory measures and government restrictions in terms of building standards, fire safety measures that apply to historic buildings, and laws that protect safe, healthy, and accessible environment (Aigwi *et al.*, 2020; Bullen & Love, 2011; Conejos *et al.*, 2014). In addition, law and global preservation treaties place extra legal requirements that are unique to adaptive reuse, and in such a way distinguish between such operations and the creation of new buildings (Aigwi *et al.*, 2020).

Direct democratic governance through the local community impacted by urban development plans assisted by a citizen-partnered political system can help to overcome regulatory regimes and legal barriers, thus supporting the spread of the adaptive reuse projects (Shipley *et al.*, 2011; Yung *et al.*, 2014).

Zoning Considerations

The current zoning laws and land-use structures must be strengthened to support residential development and ensure that the law is obeying the legal framework and integrating with the community in harmony and function (Talen, 2012; Tsenkova, 2023). It is necessary to have an in-depth familiarity with local zoning laws that can affect redevelopment. The performance of any project would also not be successful without compliance of all property transactions and development activities with legal requirements (Langston, 2010).

The use of extant buildings may be hindered by zoning barriers. The zoning ordinances should, therefore, be used to offer incentives towards the utilization of existing structures and be flexible on the functions that can be performed by eligible structures (Bansal & Pandey, 2024). These buildings are mostly those with great artistic, historical, cultural value, or big, unused structures forming important part of the neighbourhood fabric. Often these buildings have outlived their original functions but face a challenge in reuse without a rezoning process as a result of the restrictive uses permitted as per their current zoning areas, including single-family residential and institutional areas. Incentives are provided to encourage preservation of the existing buildings which will reduce the environmental impact caused by demolishing buildings (Bansal & Pandey, 2024).

Socio–cultural Considerations

People gain a lot of pride based on their historical, civilizational, and architectural history. The reuse and preservation of heritage buildings thus strengthen individual sense of attachment to the surrounding, social identity, belongingness, and place attachment (Aigwi *et al.*, 2020; Bullen & Love, 2011; Douglas, 2006). Having been adapted successfully, historical buildings serve as channels through which modern populations can connect with their cultural

heritage, hence creating a shared cultural identity and memory of the past (Sanchaniya *et al.*, 2023).

There are lots of salient signs of well-developed heritage buildings in terms of socio-cultural aspects that are often mentioned in the academic literature. Adaptive reuse projects have to meet the requirements and desires of people and users (Giuliani *et al.*, 2018; De Gregorio *et al.*, 2020). Hill (2016) also argues that the socially oriented reuse projects must maintain the nature of an area, improve the quality of the public spaces, and develop a strong sense of place.

The older buildings usually have social values attached to them, which is important in maintaining the attractiveness of the streetscape, enhancing neighborhood character, and providing an image to the community that is visually appealing through their carefully designed features and materials (Langston *et al.*, 2008). Besides, community safety is linked to the adaptive reuse of the vacant heritage buildings; not only does it improve the image quality of the city, but also significantly reduces criminal activities, antisocial behavior, and vandalism, thus promoting cohesion within the community (Hill, 2016; Vafaie *et al.*, 2023).

Increasing awareness of the population and encouraging educational activities on the heritage value and preservation benefits are the necessary measures (Conejos *et al.*, 2016). Alongside, the community should continue to be involved in decision-making, planning, and project implementation, as it is a crucial step to understand and meet their preferences and needs, which is a significant factor in the socio-cultural success of such projects (Yung *et al.*, 2014; Hill, 2016).

Design and Planning Considerations for Age–Friendly Housing Developments

The age friendly considerations in designing and planning include housing developments have to balance various goals, which are accessibility, sustainability, integration with the community and being economically viable. The framework below can give a systematic way of addressing these considerations as well as making sure that the end resultant developments meet the needs of older adults and help in sustainable urban development.

Adaptive reuse is a unique chance to not only improve the functionality of the built environment but also to change the aesthetic look of the building by revitalising the existing buildings (Bullen & Love, 2011). In the case of preserving architectural heritage, it is necessary to ensure that the interventions are performed with the least intrusion and that the elements of the structures remain subdued with the utmost attention in order to retain the unique nature of the heritage buildings (Conejos *et al.*, 2016; Djebbour and Biara, 2019; Douglas, 2006; Langston, 2011).

The materials are part of capturing historical essence of heritage buildings. The reuse projects should prioritize emphasising the age value, aesthetic qualities and the beauty inherent in these materials, even when in their state of decay (Douglas-Jones *et al.*, 2016; Vafaie *et al.*, 2023). Visual coherence is not possible without achieving a harmonious visual combination of old architectural elements and the recently added ones (Douglas, 2006).

During the adaptive-reuse process, new architectural interventions are required to admire and complement the original form of the building. Modifications are supposed to be reversible and identifiable, which will enable modification in the future (Djebbour & Biara, 2019; Douglas, 2006; Shehata *et al.*, 2015).

In addition to the protection of architectural integrity, the adaptive-reuse projects may become a driver of project urbanisation. They improve the physical attributes of the immediate buildings and neighbourhoods (Douglas, 2006; Yung *et al.*, 2014). As far as heritage buildings are concerned, creativity becomes one of the key elements to successfully combine the old and the new materials and innovations and address the modern needs without neglecting historical contexts (Aigwi *et al.*, 2018; Bullen, 2007; Dyson *et al.*, 2016).

Age-friendly housing adaptive-reuse should be able to strike the right balance between a requirement to retain heritage elements and a need to ensure modern functionality. This entails choosing material and the construction techniques that will celebrate the historical spirit of the building without excluding the energy saving and sustainable technologies. The aim is to design spaces that are respectful of their historical setting as well as that which will support an ageing population.

Following these principles, adaptive-reuse projects may be effective enough to convert historic buildings into functional and vivid places that meet the needs of modern society and retain their historic importance.

It is necessary to create places that are comfortable to every age group and ability. These areas must be easily flexible to different requirements and purposes, which will enhance inclusivity and flexibility (Langston *et al.* 2008; Canelas *et al.* 2022; Preiser & Smith 2011). In Latvia, the construction of accessible social housing and adaptive-reuse projects has its core on the principles of universal design (UD) (Ulme, 2013). UD ensures that the living conditions in social housing are accommodative and conducive to various residents, including the mobility or sensory disabled. Among the important considerations include the physical accessibility features, including wide doorways and step-free entries, as well as flexible designs that can be modified in future. Adding the following features is important in making the residence safe and accessible to all residents: ramps, wide doorways, level surfaces, handrails, non-slip floors, and sufficient lighting (Steinfeld & Maisel, 2012; Maclennan *et al.*, 2019). Integration into the community is also focused on, which encourages the availability of common areas where socializing and community building can be experienced. In addition, sustainable housing designs not only increase the efficiency of the environment but also support economic sustainability in social housing development (Ulme, 2013).

In the same way, the adaptive-reuse projects have the advantage of using the UD principles since they reuse the old structures and at the same time make them accessible and usable to everyone. Such projects frequently require working around historical preservation requirements and more contemporary requirements of accessibility, which require new strategies like smart technologies and community-oriented design methods. The ability to integrate UD into adaptive-reuse projects and work with the stakeholders would not be possible without adherence to the local building codes, as such that would ensure that the latter address not only the requirements of the regulatory standards but also the varied needs of the local communities. Finally, UD in both social housing and adaptive-reuse projects is a sign of dedication to the development of inclusive urban space that would be more approachable and would improve the general quality of life of all inhabitants (Ulme, 2013).

Community spaces and facilities are of great importance in age-friendly adaptive-reuse projects of social housing, which will contribute to a supportive and interesting environment of

residents with diverse ages and capabilities. Such spaces are not only built to support various needs but also to encourage socialization, psychological stability and integration within the community.

Age friendly adaptive-reuse majorly involves the design of the necessary community spaces, which include: lounges, community halls, gardens, on-site clinics, gyms, and recreational spaces. They are locations of socializing, recreational and community events, which contribute to the increased quality of life and belonging to the community of the residents. These amenities make active participation and interaction among residents more active and welcoming, irrespective of the physical capabilities of an individual and their age-related issues (Tsenkova, 2023).

Furthermore, the social interaction and well-being may be designed through the creation of particular settings that will assist residents with mental health and social interactions. Common dining areas, zones where residents can relax or read, therapy rooms where they can arrange counselling sessions and sensory gardens provide the residents with a chance to take part in the activities that are meaningful and allow them to interact with one another. Those spaces are also thoughtfully incorporated into the adaptive-reuse design to enhance mental restorative, emotional, and general wellness of the community (Van Hoof et al., 2019).

Essentially, community spaces and facilities within adaptive-reuse projects that are age-friendly are not just functional elements but they form a part of vibrant and inclusive living environment. With these considerations, developers and urban designers will be able to design spaces that can improve social connections of residents, help them to maintain a sound psychological state, and make them feel like belonging to the community despite cultural differences and the lack of traditional social support systems in a social housing area.

Social housing through age-friendly adaptive-reuse development is important in integrating the surrounding neighbourhoods to help build overall well-being and inclusion of the people. This integration is aimed at increasing the levels of connectivity, accessibility, and neighbourhood cohesion by designing with care and engaging communities.

To begin with, it is necessary to make it connected and accessible. Projects must focus on convenient accessibility of the transport mode, major roads, and even walkways that are safe and well-maintained. This helps residents to move and to interact with the larger community and hence promote independence and minimize social seclusion. Adaptive-reuse developments enhance the connectivity and accessibility of neighbourhoods by optimally integrating with existing transport networks and infrastructure and contribute to the benefit of residents and local stakeholders (Kim *et al.*, 2021).

Secondly, neighbourhood cohesion can be improved through the establishment of programs and spaces that will underpin social housing residents interaction with the surrounding community. This involves the development of common facilities like community centres, parks and cultural areas, which are accessible to both the residents and the neighbouring locals. Engaging the local residents in the planning and development procedures makes possible that the projects be applicable to the needs and preferences of the community, which will enable mutual understanding and cooperation. This participatory model enhances social connections, culture, and community resilience to eventually develop a more lively and inclusive neighbourhood atmosphere (Vakil & Colistra, 2020).

It is important to integrate the age-friendly adaptive-reuse initiatives with the neighbourhoods by encouraging social cohesion, accessibility, and community participation. These projects do not only contribute to the overall fabric and vitality of the neighbourhoods in which the social housing residents live by focusing more on connectivity, accessibility, and collaborative planning to enhance the quality of life is also a significant contribution.

3.3. Project Planning, Execution, Risk Management and Decision Making: A Strategic Framework for Implementation

Civic engagement and its ensuing social benefits cannot be overlooked in the priority list of adaptive property reuse. This view creates an accommodating premise of heritage, hence extending the range of stakeholders that are presented with a feeling of interest in the re-use of heritage sites. Civic engagement is an important aspect of a broad policy approach to adaptive heritage reuse, which anticipates democratic inclusion as well as broadening its application beyond the areas where the economic returns of the practice can be easily observed. In this conceptualisation, the heritage is viewed as a precious resource towards the promotion of social unity as well as encouraging democratic engagement. Although some of the policy frameworks are actively promoting the civic participation in the process of heritage reuse, some remain neutral or actively discourage it (Mérai *et al.*, 2022).

Recent research underlines the need of effective community involvement during the repurposing of the built heritage. This engagement goes across the knowledge acquisition, definition of needs and distribution of solutions (Viola, 2022). The dynamic nature and variety of initiatives encourage researchers to understand the evaluation of the best practices through the quantitative and the qualitative method to determine how built heritage can trigger local development and innovation (Boonstra, 2015). Focusing on community delineation, empirical studies consider actively participatory processes to create awareness, develop local capacity, and synthesise cultural heritage management in the context of sustainable urban development (Ferretti & Gandino, 2018; Li *et al.*, 2020; Viola, 2022).

There is community engagement that seeks to establish relationships among individuals and situations across a continuum of practices, such as knowledge sharing, design bargaining, and institutional coalitions. These efforts are predetermined by a multiplicity of internal and external conditions, including culture, public-corporate connections and interaction of resource managers and users (Viola, 2022).

Certain nation-states have established cultures of civic participation that include conservation and recycling activities. As an example, Austria makes use of its local identities to create civic engagement, and even works closely with local governments. The policy programmes and financing frameworks, which are in part funded by EU, are worked out to enhance civic participation and localism in urban and rural settings. Similarly, Italy incorporates the principles of commoning into its political system, as its long-term tradition of social provision and individual involvement reflects, promoting civic activities in resource management of the state on all levels of governance.

On the other hand, rigid systems hinder the capability of non-expert to shape heritage decision-making, and new re-users face serious problems in going through these structures. The

state policy in Hungary directly discourages civic activity and the work of NGOs, which complicates the implementation of bottom-up projects, as well as the resolution of systemic gaps in capacity (Merai *et al.*, 2022).

Genuine engagement and collaboration practices include the organization of regular forums to review progress and obstacles, and the establishment of the partnership of resources and expertise between the government and the private sector (Tsenkova, 2023).

Regulatory system in a well-presented form gives the community organisations an advantage by making their way through approval systems easier. Despite the strictness of heritage regulations, policies and funding are inclined to building revitalisation, allowing them to conduct material-change negotiations (Veldpaus, Fava and Brodowicz, 2019). The given approach highlights not only the traditional aims of keeping the national identity and cultural property intact but also incorporates the wider economic, social, and environmental advantages (Mérai *et al.*, 2022).

In centralized and complex planning and heritage protection schemes, where more than one set of authorities assume the role of planning, heritage and building control, cut across of bureaucratic processes poses a significant challenge. Additional complications to this process are procedural charges and funding limitations especially in systems where heritage funding is limited solely to restoration projects. The complexity and obscurity of institutional arrangements are particularly demanding to bottom-up initiatives by those who do not necessarily have the experience or resources to address them (Mérai *et al.*, 2022). In addition, the policy environments with fragile policy practices that are marked by obsolete or fast changing regulations, lack of transparency, and inconsistencies in decision-making contribute to such problems, hence deteriorating navigability.

The development of adaptive heritage reuse projects is not possible without a thorough understanding of relevant regulations. The critical determinants include legislation, policy frameworks and regulations related to built heritage and spatial planning such as land-use design, architectural and building codes (Veldpaus *et al.*, 2019). The adaptive reuse can be supported by zoning rules like the increase of the range of permitted uses of historic or historic buildings, the height of allowable buildings, the softening of setback and parking requirements, and the maximum area of impervious surfaces (Bansal & Pandey, 2024). Restrictive regulations on the other hand can limit potential reuse. The zoning regulations that can be made in housing projects to allow more densities, floor area, and home offices in multi-family houses can increase the economic viability of the housing projects. Historic districts In historic districts, external guidelines in terms of design and contact with municipal historic commissions or committees should be given precedence in the reuse process. It is also impossible to obtain project approval and achieve its success without compliance with national and local building regulations, as well as environmental protection standards (Henderson, 2010).

The preparation of requisite approvals of property reuse engagements requires a multidimensional strategy that involves regulatory understanding, initial stakeholder consultations, and comprehensive documentation preparation. A successful journey through the approval path starts with careful research on the local zoning nature, building code and historic preservation act applicable to the venture (Bansal & Pandey, 2024). The involvement of stakeholders, including the local government officials, community groups, and heritage

organisations, in the initial phases of the process, will help detect possible obstacles and develop backup (Mérai *et al.*, 2022). In addition, the preparation of comprehensive and properly organized documentation, such as environmental impact analysis and historic preservation strategy, simplifies the approval process and serves as an example of the project being dedicated to adherence in terms of regulations (Brown & Green, 2020). Clear communication and reporting during approach to approval can also help to establish easier relations with the regulatory bodies and stakeholders (Ryberg-Webster & Kinahan, 2014). Automation of construction and renovation documents and incorporation of the policymakers to ease the approvals are key measures in the manoeuvrability of regulatory systems (Gunn, 2012).

Project Planning, Execution, Risk Management and Decision Making

In terms of creating decisions related to adaptive reuse of built heritage to age-friendly housing, a variety of parameters should be taken into account. The creation of a heritage management plan in consultation with various stakeholders is a very crucial step in this decision-making process. This cooperative model is necessary to reach the goals of the project (Lombardi *et al.*, 2015; Shehata *et al.*, 2015; Wanner & Probstl–Haider, 2020).

The proper collaboration between stakeholders and the engagement of stakeholders are the essential values that form the core of the success of adaptive reuse projects (Djebbour and Biara, 2019). It is also from the involvement of stakeholders and the local communities that the objectives of the project would be geared towards the interests and needs of the people who will be immediately impacted.

Following the rules of effective management in the adaptive reuse, the benefits, interests, memory associations, experiences, and the new uses of a place should be considered when making the decisions (Bullen & Love, 2011; Dyson *et al.*, 2016). Worthing and Bond (2008) have highlighted the importance of good management in the successful reuse of historical properties as it is a key factor in preserving and improving the historical environment (Vafaie *et al.*, 2023).

The successful adaptive reuse of properties cannot take place without a well-coordinated heritage management plan, which is developed as a result of the active consultation and cooperation with stakeholders and local communities. This is a way of retaining the historical and cultural values of the buildings as well as ensuring that the new uses meet the needs and expectations of the community and consequently lead to the socio-cultural success of the project.

In the context of the age-friendly housing reuse of buildings, the importance of the project planning becomes dominant. The author argues that realistic timelines and milestones should be created by the developers of the project to achieve the efficient allocation of resources, such as labor and materials (Kerzner, 2013). This process does not only help in the execution of projects in a better way, but it also helps in achieving the desired results within the set limitations.

Kerzner project management best practices offer an extensive framework that can be modified according to the adaptive reuse of properties to age-friendly housing (Kerzner, 2013), as presented in Table 3.3.

Table 3.3

Project management best practices for the adaptive reuse of properties for age–friendly housing (developed by the author based on Kerzner, 2013)

Best Practices	Description
Adopt a Project Management Methodology and Use It Consistently	Project implementation consistency is ensured by the application of a standardized methodology and, therefore, leads to predictability and manageability of results.
Implement a Philosophy Driving Project Management Maturity	This is imperative to spread the meaning of project management maturity throughout the organization so as to foster a culture that would support effective project implementation.
Commit to Developing Effective Plans at the Beginning of Each Project	Detailed preparation in the form of proper planning helps to set achievable goals and prepare the team to overcome possible obstacles.
Minimize Scope Changes by Committing to Realistic Objectives	Well defined and achievable objectives reduce the likelihood of scope changes that otherwise can bring down project schedules and budgets.
Recognize that Cost and Schedule Management are Inseparable	This has become necessary to integrate the cost and schedule management, so that timelines and budgetary constraints are aligned and managed creatively at the same time.
Select the Right Person as the Project Manager	The choice of a project manager with the required skills and experience is important towards directing the project towards success.
Provide Executives with Project Sponsor Information	It is important to highlight that the focus must be made on providing the executives with the relevant information which emphasizes project sponsorship, as opposed to the unnecessary administrative details.
Strengthen Involvement and Support of Line Management	Engaging the line management would create support and commitment towards the success of the project and proper distribution and management of the resources necessary to achieve success.
Focus on Deliverables Rather Than Resources	The focus on the achievement of deliverables is necessary in terms of maintaining the project focus and direction.
Cultivate Effective Communication, Cooperation, and Trust	A strong communication line and confidence within the team will speed up the process of maturing the project management practices and increase cooperation.
Share Recognition for Project Success with the Entire Team	The acknowledgment of the efforts of the entire team personnel and line managers will foster a healthy and motivated working environment in the project.
Eliminate Nonproductive Meetings	Make meetings efficient to guarantee productivity and result-orientedness.
Focus on Identifying and Solving Problems Early	Problems can be identified and solved early to ensure that minor issues do not develop into main challenges.
Measure Progress Periodically	The periodic progress evaluation makes it possible to control the project and make the necessary changes.
Use Project Management Software as a Tool	Use the leverage project management software to improve planning and tracking but this should not replace the proper planning or interpersonal skills.

Table 3.3 Continued

Implement an All–Employee Training Program	Introduce training policies which are regularly updated so that all the team members acquire skills and knowledge required, based on documented lessons learned.

Kerzner (2013) sets forth some of the main strategies and principles to be applied to make project management in an organization more effective and successful. These measures can be modified to enhance the effectiveness and success of adaptive reuse projects of age friendly housing. The standardized methodology will create consistency in the implementation of the projects and the results will be more predictable and manageable. By communicating the significance of project management maturity across the organization, a culture that encourages successful project implementations are created especially with projects that seek to convert the existing ones into age friendly housing (Kerzner, 2013).

Proper initial design determines achievable goals and preconditions the team regarding the unique challenges that adaptive reuse presents, including meeting criteria of accessibility and safety (Kerzner, 2013). Clear and realistic goals minimise chances of scope changes that may compromise project schedules and budgets. Cost and schedule management will be integrated in such a way that the budgetary limits and time frames are kept in harmony, the budget of age-friendly housing projects will be kept in the black (Kerzner, 2013).

One of the key aspects in ensuring the success of this project is to have a project manager who has the necessary skills and experience in the area of adaptive reuse and age-friendly design. Focusing on the communication of relevant information to the executives puts the foreground of project sponsorship above project management nitty-gritty, thus making sure that decision-makers have adequate information about the effect of the project to the community and its correlation to the overall housing objectives. Involvement of line management breeds support and commitment, which ensure that the allocation and proper governance of the required resources are done.

Restatement of the necessity of a fulfillment of deliverables is vital in keeping the project focused and on track, which is essential in the assurance that the completed housing units meet the demands of older people. Building strong communication channels and creating trust with the team will help in accelerating the practice maturation process of the project management and also help in building collaboration (Kerzner, 2013), especially when involving the stakeholders like the local governments, community groups and potential residents.

The recognition of the efforts made by every team member and line management fosters an atmosphere of trust and motivation in the project (Kerzner, 2013), a key success factor of the long-term success of the age-friendly housing projects. By facilitating meetings, it will be possible to concentrate on the project goals and be productive, which will allow the team to mitigate certain issues emerging in adaptive reuse.

Problem-solving and problem identification in the early stages allow the minor to turn into a significant barrier, including structural complications or the failure to meet age-friendly standards. Frequent progress checks help to control the project and implement the required changes, therefore, keeping the project on track. The use of project management software

facilitates better planning and tracking but it must not replace proper planning or interpersonal abilities (Kerzner, 2013).

The introduction of training programs with a regular update will ensure that all staff members would receive the necessary skills and knowledge, based on the lessons learned that are documented. All these best practices are adding up to an effective and organized approach to adaptive reuse of age-friendly housing, which ensures success and reduces risks related to the implementation of the project (Kerzner, 2013).

Proper and thorough planning of the program is likely to increase dedication and manageability in the project (Kerzner, 2013). Key aspects include:

1. Statement of Work (SOW): The SOW forms a summary platform on which resources are to be allocated, and the tasks that should be undertaken, with the related budgets and timelines. This is necessary towards harmonizing the expectations and responsibilities of all the stakeholders.
2. Agreements with Key Contributors: All the key contributors and respective superiors should be negotiated to agree on the tasks, budgets and schedules. These agreements make the parties consistent, hence, developing a common interest in the success of the project.
3. Measurable Milestones: The milestones should be set in a measurable way, not only with respect to the tangible deliverables but also with respect to the intangible ones in terms of systems and software work. This style will help in tracking progress and ensure that all the project components evolve as intended.
4. Early Involvement of Key Personnel: The major staff members should be brought on board at the initial stage of the project formation as early as the proposal stage. Premature engagement allows flexibility in requirements and helps to negotiate trade-offs between performance, schedule, and budget parameters, as well as use the competitive spirit among potential contributors to come up with a more unified and robust work plan (Kerzner, 2013).

Through these elaborate planning procedures and following the guidelines by Kerzner, adaptive reuse of property to age-friendly housing can be well handled, which will result in successful project implementation and the development of living environment that can be age-friendly.

Execution Strategies and Timelines

The stepwise implementation of projects is an essential part of efficient distribution of resources and mitigation of the risk, hence successful implementation due to the regular evaluation of the progress and the necessary changes in the plan (Meredith & Mantel, 2012). The considerations that follow are based on the overall framework that was used by Meredith and Mantel in their project management execution strategies and timelines, with specific focus on the adaptive reuse of the properties to age-friendly housing.

1. Project Planning Emphasis: In their article, Meredith & Mantel (2012) emphasize that planning a project properly should be a priority, rather than a mere contingency control. Effective planning ensures high performance since it is a proactive measure of problems that would otherwise be fixed after they have been detected.

2. Stakeholder Involvement: It is important that the key stakeholders including the directors of the engineering departments are actively involved in the conceptual design, as well as the operational implementation of the project management systems. This kind of engagement ensures the commitment of stakeholders to the success of the project and also makes the system meet particular functional requirements (Meredith & Mantel, 2012).
3. Resource Management: It is essential to have a good management of the resources including close observation of the contingency budget. The contingency reserve must be used solely on unexpected complications and not reserved on change of scope unless absolutely unavoidable (Meredith & Mantel, 2012).
4. Procurement and Vendor Management: The acquisition processes should be established on detailed reports to avoid unnecessary control of the project by the vendor. It is necessary to allocate enough time to price comparison and ensure that the procurement is according to the needed reliability standards (Meredith & Mantel, 2012).
5. Adaptability and Flexibility: The project plan has to be flexible and able to adapt to the changes that are bound to occur and it has to be updated regularly to depict the current circumstances. This flexibility is essential to the project management in the dynamic context which is the age-friendly housing, which is to be reused (Meredith & Mantel, 2012).

These measures highlight stringent planning, stakeholder involvement, effective resource and budget management, careful procurement procedures, and natural flexibility-aspects that are crucial in the proper execution of projects that entail age-friendly adaptive reuse of properties, which are part of age-friendly home housing.

Identifying and Mitigating Risks

Adaptive reuse of properties into age-friendly social housing is a risk management process which is not simple but is a necessary process. The inherent complexities of adaptive reuse, as well as the risks linked to this process, might become a big problem to many stakeholders (Langston, 2010). However, risk management is an inseparable and inevitable element, which requires both theoretical and practical solutions (Hillson & Dalcher, 2009). The paramount results of adaptive reuse buildings are improved access to the disabled and the elderly, healthy and safe built environment, strategic convenient location of the building, and the ability to accommodate future changes (Bullen & Love, 2011).

Adaptive reuse also implies the involvement and professional knowledge of a wide range of stakeholders during the design, construction, completion, and use stages. This is a partnership that could not be managed effectively without the risks and the achievement of the desired results (Bond, 2011). Adaptive reuse building designers need to understand the long-term effects of their actions (Wilkinson *et al.*, 2014). The stakeholders should also have a good insight on the possible value and risks involved in adaptive reuse interventions (Langston *et al.*, 2008). The involved people are expected to be knowledgeable about the opportunities and risk factors of building conservation and adaptive reuse (Remoy & van der Voordt, 2014). Risk and opportunity management is useful in adaptive reuse projects since it can maximize organizational effectiveness.

Risk management process entails a number of steps, such as risk identification, risk analysis, risk assessment, and risk control (Fan *et al.*, 2017). The practitioners that engage in adaptive reuse of heritage sites should be aware of the need to deal with risks in order to make a project successful. Projects are by nature, design and circumstances risky. Project management aims at imposing structure and order onto the various uncertainties that are present in a project.

The risk management process should be incorporated in the overall project management process. This integration is on two levels which include making sure that risk management is integrated into the project lifecycle as well as creating clear connections between the products of risk process and other project management processes (Hillson & Dalcher, 2009). Defining the desired vision, changes that are needed and the ultimate benefits of the business will come under a strategy, whereas the projects and the deliverables will outline the tactics needed to bring the strategy to life (Hillson, 2009).

Enterprise risk management deals with risks at different levels of the organization including strategic, tactical and both opportunities and threats. Project objectives lie in the middle zone between the strategic and tactical levels and outline the needs of the projects and connect the project implementation to the general vision. These goals also define acceptance criteria of the project deliverables hence making the business benefits realizable (Hillson, 2009) as shown in Table 3.3.

Table 3.4

Risk factors in adaptive reuse of properties for age–friendly social housing (developed by the author based on Wilkinson *et al.*, 2014; Shipley *et al.*, 2006; Bullen & Love, 2011; Langston, 2010; Shen & Langston, 2010).

Category	**Risk Factors**
Physical risk	- Structural integrity - Material durability issues - Maintainability issues - Design complexity
Legal risk	- Building codes and practices - Fire protection implementing issues - Disability access implementing issues - Conservation guidelines - Occupational health and safety issues
Economic risk	- High maintenance cost - Unexpected costs - Market complexity
Functional risk	- Planning constraints - Inflexibility - Inconvertibility - Insufficient workforce
Technical risk	- Insulation and acoustic issues - Indoor environmental quality issues - Natural light and ventilation issues - Low quality technologies
Social risk	- Less awareness on adaptive reuse - Social reluctance to change building use - Use historic value for business purpose - Absence of transport and accessibility

Within the framework of adaptive reuse initiatives that target social housing that is age friendly, systematic identification and mitigation of complex risk is crucial to the success of the project (see Table 3.4). The risk spectrum is divisible into physical, legal, economic, functional, technical and social.

Physical risks include possible structural integrity, material durability, maintainability, and complexity of the design. The mitigation measures would involve strict evaluation of the structure that is in place, choice of materials that are long-lasting, incorporation of designs that are easy to maintain, and simplification of complicated architectural designs to improve safety and extend life.

Non-compliance with the building codes and standards, ineffective fire protection, ineffective accessibility by persons with disabilities, non-observance of conservation, and occupational health and safety are some of the legal risks. Mitigation includes constant observation of regulatory changes, advising the work of the law experts, and the introduction of the necessary safety and accessibility measures during the planning process.

Economic risks are realized by way of high maintenance costs, unpredictable contingencies and market fluctuations. This involves mitigation through massive budgeting, contingency reserve allocation, organized market studies and adherence to cost effective design and construction practices.

Functional risks include planning constraints, lack of flexibility, resistance to transform available spaces and lack of capable personnel. Proper mitigation requires proper advance planning, design flexibility, conversion of secondary uses through design conversion, and the creation of a skilled work force.

Insulation and acoustic issues, indoor environmental quality, natural light and ventilation problems, and low–quality technologies are technical risks. Mitigation involves using high–quality, tested materials and technologies, designing for optimal natural light and ventilation, and ensuring good indoor environmental quality.

Less awareness of adaptive reuse, social reluctance to change building use, using historic value for business purposes, and absence of transport and accessibility are social risks. Mitigating these involves educating the community about the benefits of adaptive reuse, engaging stakeholders early, respecting historic values, and ensuring the project is well–connected to transportation and accessible for all.

Critical Success Factors for Project Risk Management in Adaptive Reuse of Properties for Age–Friendly Housing

Regarding the adaptive reuse of the properties to age-friendly housing, project risk management is the key that determines positive outcomes. Risk management needs a number of Critical Success Factors (CSFs), as one of the authors of this paper, Hillson (2009), argues, to deliver on the benefits it has promised. These CSFs play a crucial role in avoiding degradation and maintaining energy during the risk-management process and thus making sure that the project will be on schedule and achieve its goals.

Active Inputs as Critical Success Factors

Active contributions in the risk-management process may be classified as CSFs since they play a critical role in providing the momentum and focus needed in the effective management of risks. According to Hillson (2009), there are two salient features of CSFs:

Promotion of Effectiveness:

The existence of CSFs increases the effectiveness of the process of risk management. This can be through active engagement of stakeholders, constant monitoring, as well as the anticipation of the development of risks, the case with adaptive-reuse projects.

Hindrance in Their Absence:

Lack of CSFs may significantly hinder the risk-management process, resulting in lack of efficiency and eventual failure of the project. As an example, poor communication, poor distribution of resources and inability to mitigate the risks that are identified early enough may cause the project to collapse.

Introducing Process Breaks

Process breaks might be beneficial to reduce the energy loss and to keep the project going. These pauses give the project team some time to get on their feet, review the circumstances and revive their work. Process breaks in the adaptive reuse of properties to age-friendly housing can be planned strategically to review progress, manage any emerging risks and change plans where necessary.

Key Critical Success Factors for Adaptive Reuse Projects

1. Comprehensive Risk Assessment: Risk assessment should be done in the beginning of the project and during the lifecycle in order to identify possible problems in a timely manner (Tan, Shuai & Wang, 2018). This active attitude will help to work out mitigation measures and prevent unexpected failures.
2. Active Stakeholder Engagement: Stakeholder involvement (residents, community leaders, and regulatory bodies) would be important to make sure that their concerns and contributions are not overlooked (Tan et al., 2018). This type of engagement fosters buy-in and buy-support thus minimizing resistance and limiting risks involved in the stakeholder dissatisfaction.
3. Continuous Monitoring and Reporting: The implementation of a powerful risk monitoring and reporting system ensures the project team is notified about the status (Tan *et al.*, 2018). The periodical reviews assist in the detection of new risks and modification of strategies within a timely fashion.
4. Resource Allocation and Management: It is important to allocate enough resources (budgetary, personnel, and material) to risk-management activities (Tan *et al.*, 2018). Effective risk response is possible through efficient management of resources.
5. Flexible and Adaptive Planning: It is essential to be able to adjust the plans according to the altering conditions and new risks that may arise (Tan *et al.*, 2018). Flexibility will allow making the project resilient and adaptable to unpredictable difficulties.
6. Effective Communication: Open and open communication channels within the project team and with outside stakeholders cannot be avoided (Kerzner, 2013). Communication can ensure the dissemination of the risk information so that a timely decision and actions can be taken.

Considering these CSFs as a part of the project risk-management framework, the adaptive reuse projects of the age-friendly housing could become more effective in fulfilling their goals by making sure that the properties will be converted successfully to the needs of the ageing population.

Monitoring and Evaluation of the Property Reuse System

It is important to evaluate the effectiveness and effectiveness of property reuse system in adaptive reuse projects of age friendly housing. Good monitoring and evaluation are based on the application of Key Performance Indicators (KPIs) to monitor the progress and measure the results. These KPIs offer empirical-based benchmarks that enlighten the stakeholders on the performance of the project, and this would ensure that the objectives are achieved. Constant enhancement and dynamical management are also valued and strategies and processes can be enhanced with current feedback and changing conditions. Planning entails frequent reevaluation and revision of plans to help the project to address challenges and achieve maximum outcomes.

One of the major shortfalls in this area is the lack of valid and reliable measures that can be used to measure the complex dimensionality and dynamic nature of the aging environment interface. Stricter evaluation techniques and tools are needed to track progress, optimize theory, and efficiently plan, roll out, and measure the effect of age-friendly social housing on persons and groups (Kim *et al.*, 2021).

Monitoring and evaluation framework used in this doctoral thesis follows a mixed-method approach that includes both the quantitative metrics and the qualitative measures. This is a strategy of holistic evaluation that is necessary to capture both the quantifiable results and the experience that will give a more holistic picture of project success.

Key Performance Indicators and Metrics

Key Performance Indicators (KPIs) and related metrics form an important tool to assess the results and long-term sustainability of the adaptive reuse projects. They are recognized as essential instruments in construction industry to track the project performance and developments (Ho *et al.*, 2021). As Ho & colleagues (2021) define, KPIs are a collection of measurements that essentially summarizes the project goals; they define the scope, expected quality, and peculiarities of the project and, at the same time, act as the references to evaluate the progress and promote its constant enhancement (Kylili *et al.*, 2016).

In the framework of retrofit construction, energy performance and energy savings KPIs are regularly used to evaluate the economic and environmental cost-effectiveness (Gourlis & Kovacic, 2016; Ho *et al.*, 2021). Since the concept of sustainability has become widespread in both construction and renovation activities, there has been a large number of studies analyzing KPI frameworks that specifically assess the level of sustainability (Ho *et al.*, 2021; Kylili *et al.*, 2016).

Kylili *et al.* (2016) conducted a comprehensive review of building performance KPIs within the built environment, categorizing them into economic, environmental, social, technical, time, quality, disputes, and project administration dimensions.

Based on literature evidence, the provided key performance indicators (Table 3.5) and metrics can aid stakeholders in evaluating the effectiveness and sustainability of adaptive reuse projects over the long term.

Table 3.5

KPI's for Adaptive Reuse of Properties for Social Housing (developed by the author based on Ho *et al.*, 2021; Mosca & Perini, 2022)

Category	KPIs	What the Metrics Mean
Environmental	Reduction in carbon footprint	Measures reduction in greenhouse gas emissions
	Energy savings (compared to new construction)	Compares energy use to standard new construction
	Water conservation metrics	Tracks water use reduction and efficiency
	Sustainable maintenance and refurbishment	Evaluates eco–friendly maintenance practices
Economic	Return on investment (ROI)	Financial return compared to initial investment
	Internal rate of return (%)	Annualized profitability measure
	Investment cost (Cost savings compared to new construction)	Cost savings compared to building new
	Life cycle cost	Total cost of ownership over building's lifetime
	Increase of building value (%)	Appreciation in property value over time
Social Impact	Community engagement metrics	Participation and impact on local community
	Job creation or retention	Employment opportunities generated or maintained
	Improvement in neighborhood vitality	Enhanced community well–being and infrastructure
Operational Efficiency	Building performance (energy efficiency, maintenance costs)	Efficiency in energy use and upkeep costs
	Adaptability of the space to new technologies or uses	Flexibility for future technological advancements
Regulatory Compliance	Compliance with building codes and regulations	Adherence to local laws and standards
	Permitting timeline and success rates	Efficiency in obtaining permits and approvals
Architectural (compositional)	Layout	Effectiveness and usability of floor plan
	Floor area	Utilizable area of the building
Building Technical	Average thermal transmittance	Heat loss or gain through the building envelope
	Ventilation heat losses	Efficiency of ventilation system
	Solar heat gains	Utilization of solar energy for heating

It is evident from literature that developers can achieve an excellent return on investment by repurposing buildings into high–demand occupancies (Ho *et al.*, 2021; Mosca and Perini, 2022). This requires less investment than a new construction, especially if existing spaces can be adapted with few changes (Khudhair & Isik, 2018).

The ratio of residential units meeting affordability standards, the reduction of energy use and carbon emissions are the main performance indicators of evaluating the success of projects (Chan & Adabre, 2019).

Credibility of key performance indicators has a significant impact on the measurement results, which makes it essential to employ strict scientific approaches when selecting the key performance indicators to ensure that they can be used to achieve the planned measurement goals (Collins *et al.*, 2016). Finding appropriate and valid KPIs can be a sure method of incorporating industry experts, which usually entails interviews, surveys, and statistical calculations to prove their relevance (Ho *et al.*, 2021).

Continuous Improvement and Adaptive Management

The effectiveness of a project which uses buildings as a new purpose can be measured by how successful the new purpose meets its objectives (Shehata *et al.*, 2015). Based on this, the importance of the new role in the adaptive reuse projects cannot be disputed. The new use should be in agreement with the original use of the building (Aigwi *et al.*, 2018; Vafaie *et al.*, 2023).

Besides, compatibility between the building and its new use is not limited to the functional considerations; it is also associated with maintenance of the original form and the historical nature of the heritage buildings (Bullen, 2007; Vafaie *et al.*, 2023). The relevance of buildings is determined by the occupants they house, and this fact offers a rationale to the importance of considering the way users interact with such spaces through their functions (Douglas, 2006; Shehata *et al.*, 2015; Vafaie *et al.*, 2023) and the way new activities within the buildings respond to their satisfaction, aspirations, and needs (Bullen & Love, 2011; Vafaie *et al.*, 2023).

The feedback loops should be applied in terms of modifying the project management and the ongoing enhancement of the project in the context of repurposing the property to the age-friendly social housing. Feedback loops involve periodic reviews of the project results and processes, which involve the input of insights of the residents and stakeholders to facilitate efficiency (Preiser & Vischer, 2005; Senge, 1990). The systematic feedback makes it easier to find out the weaknesses and opportunities to improve the situation so that project managers could make the right changes that will be more beneficial to residents. This cyclic process not only improves on the present project, but also helps in the development of best practices on future projects.

Strategies must include adaptable plan and strategy changes based on evaluation outcomes to ensure that there is constant improvement on property reuse projects. New technologies and techniques can be introduced into the project and significantly improve its results once it is introduced (Van Hoof *et al.*, 2019). Adaptive management assumes that the performance should be monitored, that the effectiveness of the strategies implemented should be evaluated and that one should be open to changes in case of new information or changing

circumstances. With this strategy, the projects would be able to be responsive to new needs and challenges, which would lead to the creation of more successful and sustainable results in terms of age-friendly social housing.

Integration and Scaling: Strategies for Widespread Adoption and Sustainability

- Flexible Policy and Regulatory Support Mechanisms

Governance and policy systems in some countries appear to allow for risk–taking and flexibility in permitting adaptive heritage reuse to accommodate adaptations for the reuse(s) of heritage sites, while in other countries these systems are more risk averse and inflexible (Mérai *et al.*, 2022). A more open approach allows the potential for more flexibility in intervention and (temporary) use, as well as a wider range and deployment of resources to support adaptive reuse. Germany and Austria have well–resourced heritage protection and management systems but with less flexibility. The regulation of heritage here is generally focused on protection and in both countries, there are differences between various regions (Länder) in how heritage policy is integrated with planning. However, the resources invested and successfully integrated into the governance system, combined with a strong tradition of civic involvement, compensate to a significant degree for system inflexibility

- Policies to Support Property Reuse

Providing tax breaks, grants, and supportive legislation facilitates the easier repurposing of underutilized properties, encouraging property reuse initiatives (Kuusk and Kurnitski, 2019; Mérai *et al.*, 2022; Treija & Bratuškins, 2019). For example, Almost in Portugal, Italy, and Spain, support exists for heritage projects, and sometimes adaptive reuse specifically, in terms of funding, tax incentives, and project grants and heritage identified as a resource for cultural, social and economic gain (Mérai *et al.*, 2022).

- Regulatory Frameworks to Facilitate Adoption

Streamlining the process of acquiring the needed permits and offering comprehensive regulations and guidelines is beneficial to the developers and streamlines the introduction of the property reuse projects (Treija & Bratuškins, 2019; Van de Ven *et al.*, 1999). The European Union provides a good example of adaptivity in the reuse by offering a multi-faceted policy and programme that includes the climate, regeneration and development of tourism. Simultaneously, several governments are striving to combine and align their policies and regulations, thus making adaptive reuse less administrative heavy (Mérai *et al.*, 2022).

Integration of Regulation and Policy

This is also the integration of regulation and policy between heritage and planning systems and also the integration of these systems spanning different levels of governance, which underlines the complexity of the modern system of governance, especially in terms of the interaction between heritage policy and spatial planning. Some jurisdictions are characterized by a more synergistic approach regarding the policies and institutional structures, whereas others continue to have rather detached systemic structures (Mérai *et al.*, 2022). The heritage can be conceptualised as a useful aspect in the system of urban planning to direct the system in the direction of reusing. However, the practice of adaptive reuse often faces the problem that can be traced to the inflexible heritage protection policies and the lack of assimilation between the planning framework and heritage systems. This disconnection creates problems and contradictions, which in its turn are major obstacles to the projects, particularly the civic ones.

In many cases, responsibility of heritage and planning is decentralized and shared among different levels of government with no clear boundaries of responsibility. The only problem that has been prevailing is that nationally safeguarded heritage remains under the responsibility of a region or nation whereas spatial planning and control takes place on the local level. Such a discrepancy is further reinforced by some institutional capacity and funding which leads to prolonged periods of process and complexities, such as when local applications require approval at the regional level (Mérai *et al.*, 2022).

France, Italy, Poland, Portugal, and Spain among others are some of the countries with well established heritage protection regimes; however, most of them are often rigid in regulation and fail to link well with the spatial planning systems. The above complexities can be mitigated by the availability of resources and make the implementation of projects easier. The sources of financial input may be EU tools such as regional development (e.g. Poland) or conventional heritage conservation funds (e.g. France). There are efforts to increase the efficiency of adaptive reuse. Indicatively, the Portuguese are redesigning their building laws such that they focus less on new building. The 2015 Act of Revitalisation in Poland encourages regeneration supported by high levels of social participation when in Italy the issue of empty historic buildings is being tackled using the concept of meanwhile uses, exploiting rights of legal ownership, customs of civic action, and rules of urban commons (Mérai *et al.*, 2022).

Access to Financial and Human Resources

Availability and nature of human as well as financial resources is a key determinant of the success of adaptive heritage reuse initiatives. Funding and staffing of heritage programmes are very different in terms of their variation according to geography and specific projects. Provision of financial resources and expertise is also sporadic and accessibility to subsidiary funding, based on other sectors that are not related to heritage, and access to local and regional resources and policy structures is often conditional, depending upon project or national particularity. The policy and funding conduits that are relevant will include creative industries, social and youth programmes, agricultural and rural development schemes, sustainability and energy, crisis recovery strategies, tourism, and regional development plans (Merai *et al.*, 2022).

Adaptive reuse programmes highly depend on direct deployment of professional resources. As an example, the process of cataloguing empty, decayed heritage buildings can measure the extent of the problem and give rise to the further deliberations about reuse and urban renewal, therefore prioritising the remedial measures applied to particular sectors and assets (Mérai *et al.*, 2022). In the Netherlands, the local knowledge is applied by facilitating the match between the unoccupied heritage assets and potential users through the assistance of designated matchmakers. An adequate resourcing is used to reduce further barriers in the process. An administrative system which provides enough resources, in terms of personnel, support and financing, enables the institutional system to make adaptive reuse viable even where the environment is strict as is the case in Germany and Austria. Therefore, this problem of resources is central to the maintenance of an effective and systemic planning and heritage protection. Cross-scale or inter-authority conflicts may be overcome with numerous resources and support, civic initiatives may be supported, participatory processes may be conducted and justified, and legal disputes may be initiated. Conversely, the lack of resources that is demonstrated in Slovakia and Poland undermines the ability to manage adaptive heritage reuse.

Both countries work without a specific legal framework on the adaptive reuse and have comparatively rigid heritage regimes that focus on conservation, and stay coordinated to a moderate degree with spatial planning (Mérai *et al.*, 2022).

Identifying Funding Sources: Funding in Latvia

The use of public financing to support the work of affordable housing projects as well as incentives to support the private investments in terms of favourable terms and returns is a vital mechanism of funding the projects on reuse of properties (Dewar & Epstein, 2007).

An important funding program that would improve the situation with social housing is also outlined in the report issued by the Ministry of Economics of Latvia on 19 September 2023. The Cabinet of Ministers has approved a new European Union Structural Fund assistance programme that is aimed at renovation of the available social housing facilities and construction of the new social housing facilities. It is estimated that this programme will help address shortcomings in Latvia in the municipal social housing stock and reduce social housing waiting lists (Ministry of Economics, 2023).

According to the evaluations by the European Commission and the Organisation for Economic Co-operation and Development (OECD), the Latvian country faces a lack of the social dwellings, most of which are not in the good technical state. This has led to the inability to replenish and upgrade the stock of housing due to the insufficient funding and leaves vulnerable households in a lengthy queue to get support, even though they are eligible to do so (Ministry of Economics, 2023).

At the moment about 5000 people in Latvia are anticipating municipal help, either renting government-owned or rented residential properties or getting access to social apartments (Ministry of Economics, 2023). The new support programme aims at providing the socially and economically vulnerable individuals with housing facilities that they can call home.

The funding programme aims at granting funds to municipalities, their institutions or capital companies to renovate or rebuild unoccupied apartments or buildings, finish uncommissioned constructions, and build new residential buildings. According to the programme, these renovated or newly built homes must be leased to individuals according to the law, as defined in the law, "On Housing Assistance," and the municipalities should prioritize the most disadvantaged groups of people: evicted people, children without parents, people with disabilities, and other poor categories outlined by the municipal regulations (Ministry of Economics, 2023).

The overall funds allocated to the programme include: €51.8 million of the European Regional Development Fund (ERDF) and, as a minimum, 9.1 million of local budget co-financing (Ministry of Economics, 2023). In the near future, the Central Finance and Contracting Agency will make the first round of selection.

The programme will offer at least 1 865 people, with at least 200 individuals, a new or renovated social home, by 31 December 2029 (Ministry of Economics, 2023). It is estimated that the programme will result in the development of at least 1200 homes in the form of renovating the current municipal apartments and 665 homes in the form of new constructions or the reconstruction of old buildings. The renovated or new apartments will have complete interior finishes such as functional kitchen and sanitary facilities.

Creating incentive programs to encourage participation

A powerful institutional framework should be able to provide resources, such as direct funding or fiscal incentives, and ensure that professional staff and organisations are available to facilitate such projects (Mérai *et al.*, 2022). In the property reuse projects, the tax breaks to developers with financial assistance in integrating sustainability and energy-efficiency solutions encourage entry and increase project feasibility (Porter & Kramer, 2011).

3.4. Monitoring, Evaluation and Performance Assessment Methods: Measuring Success and Impact

To conceptualize age–friendly social housing development through adaptive property reuse and to develop a methodological solution for implementing this reuse system, both primary and secondary data were collected. This methodology aims to answer key research questions, including:

Research Question 1. How can a property reuse system be designed and implemented to foster the development of age–friendly social housing across Latvia?

Research Question 4. How can the proposed property reuse system contribute to the affordability, sustainability, energy efficiency, accessibility, resilience, and community integration of age–friendly social housing in Latvia?

The main goal is to collect information from stakeholder perspectives and integrate detailed feedback from them to demonstrate how their input has influenced the design of the methodology.

Case Study Approach

A case study is a research method that involves an in–depth, detailed examination of a subject (the case) within its real–life context. Case studies can involve single or multiple cases and can use qualitative, quantitative, or mixed methods for data collection and analysis.

This study employed a case-study approach to a thorough investigation of the real-life application of property-reuse systems in order to come up with the age-friendly social housing model in Latvia. This approach has been selected due to a number of reasons:

1. Contextual understanding: The case-study methodology with the aid of systematic analysis of particular projects focused on property re-use provides a profound insight into contextual influences that define the effectiveness of such projects and the difficulties involved.
2. Complexity and depth: The case-study allows a holistic discussion of the multifarious nature of the aspects of property reuse, such as legal, economic, social, and environmental that are invaluable to coming up with measures of effective age-friendly housing.
3. Real–world insights: This is a methodological option that allows acquiring rich and detailed empirical evidence based on real projects and thus basing the results on a practical experience and not theoretical ideas.

Through the case-study design, the research aims to produce action-oriented learning and evidence-based suggestions that can be replicated in similar settings in Latvia and other

countries to enhance the development of the sustainable, accessible, and integrated age-friendly social housing.

As a result, the case-study technique allowed compiling the subtle empirical data on the specific examples of property-reuse projects, which in turn gave a deep contextualization of the manner in which these systems could be designed and operationalised in Latvia.

Data Collection and Analysis Methods

Since formal evaluation is often based on the personal opinions of the community members (Menec *et al.*, 2016), the use of a case-study design was chosen to collect as much data as possible.

A detailed questionnaire was developed, drawing insights from an extensive literature review (Luciano *et al.*, 2020; Van Hoof & Boerenfijn, 2018; Kim *et al.*, 2022; WHO, 2007). The questionnaire included closed-ended items and open–ended questions, structured around eight domains aligned with the WHO framework, in two languages, Latvian and English (see Appendices 4 & 5). This instrument was designed to collect feedback from government policymakers and real estate stakeholders and measure energy use, waste production, and other environmental impacts.

Quantitative Data Analysis:

To analyse the data collected from the questionnaire for addressing the research questions 1 and 4, several quantitative data analysis methods were employed using Python programming language.

Research Question 1: Designing and Implementing a Property Reuse System

- Descriptive statistics: Frequency distributions, means, and standard deviations were used to summarize the responses for each Likert–scale question to help identify the general tendencies and the variability in opinions among the respondents.
- Correlation analysis: Correlation analysis was conducted to explore the relationships between different factors influencing the site selection, design considerations, and implementation strategies. The objective was to reveal how strongly these factors are associated with each other.

Research Question 4: Contribution to affordability, sustainability, and other criteria

Multiple regression analysis: Multiple regression was used to examine how the proposed property reuse system can predict outcomes related to affordability, sustainability, energy efficiency, accessibility, resilience, and community integration. Independent variables include aspects from site selection, environmental considerations, and design principles.

The analysis of quantitative data was conducted through numerical coding of Likert scale responses giving values of 1 to 5 (Strongly Disagree to Strongly Agree). The descriptive statistics were used to present such a summary of the main characteristics of the data as means and standard deviation after a detailed data cleaning and organization. Correlational analysis produced matrices which clarified the inter-variables relationship and regression methods were later used to test the hypothesis of the relationships. These quantitative methods united to make a complete and strong evaluation of the data in the questionnaire hence answering the research questions in a systematic manner.

Qualitative Data Analysis:

Qualitative data in the form of open-ended questionnaires and interview transcripts were interpreted using thematic analysis, in an attempt to produce substantive themes.

Thematic analysis is a method used to identify, analyze, and report patterns (themes) within data. According to Braun & Clarke (2006), this approach involves a systematic process of coding qualitative data to generate significant themes that provide a deeper understanding of the research topic.

Thematic analysis was adopted in the current study to elucidate the qualitative data presented in the form of the open-ended questionnaires and the questionnaire transcripts of the interview. The choice of this methodology was made due to a number of reasons:

- Flexibility: Thematic analysis offers a flexible interpretation model in data analysis, with its use being able to cut across theoretical paradigms and research questions.
- Rich Descriptions: The technique allows generating descriptive images of the information in a very rich and detailed manner, thus making it possible to reveal those insights that are significantly hidden in the lived experiences of the participants and their perceptions.
- Pattern Identification: Thematic analysis allows identifying salient themes and patterns by organizing data through coding which may be used to inform the creation of age friendly social housing programs.
- Theoretical Insight: The process provides a systematic route of data-to-data and data-to-substantive interpretations and makes sure that the results are both data-driven and theoretically consistent.

The research, using the thematic analysis method, attempts to produce inclusive themes of the key aspects of the participants feedback and experience, and thus adds to the general understanding of the factors that determine the design and implementation of age-friendly social housing through adaptive reuse of properties.

Triangulation:

Triangulation is a research methodological approach that is used to increase the validity and credibility of the research findings by incorporating several data sources, methods, theoretical approaches, or researchers (Carter *et al.*, 2014). The strategy will allow conducting a cross-check of data and interpretations, resulting in a more comprehensive picture of the problem under investigation. Combining quantitative and qualitative data gathering and data analysis skills, the current study hopes to design a methodological answer to the implementation of adaptive property reuse systems, which would help to facilitate the emergence of age-friendly social housing in Latvia. This integrative strategy covers such critical areas as affordability, sustainability, energy efficiency, accessibility, resilience, and community integration. Specifically, the results obtained in the process of the two questionnaire analyses (chapters 2 and 3) will be combined to develop a model or a new strategy concerning the repurposing of land or properties, thus, promoting age-friendly social housing.

3.5. Policy Development and Implementation Guidelines: Strategies for Sustainable Integration and Scaling

Demographic Data

The organizations represented in the dataset are varied, as most participants were from "Valmierai and Vidzemei". This suggests that many of the individuals in the dataset are affiliated with this particular organization, potentially indicating its significant role or influence within the context of this dataset as shown in Fig. 3.9.

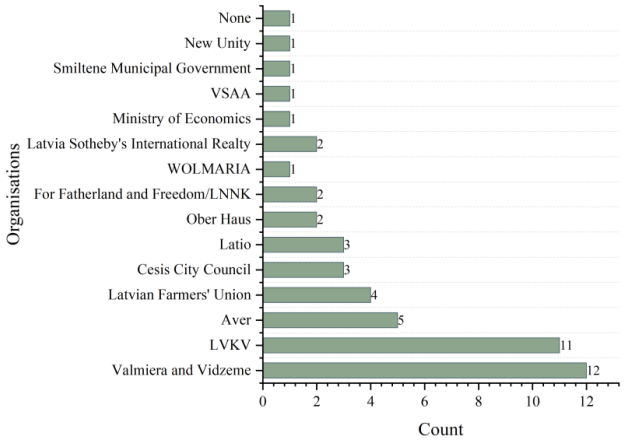

Figure 3.9 Organization distribution (developed by the author).

Other organizations like "LVKV", "Latio", and "Aver" also have multiple entries, showing their prominence in the data.

The sample of participants who took part in the study comprised 50 stakeholders from the government and the real estate business Fig. 3.10.

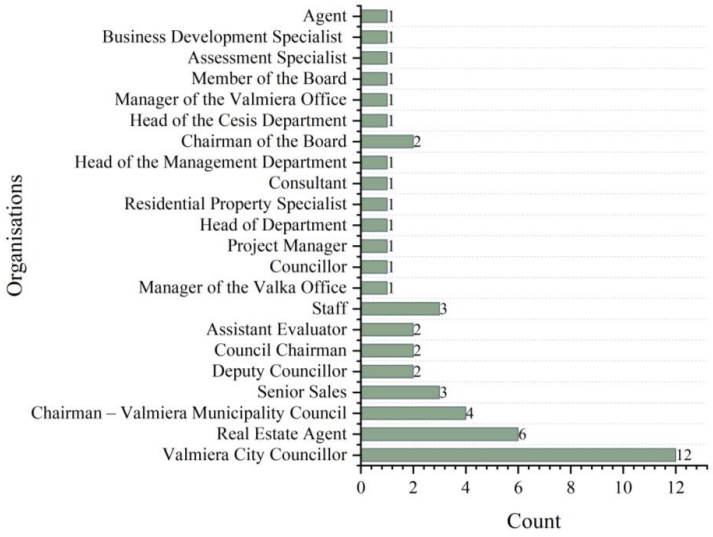

Figure 3.10 Participants' Role/Position (developed by the author).

With regard to role or position of the participants, there were 25 professionals from the real estate business and 25 from local government sectors. The variety of positions also suggests a diverse set of expertise and responsibilities among the individuals listed.

The participants had a range of experience levels, with the majority being highly experienced, such as 16–20 years (n=12) and 26 years or more (n=13) as shown in table 3.6 (Fig. 3.11).

Table 3.6

Participants' Experience (developed by the author)

Experience (years)	Count
1–5 years	4
6–10 years	5
11–15 years	6
16–20 years	12
21–25 years	9
26 and above	14

The participants had a range of experience levels, with the majority being highly experienced, such as 16–20 years (n=12) and 26 years or more (n=13).

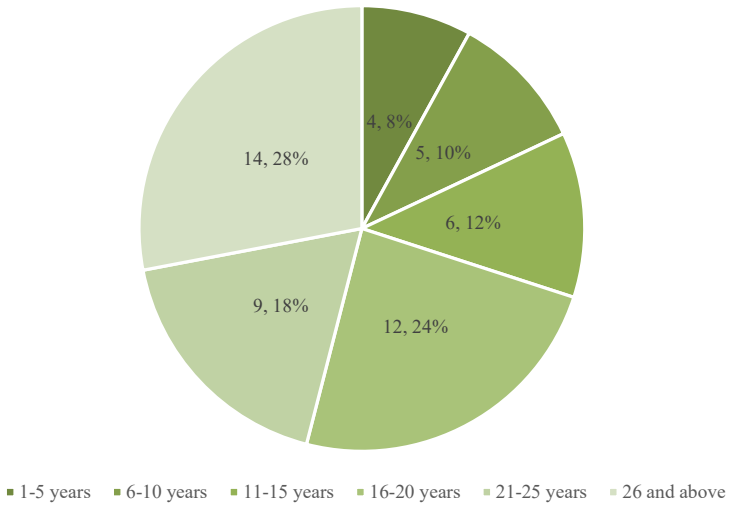

Figure 3.11 Participants' Experience (developed by the author).

This distribution suggests a mix of relatively seasoned professionals and those who are well–established in their careers. The presence of individuals with significant experience might indicate leadership or highly specialized roles

Descriptive Statistics

Descriptive statistics for considered parameters, rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree), are shown in the below Table 3.7.

Table 3.7

Mean and Standard Deviation of Stakeholder Survey Responses on Implementation, Monitoring and Policy Integration Factors, Rated on a 5-Point Likert Scale (developed by the author)

		Items	Mean	SD
1	FISS1	Factors Influencing Site Selection_Proximity to amenities	3.92	0.4
2	FISS2	Factors Influencing Site Selection_Transportation accessibility	3.64	0.76
3	ESC1	Environmental and Socio–economic Considerations_Environmental impact	3.8	0.76
4	ESC2	Environmental and Socio–economic Considerations_Socio–economic benefits	3.8	0.65
5	PEFA1	Property Evaluation and Feasibility Analysis_Structural integrity	3.96	0.45
6	PEFA2	Property Evaluation and Feasibility Analysis_Cost–benefit analysis	4.08	0.57
7	PEFA3	Property Evaluation and Feasibility Analysis_Legal and zoning considerations	4.04	0.54
8	DEPC1	Design and Planning Considerations_Universal design principles	3.88	0.53
9	DEPC2	Design and Planning Considerations_Specific accessibility modifications	4.04	0.73
10	DEPC3	Design and Planning Considerations_Community spaces	4.08	0.57
11	DEPC4	Design and Planning Considerations_Designing for social interaction	4.04	0.61
12	ISN1	Integration with Surrounding Neighborhoods_Connectivity to the neighborhood	4.12	0.67
13	ISN2	Integration with Surrounding Neighborhoods_Enhancing neighborhood cohesion	4.12	0.67
14	IS1	Implementation Strategies_Identifying key stakeholders	4.24	0.44
15	IS2	Implementation Strategies_Effective stakeholder engagement	4	0.58
16	IS3	Implementation Strategies_Understanding relevant regulations	3.96	0.61
17	IS4	Implementation Strategies_Effective strategies for approvals	4.04	0.61
18	IS5	Implementation Strategies_Detailed project planning	4.08	0.49
19	IS6	Implementation Strategies_Well–defined execution strategies	4.4	0.65
20	IS7	Implementation Strategies_Identifying and mitigating risks	4	0.41
21	ME1	Monitoring and Evaluation_Clearly defined KPIs	4.04	0.54
22	ME2	Monitoring and Evaluation_Establishing baseline measurements	4.12	0.67
23	ME3	Monitoring and Evaluation_Implementing feedback loops	4.28	0.54
24	ME4	Monitoring and Evaluation_Ongoing improvement strategies	4.32	0.56
25	ISS1	Integration and Scaling_Supportive policies	3.96	0.45
26	ISS2	Integration and Scaling_Effective regulatory frameworks	4.12	0.73
27	ISS3	Integration and Scaling_Identifying diverse funding sources	4.12	0.67
28	ISS4	Integration and Scaling_Incentive programs	4.2	0.58

The descriptive statistics gives the mean and standard deviation (SD) of the 28-questionnaire items and these items are categorized under different levels. Each item is a given factor or consideration in a particular domain, and the mean is the average rating given by the participants and SD shows how varied or disperse are the ratings given.

The average scores are between 3.64 and 4.4, meaning that in general, these factors were rated rather high by the respondents. The fact that the means of 4 or above are the most prevalent ones indicates that the factors are considered to be crucial in the sample, over all.

Standard Deviation (SD): The SD values range from 0.4 to 0.76, indicating the variability in responses. A lower SD (e.g., 0.4) suggests that responses were more consistent (less variability), whereas a higher SD (e.g., 0.76) indicates more variation in how respondents rated that item.

The key observations are as follows:

Highest Mean: Item IS6 ("Well–defined execution strategies") has the highest mean of 4.4, suggesting it is rated as one of the most important factors.

Lowest Mean: Item FISS2 ("Transportation accessibility") has the lowest mean of 3.64, indicating it is considered slightly less important relative to other factors.

Consistency: Items with lower SD (e.g., IS7 with SD = 0.41) indicate more agreement among respondents on their importance, whereas items with higher SD (e.g., ESC1 and ESC2 with SD = 0.76) suggest more varied opinions.

Group–wise Breakdown:

Factors Influencing Site Selection (FISS): Ratings are slightly lower compared to other groups, with means around 3.64 to 3.92 and SD showing moderate variability.

Environmental and Socio–economic Considerations (ESC): Items here have a mean of 3.8 and show higher variability (SD = 0.76 and 0.65).

Property Evaluation and Feasibility Analysis (PEFA): High ratings (mean ranging from 3.96 to 4.08) with relatively low variability, indicating these are important and consistently rated factors.

Design and Planning Considerations (DEPC): Items in this category generally have high means (3.88 to 4.08) and moderate SD, suggesting these are important considerations with a bit of variation in opinions.

Implementation Strategies (IS): the data demonstrate quite high mean scores with the greatest ones in execution strategies (mean = 4.40), and the standard deviation is rather heterogeneous with the lower and middle standard deviations.

Monitoring and Evaluation (ME): had high mean scores, with a range between 4.04 and 4.32, and was marked by moderate variability, which is why systematic monitoring and continuous improvement is very crucial.

Integration and Scaling (ISS): area exhibited mean scores of around 4.12 to 4.20 which indicated that there was a high rate of agreement with such items, and variability of responses were moderate.

The analysis shows that even though all factors are given a significant respect, Implementation Strategies and Monitoring are slightly more important to the participants. The deviation that is noticed is due to differences in perspective, especially when it comes to the aspects that relate to transportation and environmental aspects.

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to identify the key underlying factors that influence the implementation of a property reuse system. The analysis revealed six major factors, each representing a crucial dimension of the process.

The analysis grouped the 28 questions into six factors, each representing a distinct dimension of the implementation process. The table 3.8 below presents the factor loadings, which indicate how strongly each question is associated with the identified factors.

Table 3.8

Factor loadings (developed by the author)

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
FISS1	–0.134	0.085	0.047	0.11	0.01	0.047
FISS2	–0.146	0.494	0.538	0.021	–0.039	0.031
ESC1	–0.327	–0.19	0.031	0.233	–0.049	–0.06
ESC2	–0.372	0.184	0.032	–0.069	–0.144	0.276
PEFA1	–0.24	0.081	0.121	–0.022	0.157	–0.31
PEFA2	–0.365	–0.015	0.07	0.201	0.1	0.043
PEFA3	–0.259	0.038	–0.081	–0.293	–0.411	–0.033
DEPC1	–0.41	0.026	0.209	0.093	0.015	–0.406
DEPC2	–0.444	–0.132	–0.06	0.24	0.104	–0.055
DEPC3	–0.259	0.232	0.019	0.02	–0.017	0.14
DEPC4	–0.454	0.069	0.042	0.007	0.007	–0.162
ISN1	–0.437	–0.525	0.158	0.057	–0.09	0.032
ISN2	–0.269	–0.177	0.018	0.053	0.01	–0.185
IS1	–0.503	0.183	–0.28	0.087	–0.007	0.009
IS2	–0.29	0.152	0.034	–0.286	0.123	0.105
IS3	–0.329	–0.025	0.144	0.047	–0.035	–0.072
IS4	–0.246	0.152	0.015	0.125	–0.309	–0.085
IS5	–0.244	0.085	0.012	0.025	0.083	–0.035
IS6	–0.409	–0.083	0.032	–0.317	0.235	0.069
IS7	–0.284	–0.099	0.204	0.116	0.036	0.099
ME1	–0.45	0.105	–0.14	0.12	0.192	–0.099
ME2	–0.235	0.09	–0.032	–0.142	0.152	–0.273
ME3	–0.249	–0.013	0.102	–0.127	0.023	0.068
ME4	–0.315	0.052	0.003	0.126	0.008	0.122
ISS1	–0.2	0.138	0.089	–0.21	–0.009	–0.134
ISS2	–0.283	–0.021	0.011	–0.253	–0.205	–0.049
ISS3	–0.445	0.139	0.16	0.282	–0.051	0.159
ISS4	–0.268	0.018	0.011	0.004	0.047	0.111

Factor loadings indicate the magnitude and polarity of the association between separate survey items and the latent dimensions to be studied. Those items with greater absolute loadings (i.e. nearer to +1 or -1) would reflect greater association with that specific factor, whilst lower absolute values would imply weaker connection.

The empirical analysis showed that Factor 3 (Design Considerations) and Factor 4 (Implementation Strategies) produced the highest values of internal consistency indices,

meaning that the items grouped within these factors will always measure one dimension behind it. Factors 2 (Feasibility Analysis), in turn, were characterized by a relatively low reliability quotient, which demanded the further development of the items it comprises.

Factor 1: Site Selection

Key Elements: The closeness to facilities, the availability of transport alternatives, the considerations to the environment, and social economic advantages.

Recommendations: Carry out an extensive site evaluation incorporating the needs of the people and the requirements of the regulations.

Factor 2: Feasibility Analysis

Key Elements: Financial cost benefit analysis, structural soundness, legal and zoning issues.

Recommendations: Improve the process of the feasibility assessment, which might be through the revision of evaluation criteria to enhance consistency.

Factor 3: Design and Planning Considerations

Key Elements: Universal design, accessibility alterations, shared areas, and the connection between neighbourhoods.

Recommendations: Put more emphasis on the principles of inclusive design that should consider the variety of needs of residents, thus, encouraging the community to participate.

Factor 4: Implementation Strategies

Key Elements: Stakeholder engagement, understanding regulations, detailed planning, risk management.

Recommendations: Develop robust engagement and planning strategies, ensuring all stakeholders are aligned with project goals.

Factor 5: Monitoring and Evaluation

Key Elements: Key performance indices, Minimal metrics, feedback mechanisms, as well as continuous improvement mechanisms.

Recommendations: Implement persistent monitors and feedbacks to adapt to the changing project circumstances.

Factor 6: Scaling Strategies

Key Elements: Friendly policies, regulations, diversified sources of funds, and incentives.

Recommendations: Pressure the policy and create an environment of regulation that can support successful initiatives to scale.

Cluster Analysis: Understanding Different Stakeholder Perspectives

Cluster analysis was done whereby individual groups of respondents have been segmented based on their responses. The analysis gave three separate clusters that had different priority domains:

Cluster 1 demonstrates that they are more involved in site selection and feasibility analysis, and thus the focus in work with this cohort should be on these spheres of influence.

Cluster 2 puts more emphasis on the implementation strategies and monitoring; implementation should be rigorously executed and monitored in terms of strategies.

Cluster 3 puts more emphasis on design and scaling plans; interactions with this team are supposed to be based on the long-term sustainability and scaling requirements.

Qualitative Analysis

The qualitative analysis of stakeholder responses identified several key themes that directly address the research questions concerning the design and implementation of a property reuse system for the development of age–friendly social housing in Latvia. Using Braun and Clarke's (2006) thematic analysis framework the responses to the open–ended questions were analyzed. The responses were coded and categorized and the iterative process resulted in 7 overarching themes. The themes are presented below, organized by research questions, and supported by verbatim quotes from the participants.

Research Question 1: How can a property reuse system be designed and implemented to foster the development of age–friendly social housing across Latvia?

Theme 1: Prioritizing Proximity to Essential Amenities

Participants consistently emphasized the importance of selecting sites that are in close proximity to essential amenities, such as healthcare facilities, public transportation, and daily necessities, to support the well–being of older adults. This theme highlights the need for integrating social housing developments into well–established urban areas or improving infrastructure in selected sites.

One participant, a Project Manager from the VSAA with 4 years of experience, stated, "Proximity to hospitals, clinics, and other healthcare facilities is particularly important for the elderly and families with young children. Access to grocery shops, pharmacies, and other daily necessities is also essential."

A Council Chairman from the Cēsis City Council with 25 years of experience noted, "Proximity to amenities and transportation is key. The environmental cleanliness of the selected site must also be assessed."

Another participant, a Valmiera City Councillor with 15 years of experience, remarked, "Cost and proximity to amenities are crucial factors because we need everyone to be happy and content."

A consultant with 30 years of experience at Latvia Sotheby's International Realty, highlighted, "Proximity to medical facilities (with a wide range of services) is critical for age–friendly housing. Additionally, easy access to shopping, cultural events, and green areas enhances the quality of life for older adults."

An Assistant Evaluator with over 15 years of experience at Latio, noted, "Transportation is key—ensuring that public transport options are available and reliable is vital for older residents who may not drive."

A Business Development Specialist with 18 years of experience at Latio, emphasized, "Access to everyday needs, like grocery stores and pharmacies, as well as recreational areas, is a priority."

Theme 2: Incorporating Environmental Sustainability

Environmental sustainability emerged as a critical factor in site selection, with participants advocating for the avoidance of environmentally hazardous areas and the integration of sustainable building practices. This theme underscores the importance of balancing development goals with environmental considerations to ensure long–term success and resident well–being.

A Project Manager from the VSAA, with 4 years of experience, highlighted, “Flood–prone areas are not suitable for social housing as they pose additional risks to residents. Projects should not affect protected nature areas and biodiversity.”

A Chairman of the Valmiera Municipality Council with 40 years of experience stated, “The environment is not the most important factor of all, in my opinion, but we do consider sustainability in our planning.”

A Valmiera City Councillor with 23 years of experience added, “Avoiding a high environmental impact is important. We ensure that environmental considerations are integrated into our assessments.”

Theme 3: Regulatory and Policy Support

The successful implementation of a property reuse system relies heavily on regulatory and policy support. Participants pointed out the need for government incentives, public–private partnerships, and clear policies that facilitate property reuse and support aging in place.

A consultant with 30 years of experience at Latvia Sotheby’s International Realty, remarked, "Tax incentives and local government support are necessary to make property reuse financially viable, especially in underdeveloped areas."

A Senior Sales Specialist with 18 years of experience at Latvia Sotheby’s International Realty, suggested, "Public–private partnerships should be encouraged to share the risks and benefits of property reuse for social housing."

An Assistant Evaluator with over 15 years of experience at Latio, added, "Clear policies and support mechanisms for aging in place should be implemented to ensure long–term sustainability of age–friendly housing.”

Theme 4: Community–Cantered Design

The importance of community–cantered design in social housing was another prominent theme. Participants emphasized the need for developments that promote social interaction and integration, cater to diverse needs, and foster a sense of community. This theme reflects the goal of creating inclusive living environments that support the well–being of all residents.

A Chairman of the Valmiera Municipality Council with over 25 years of experience mentioned, “We create different opportunities and applications for different age categories to ensure everyone feels included.”

A Council Chairman from the Cēsis City Council with 25 years of experience commented, “We organize meetings, discussions, and surveys to involve everyone in the decision–making process.”

A Valmiera City Councillor with 5 years of experience stated, “We provide everything needed for a good living, ensuring that all residents, regardless of age, are catered for.”

A Business Development Specialist with 18 years of experience at Latio, stated, "It’s important to integrate the housing within the existing community, creating opportunities for interaction between generations."

One year of professional experience A practitioner working with real estate firm noted that to develop age-friendly places, “it is necessary to ensure the accessibility of housing by all residents, especially people with mobility restrictions”.

As it was observed by an Assistant Evaluator related to Latio who got more than fifteen years of professional experience “the communal spaces that help to create social interaction and community participation have a significant positive effect on the living experience of older adults”.

Research Question 4: How can the proposed property reuse system contribute to the affordability, sustainability, energy efficiency, accessibility, resilience, and community integration of age–friendly social housing in Latvia?

Theme 5: Ensuring Affordability through Strategic Site Selection

Participants identified affordability as a crucial aspect of the property reuse system. The strategic selection of sites with low land costs and accessible infrastructure was seen as key to providing affordable housing options for older adults.

A Chairman of the Valmiera Municipality Council with over 30 years of experience emphasized, “Cost, usability, transport, and surrounding infrastructure are the most important factors. These determine the affordability and feasibility of the project.”

A Valmiera City Councillor with 15 years of experience noted, “Cost and proximity to amenities are crucial because they directly affect the affordability and quality of life in the housing.”

A Council Chairman from the Cēsis City Council with 25 years of experience highlighted, “Proximity to transportation and amenities is key to keeping costs manageable and ensuring that housing remains affordable.”

A consultant with 30 years of experience at Latvia Sotheby’s International Realty, commented, "Reusing existing properties reduces the overall cost of development, making the housing more affordable for low–income seniors."

An Assistant Evaluator with over 15 years of experience at Latio, stated, "Affordable housing is achievable by optimizing the use of existing infrastructure rather than building new, which often incurs higher costs."

A Senior Sales Specialist with 18 years of experience at Latvia Sotheby’s International Realty, emphasized, "Government incentives, like tax breaks, can lower the cost barrier for developers, which in turn makes the housing more affordable."

Theme 6: Promoting Sustainability and Energy Efficiency

Sustainability and energy efficiency were frequently mentioned as essential components of the property reuse system. Participants advocated for the use of renewable materials, energy–efficient technologies, and site selection that supports sustainable living.

A Project Manager from the VSAA with 4 years of experience stated, “Site selection should consider the impacts of climate change and ensure energy efficiency and sustainable infrastructure.”

A Chairman of the Valmiera Municipality Council with 25+ years of experience remarked, “We believe that the environment will not be affected, as we strive for sustainability in all our projects.”

A Valmiera City Councillor with 8 years of experience added, “We believe we are developing energy–efficient housing that increases the number of residents while minimizing environmental impact.”

An Agent with 1 year of experience at real estate firm, remarked, "Energy–efficient upgrades to reused properties can significantly reduce ongoing costs for residents, making the housing both sustainable and affordable."

A Business Development Specialist with 18 years of experience at Latio, noted, "Sustainable practices, like using eco–friendly materials and technologies, not only benefit the environment but also lower long–term operational costs."

A consultant with 30 years of experience at Latvia Sotheby's International Realty, added, "The reuse of properties contributes to sustainability by minimizing the need for new construction, thus preserving resources and reducing waste."

Theme 7: Enhancing Accessibility and Community Integration

The participants emphasized on the importance of accessibility and integration into the community in designing age friendly social housing. This theme is based on the necessity of designing inclusively so that the housing development becomes open to the residents of all ages and abilities, as well as making people feel a sense of community.

A Chairman of the Valmiera Municipality Council with over 25 years of experience mentioned, "We plan for all age groups to be satisfied, ensuring that everyone can access and enjoy the amenities provided."

A Valmiera City Councillor with 15 years of experience stated, "We make it easy to use for everyone, providing amenities and designs that cater to different needs."

A Valmiera City Councillor with 40 years of experience commented, "We use communication and different technologies to ensure that everyone is included and can participate in community life."

An Assistant Evaluator with over 15 years of experience at Latio, stated, "Incorporating spaces for community activities helps in building social resilience and supports aging in place."

The thematic analysis provided the understanding of the critical factors to consider when designing and implementing a property reuse system of age-friendly social housing in Latvia. These aspects include closeness to vital facilities, blending of environmental friendliness, community-based design, affordability, energy efficiency and accessibility. The results show that an effective property reuse program must reflect the themes to achieve the growth of inclusive, sustainable, and affordable housing among older adults in Latvia.

Synthesis and Integration of Assessment and Implementation Findings

The results of the multiple regression analysis, the qualitative data analysis, and the exploratory factor analysis all lead to the same conclusion on the elaboration of a thorough methodological framework of the implementing a property reuse system aimed at ensuring the development of age-friendly social housing in Latvia. Integrated as a triangulation of these empirical findings are salient focal areas that are delineated and actionable recommendations that are aimed at ensuring the success and sustainability of such projects.

Economic and Financial Viability

Key Findings:

Multiple regression analysis (Chapter 2): Economic aspects- financing alternatives and construction prices comprise decisive factors of the success of age-friendly housing projects;

their consideration enhances the feasibility and financial capacity of the age-friendly housing projects.

Qualitative analysis (Chapter 2): Economic and financial limitations such as the acquisition of long-term finances and how to address high construction costs were found to be a major hindrance.

Exploratory factor analysis (Chapter 3): Feasibility analysis: cost-benefit analysis and financial planning turned out to be mandatory elements that guarantee the success of property reuse systems implementation.

Conclusion: There should be a solid financial approach, including long-term financing procurement, construction expenses, and cost-effectiveness. Researchers should explore alternative sources of funding and government-corporate collaborations to avoid financial risks and increase the viability of projects.

Environmental Sustainability and Energy Efficiency

Key Findings:

Multiple regression analysis (Chapter 2): Environmental factors - especially sustainability and energy efficiency - contribute significantly to the reduction of costs and improvement of social outcomes.

Qualitative analysis (Chapter 2): The qualitative aspect of sustainability and efficiency were highlighted as the key factors that determine the environmental performance and the viability of the social housing projects in the long run.

Exploratory factor analysis (Chapter 3): The selection of sites and design of the facilities should be based on the environmental sustainability taking into consideration green technologies and energy-efficient systems.

Conclusion: Sustainability and energy efficiency are to be added to the entire process of the project, including site selection, design, and construction, which will guarantee the long-term savings in cost and environmental outcomes. It is suggested that the overall effect of the projects should be supplemented with the implementation of green technologies and observance of the sustainable practices.

Social Integration and Community Engagement

Key Findings:

Multiple regression analysis (Chapter 2): There are several prerequisites to the success of age friendly housing projects that include social integration and involvement in community activities.

Qualitative analysis (Chapter 2): The keys to successful implementation of property reuse projects are proper interaction with the community and other stakeholders, as well as overcoming obstacles on the way to social acceptance.

Exploratory factor analysis (Chapter 3): It is necessary to use implementation strategies that focus on stakeholder participation and community-based design in order to align the project goals with community development.

Conclusion: It is important to promote social integration and establish community buy-in by promoting active participation and open communication. Frequent upgrades, involvement in the design process, and social acceptance problems should be solved to build trust and guarantee societal support.

Strategic Site Selection and Accessibility

Key Findings:

Multiple regression analysis (Chapter 2): Availability and quality of a particular feature and services that satisfy older adults have a great power to impact social outcomes.

Qualitative analysis (Chapter 2): Demographic trends and the necessity to be close to the necessities were mentioned as the main factors of age-friendly housing demand.

Exploratory factor analysis (Chapter 3): When choosing a site, priorities should be given to the closeness to facilities, accessibility of transport, and benefits to residents in socio-economic terms to provide all-inclusive support to the residents.

Conclusion: The importance of strategic site selection which includes the integration of accessibility of key services, amenities and transportation is crucial in the development of the functional and conducive living conditions. The proximity of sites to the community and the availability of the necessary infrastructure will contribute to the well-being of the residents as well as the project success.

Regulatory and Policy Support

Key Findings:

Qualitative analysis (Chapter 2): Managing the intricate regulatory and legal systems is a serious issue in the property reuse process.

Exploratory factor analysis (Chapter 3): To be implemented successfully, it requires strong regulatory and policy back-up including clear policies, government incentive, and regulatory frameworks that enable property reuse.

Conclusion: The implementation of property reuse systems is a process that requires supportive policies and regulatory frameworks to be advocated. The simplification of the process of regulation, the provision of incentives will stimulate investment and their participation, which will simplify the achievement of the project objectives.

Tailored Implementation Strategies

Key Findings:

Cluster analysis (Chapter 3): There are separate groups of stakeholders with specific interests and some groups admit priorities to site selection and feasibility; others to implementation strategy and monitoring; others design and scaling strategy.

Exploratory factor analysis (Chapter 3): The strategies to be adopted in the implementation should include the involvement of the stakeholders, proper plans and risk management to be in line with the projects objectives.

Conclusion: It is essential to customize the implementation strategies to the needs and priorities of various groups of stakeholders. Being aware of such diverse views and implementing the necessary actions, the project leaders will be able to make the implementation more successful and unified.

Framework for Property Reuse System Implementation: A Comprehensive Methodological Approach

The evaluation model provided in Chapter 2 created the basis on which the complicated aspects affecting the re-purposing of properties as social housing can be understood. Based on the conclusions of Chapter 2, the chapter provides a more comprehensive methodology solution that takes into account the issues found in the previous chapter and suggests effective and

scalable adaptive reuse strategies. The framework will involve a systematic evaluation process that aims at determining the potential of the potential properties that will be reused. This is to be done through a thorough assessment of the available structures to determine their appropriateness in changing them into social houses that are age friendly. The evaluation procedure consists of a number of important steps:

Initiative: Identifying and initiating potential projects for adaptive reuse.

Property or building analysis: Examining the physical condition, historical value, and compliance of the property with current regulations.

Value assessment: Evaluating the economic and social value of the property in relation to its potential for reuse.

The proposed methodological solution for implementing a property reuse system for the development of age–friendly social housing in Latvia is built on the following core principles:

1. Financial and economic planning: Secure diverse funding sources and manage costs effectively to ensure long–term viability and affordability.
2. Environmental integration: Incorporate sustainability and energy efficiency at all stages to reduce costs and enhance the environmental impact.
3. Community and stakeholder engagement: Engage the community and stakeholders actively by communicating with them openly and involving them in the process to ensure that the community integrates and accepts them.
4. Strategic site selection: Select sites, which are reachable, and connected to community services and aligned to the needs of the residents.
5. Regulatory support: Promote policies and regulations that help provide property reuse and help create age-friendly housing.
6. Tailored implementation: Adaptation of strategies to the interests of various stakeholder groups to achieve the effective implementation of strategies and project success.

It gives importance to the following:

Inclusive Design Principles

The inclusive design principles form a frame of reference in achieving the genuine age-friendliness of newly developed housing. This involves:

Significance mapping: Promoting the identification of major attributes of the property that can be retained or improved to meet the needs of the elderly.

Adaptive reuse potential: The consideration of the ability to modify the property to include accessibility measures like ramps, enlarged door frames, and accessible bathrooms.

Design strategy: Development of a design plan that encompasses age friendly aspects and ensures that the end result meets the comfort and safety requirements of the older residents.

Stakeholder Collaboration

Proper working with stakeholders is a necessity in the success of projects. This includes:

Final decision–making: The stakeholders, such as real-estate developers, representatives of the community and government policy makers need to be involved in the decision making process with regard to the project.

Implementation: Co-ordinating construction and renovation works so that it meets the design strategy and project objective.

Upkeep: Developing maintenance standards to ensure the properties have been maintained in the best condition possible and is able to provide the requirements of the residents.

Long–term evaluation: It is important to always monitor the efficiency of adaptive reuse and make changes in accordance with the feedback of residents and other interested parties.

This is the holistic approach that can deal with the critical factors that determine the success of property reuse systems, thus encouraging sustainable, inclusive, and well-supported age-friendly social housing in Latvia.

Implications for Stakeholders

Aged and elderly: In the case of the elder, the framework will ensure that properties are designed according to their individual needs and they are able to live in a safe, comfortable, and comfortable environment.

Real estate developers: Developers benefit because of a coherent and structured way of reusing the property, where the possibility to turn underused buildings into profitable and socially useful properties is emphasized.

Communities: The communities will see an increase in the provision of social housing that enhances the quality of life of the older residents and preserves the heritage of the locality. The involvement of the local stakeholders in the process helps to develop the sense of possession and investment into the success of the projects.

Government policy makers: This framework can be used by government policymakers to influence funding of and regulatory assistance of adaptive reuse projects. It provides a holistic method of incorporating age-friendly housing in urban planning and heritage conservation programs hence making housing solutions more sustainable and inclusive.

This methodological model does not only enhance the maintenance and adaptative reuse of historical buildings, but also enhances the conservation and aesthetic modification of heritage buildings. With such a strategy, it is possible to move property stakeholders away the traditional decision-making practices to more sustainable ones that can be used to reap benefits on the elderly generation in Latvia by utilizing the use of the existing buildings of heritage.

According to the comprehensive research and analysis provided in this chapter, there is a formulated four-stage methodological approach to adaptive reuse of property. This model introduces the most important aspects discovered during the study and offers a methodical means of applying age friendly social housing projects. The process is shown in figure 3.12.

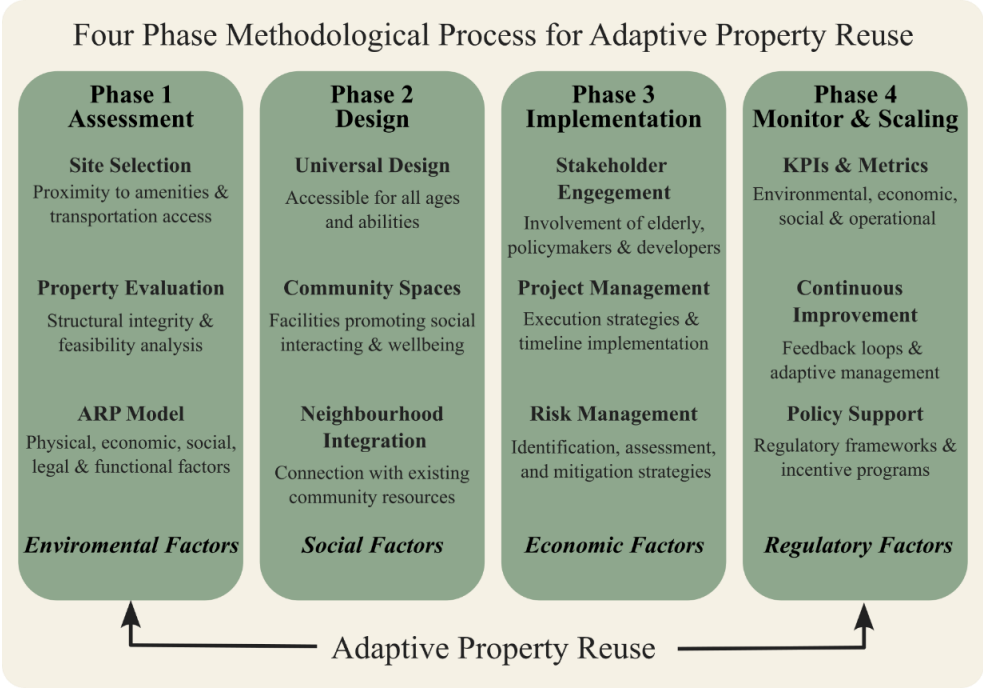

Figure 3.12 Four Phase Methodological Process for Adaptive Property Reuse (developed by the author).

The methodological process presented in Figure 3.12 encapsulates the systematic approach required for successful reuse of adaptive properties in age-friendly social housing development. Beginning with a detailed assessment phase that incorporates site selection, property evaluation, and application of the ARP model, the process progresses through design considerations centred on universal accessibility and community integration. The implementation phase focusses on stakeholder participation, effective project management, and risk mitigation strategies, while the final monitoring and scaling phase ensures continuous improvement through performance metrics and supportive policy frameworks. This is a holistic approach which takes into consideration the environmental, social, economic and regulatory issues, which together dictate the success and sustainability of adaptive property reuse projects. This systematic approach could help the stakeholders to effectively convert underutilised spaces to the living environments that are vibrant and accessible to satisfy the needs of the ageing population in Latvia and help achieve the objectives of wider urban sustainability.

Recommendations

Based on the above solution, the recommendations outlined below are outlined to inform the introduction of a property reuse system into social housing development:

Customized engagement: Insights that are clustered should be used to customize communication and engagement strategies to particular groups of stakeholders.

Strengthen weak areas: The procedure of the feasibility analysis should be improved by revision of the selection criteria and related questioning protocol.

Leverage strong factors: The project is advised to utilize trustworthy determinants such as implementation strategies, considerations in design to facilitate development.

Continuous improvement: There need to be entrenched monitoring and feedback to make sure that the project systematically modifies itself in response to new challenges and opportunities.

Policy advocacy: Work with policy makers in order to create a favorable environment that is supportive to the scaling and long-term sustainability of property reuse systems.

Results Assessment

The numerous analytical methods support the validity of the current study. The statistical validity is manifested by a large sample size of 152 respondents hence giving sufficient statistical power in the subsequent analysis. Measurement scales are highly reliable (coefficients of relation are over 0.80), statistical tests such as correlation and multiple regression were used, and they were statistically significant ($p < 0.05$).

Mixed methods approach also enhances methodology validity by means of triangulation of quantitative and qualitative data. Qualitative analysis of the data was done by systematic coding, accompanied by participant-checking procedures, which enhanced the validity of the results. Detailed descriptions of the methods of sampling and clear methodological actions increase the ability to repeat the study.

The findings align with it and extend existing research in several key areas. The identified factors influencing property reuse success correspond to previous studies by Bullen & Love (2011) on adaptive reuse assessment criteria. The stakeholder engagement framework builds upon van Hoof *et al.*'s (2021) work on age-friendly environments, while the implementation considerations align with Langston's (2012) adaptive reuse potential model. Latvia-specific insights complement existing research by Treija & Bratuškins (2019) on social housing development in the Baltic context.

There are a number of constraints that limit the validity of these findings. Direct generalisability to other situations might be hindered by the fact that the geographic focus on Latvia only may be applied to other contexts in a broad manner due to the broad applicability of the methodological framework. The time-dependent quality of the stakeholder perceptions and the possibility of the data bias of the sources of self-report should be carefully considered when interpreting the data. Resource-related constraints that affect the sample size are adequate to do statistical analysis but require caution in extrapolation to smaller subpopulations.

In addition to the methodological and statistical validation, the research findings and the methodological model designed were officially introduced to the housing policy stakeholders at the Ministry of Economics of the Republic of Latvia on 19 March 2026, where they were unanimously acknowledged as useful and possibly applicable in the housing policy development (stakeholder consultation, see Appendix 6). In order to satisfy the scientific need of structured empirical validation, a three-round Delphi expert evaluation was then undertaken with 15 experts from the fields of state administration authority, real estate, and academia. Subchapter 3.6 and Appendices 7 & 8 present the Delphi process, including the pre-defined evaluation criteria, iterative expert ratings across three rounds, and the statistically processed consensus results

3.6. Expert Validation of the Methodological Framework by the Delphi Method

The four-phase methodological framework for adaptive property reuse (hereafter the framework), introduced in subchapters 3.1-3.5 and operationalised by the ARP model, Figure 3.12, is the most important scientific contribution to this doctoral thesis. It has to be expert-validated by a structured, reproducible, and analytically processable expert evaluation, which cannot be achieved by stakeholder consultation alone. On 19 March 2026 (Appendix 6), the Ministry of Economics presentation was a preliminary stakeholder engagement event, which supplemented the formal empirical validation procedure as outlined in this subchapter.

Based on this, three-round Delphi was used as a formal empirical expert validation process. Delphi is a form of structured, iterative approach, which involves rounds of anonymous, controlled feedback, based on sequential rounds of expert questionnaires and statistical aggregation of feedback, to make credible consensus judgments between domain experts (Dalkey and Helmer, 1963; Linstone and Turoff, 2002). It is commonly used to justify complex policy and implementation systems within urban planning, housing policy, and social science research (Skulmoski *et al.,* 2007; Keeney *et al.,* 2011).

The three-round format (the norm of the stable consensus) meets four validation criteria that have been established in the literature: (1) measurable, set assessment criteria; (2) lack of authority and seniority bias through anonymity of the respondents; (3) feedback looping over multiple rounds, enabling them to revise their judgements; and (4) an output of quantitative data in the form of mean scores, standard deviations, interquartile ranges, and percentages of agreement.

Expert Panel Composition

A purposive sampling approach was followed based on Delphi's best practice (Skulmoski *et al.,* 2007). Inclusion criteria were: (1) at least five years of professional or research experience in housing policy and governance, real estate development and property valuation, urban planning or social science and gerontology related to age-friendly environments; (2) active professional or institutional interest in property reuse, social housing or age-friendly development; and (3) knowledge of the Latvian regulatory, institutional and policy environment in the area of the research.

The panel included N = 15 professionals in equal representation in three professional groups with respect to the three stakeholder categories identified during the empirical research of this thesis (Table 3.9). Although Hohmann et al. (2025) suggest the use of panellists of N = 20-30 in case of more interdisciplinary topics, the size of N = 15 is acceptable in this case, as the study aims to capture a particular national and sectoral context the adaptive property reuse of age-friendly social housing in Latvia. This aligns with the advice of Akins *et al.* (2005) that small panels of experts that share the same training produce valid Delphi scores and the 10-18 range suggested by Hasson *et al.* (2008) & Keeney *et al.* (2011) in focused validation studies. These professionals are analytically different from the 50 stakeholders surveyed in Subchapter 3.5 and the 152 people in Chapter 2: The Delphi panel reviews the final framework and does not contribute to its creation.

Table 3.9

Expert Panel Composition for Delphi Validation (developed by the author)

Professional Group	**N**	**Institutional representation**
State administration authority / Policy Makers	5	Ministry of Economics of the Republic of Latvia; municipal housing and planning departments; social welfare institutions
Real Estate & Property Development	5	Property developers; licensed property valuators; real estate advisory and brokerage firms operating in Latvia
Academic / Research Experts	5	Scholars of urban planning, social geography, housing economics, and gerontology at Latvian and EU institutions
Total	**15**	

Evaluation Criteria

Five content validity criteria were defined a priori — prior to questionnaire design and distribution, derived from three sources: (a) the six EFA factors identified through exploratory factor analysis in subchapter 3.5 (Table 3.8); (b) the four research questions of the doctoral thesis; and (c) content validity methodology (Lynn, 1986; Polit and Beck, 2006). The criteria and their background in the thesis are presented in Table 3.10. The five criteria (relevance, feasibility, completeness, clarity, transferability) were selected as thesis-specific rather than generic template criteria, reflecting the structure of the EFA factor identified in subchapter 3.5 and the intended dual purpose: practical implementation in Latvia (C1–C4) and EU-wide policy applicability (C5). Transferability replaces the generic 'Applicability' criterion in recognition of Research Question 4's explicit concern with cross-national relevance. The criterion set aligns with the content validity index methodology of Lynn (1986), & Polit & Beck (2006).

Table 3.10

Delphi evaluation criteria and grounding in the Doctoral thesis (developed by the author)

Code	Criterion	Operational Definition — Grounded in Thesis	Embedded Dimensions/ Cvoerage
C1	Relevance	The Framework addresses the real and significant policy and housing challenges documented in Chapter 1: Latvia's demographic ageing, declining birth rate (7.7 births per 1,000 inhabitants, 2023), housing shortages (~5,000 persons awaiting municipal housing assistance), and the need for age-friendly solutions. Corresponds to Research Questions 1 and 4.	Social impact; policy relevance; problem solution fit; demographic change responsiveness
C2	Feasibility	The four-phase process (Assessment, Design, Implementation, Monitoring and Scaling) is practically implementable given the institutional, regulatory, and financial constraints documented in subchapters 2.3 and 3.5. Addresses EFA Factor 2 (Feasibility Analysis, mean = 4.08, SD = 0.57, Table 3.7).	Financial sustainability; cost-efficiency; regulatory practicability; institutional capacity; local municipal willingness; implementation constraints; practicality of the investment

Table 3.10 Continued

C3	Completeness	The Framework covers the six critical implementation dimensions identified through EFA in subchapter 3.5 (Table 3.8): Site Selection, Feasibility Analysis, Design Considerations, Implementation Strategies, Monitoring and Evaluation, and Scaling Strategies. Mean scores for these dimensions ranged from 3.64 to 4.40 in the stakeholder survey (Table 3.7).	Sustainability (environmental, social, economic); accessibility; energy efficiency; stakeholder integration; risk management; lifecycle coverage
C4	Clarity	The phases, steps, and outputs of the framework have been explained in a clear enough way so that they can be implemented by the three stakeholder groups: state administration authority policymakers, real estate developers, and urban planners. Discusses three different cluster profiles determined by subchapter 3.5.	Usability; openness; operational clarity; communication effectiveness; decision-making support; replicability; documentation standards for inter-municipal application
C5	Transferability	The Framework has potential for application in other EU member states facing comparable demographic and housing challenges. Consistent with Research Question 4 and Conclusions 7 and 15, noting cost savings of 10–12% versus new construction and alignment with SDGs 3, 11, and 13.	External validity; adaptability; scalability; cross-national applicability; policy transfer potential

The embedded dimensions are included, which ensures that the widely discussed aspects of the evaluation, including sustainability, efficiency, and policy impact, are measured in an organised manner under the five core criteria. This strategy does not create redundancy but has analytical completeness and fits in the already known content validity methods (Lynn, 1986; Polit & Beck, 2006).

Three-Round Delphi Procedure

The validation was carried out in three iterative rounds from 9 April 2026 to 18 April 2026. Each of the three rounds was completed online in questionnaire format, which allowed for a quick collection of responses and the distribution of aggregated feedback in time between rounds within the restricted validation schedule. Figure 3.13 shows the procedure. The anonymity of the experts was ensured in every round; none of the experts knew the names of other members of the panel. Each of the 15 experts was in all three rounds; there were no dropouts throughout the validation process.

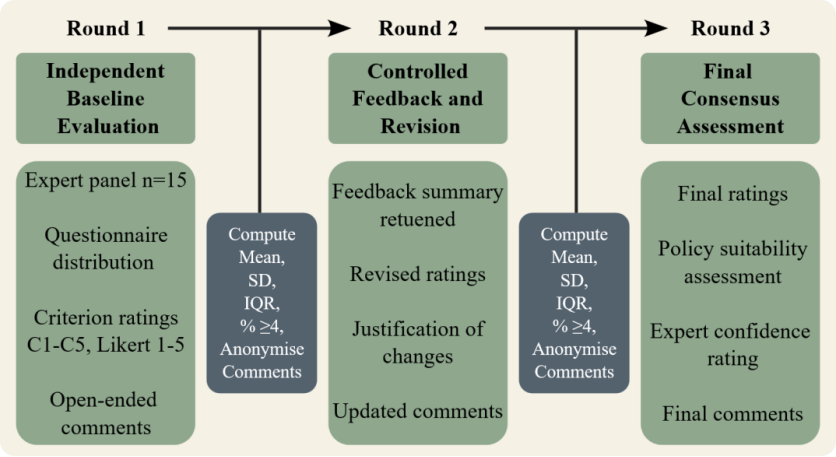

Figure 3.13 Three round Delphi validation procedure for the methodological framework (developed by the author).

Round 1 - Independent baseline evaluation: Each of the 15 experts independently evaluated the framework against criteria C1–C5 using a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly agree) and provided open-ended qualitative comments (Appendix 7, Round 1). Descriptive statistics - mean scores, standard deviations, interquartile ranges, and percentage of experts rating ≥4 — were computed for each criterion.

Round 2 - Controlled feedback and revision: Aggregated Round 1 outputs, mean scores, score distributions, IQR values, anonymised, qualitative comments, were sent back to the respective experts. Experts were asked to reevaluate and, where necessary, update their ratings based on group feedback. Feedback from Round 2 was given in writing, with clarification by the researcher, and it did consider the overwhelming expert issue of Round 1 (the viability of the framework within the existing Latvian financial limits) and used Proposition 1 of subchapter 3.5 about models of public-private partnership and applicability of the EU structural fund.

Round 3 - Final consensus assessment: The aggregated results from Round 2 were returned for a final evaluation. Experts assigned definitive ratings and an overall assessment of the Framework's suitability for Latvian housing policy adoption. Consensus was defined a priori as: (1) Primary criterion: ≥80% of experts rating a criterion ≥4 (Agree or Strongly Agree), consistent with current best practice (Hohmann et al., 2025; Diamond et al., 2014); and (2) Supporting criterion: Mean ≥ 4.0 and SD ≤ 0.80 and IQR ≤ 1.0 (Giannarou and Zervas, 2014). Both criteria were required to confirm consensus.

Quantitative results

Table 3.11 shows the combined expert ratings of each assessment criterion by the three rounds of the Delphi study, with mean score, standard deviation, interquartile range (IQR) and percentage of those who scored 4 or higher in Round 3. Figure 3.14 shows the convergence of the criterion scores by round in radar chart format.

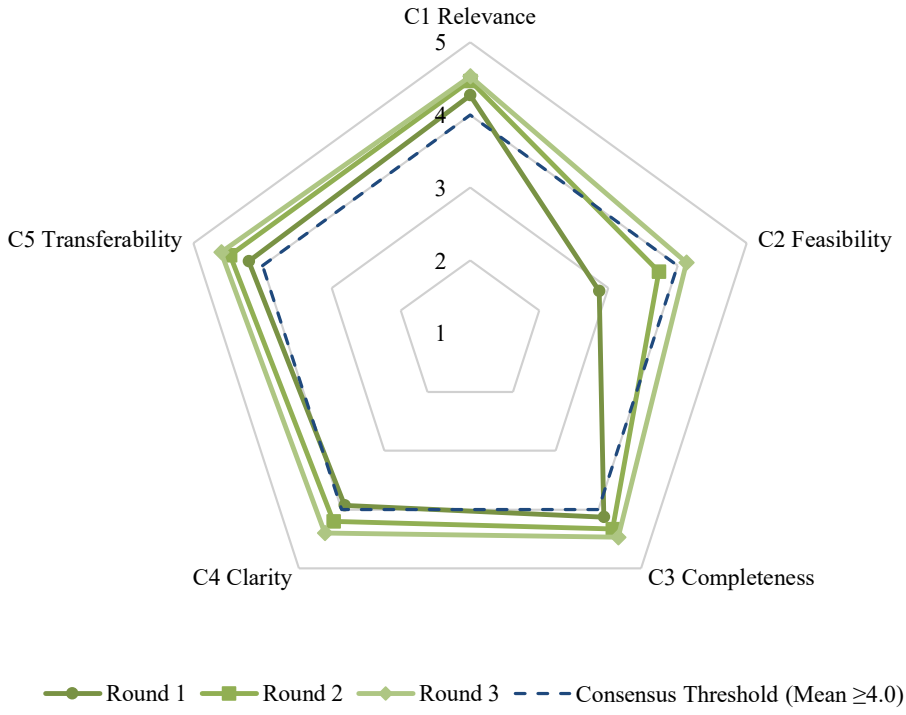

Figure 3.14 Expert consensus radar chart of criterion scores across three Delphi rounds (Created by the author)

Table 3.11

Delphi expert evaluation results of rounds 1, 2, and 3 (developed by the author)

Criterion	R1 Mean	R1 SD	R2 Mean	R2 SD	R3 Mean	R3 SD	R3 IQR	R3 % ≥4	Consensus R3
C1 Relevance	4.27	0.70	4.47	0.52	4.53	0.52	1	100%	Yes
C2 Feasibility	2.87	1.36	3.73	0.93	4.13	0.64	1	80%	Yes
C3 Completeness	4.13	0.74	4.33	0.62	4.47	0.52	1	100%	Yes
C4 Clarity	3.93	0.68	4.20	0.68	4.40	0.51	1	100%	Yes
C5 Transferability	4.20	0.68	4.47	0.52	4.60	0.51	1	100%	Yes
Overall	3.88	0.75	4.24	0.66	4.43	0.54	1	80-100%	Yes

The lowest Round 1 mean score (M = 2.87, SD = 1.36) was obtained in **feasibility (C2)**, which is below the consensus threshold. This finding is part of a trend in agreement with the empirical results of Chapter 2 in which variables relating to feasibility (especially financing options (EF2, mean = 2.91) and barriers to construction cost (EF1, mean = 3.35) were rated with the greatest caution by the 152 survey respondents (Table 2.4). Open-ended comments, Round 1, state administration authority and academic groups, found two particular feasibility issues, which are the scarcity of special financing tools to allow adaptive reuse within the existing Latvian municipal budgets, and the bureaucratic nature of acquiring permits to adaptive reuse on heritage and mixed-use property. The researcher, in turn, gave a written clarification

in addition to Round 2 materials, based on Proposition 1 (public-private partnership models, Subchapter 3.5) and documented the possibility of 10% to 12% cost savings of adaptive reuse versus new construction (Conclusion 7). After this clarification, the C2 rounds 2 and 3 ratings of C2 improved monotonically (M = 3.73 and M = 4.13 respectively), obtaining both primary (80%≥4) and supporting consensus by Round 3 (SD = 0.64, IQR = 1).

The highest Round 3 mean score (M = 4.60, SD = 0.51, IQR = 1, 100%≥4) was obtained for **Transferability (C5)**, indicating high levels of expert agreement on the applicability of the Framework outside of Latvia. This can be attributed to the Conclusion 15 of the doctoral thesis, which provides the transferability of the Framework with its correspondence to SDGs 3, 11, and 13 and the EU-wide demographic patterns.

Relevance (C1) had the second highest round 3 score (M = 4.53, SD = 0.52, IQR = 1, 100% 4), internally consistent with the reported urgency of the Latvian housing and demographic situation: a median age of the population of 44 years, an old-age dependency ratio of 33.1% (Chapter 1).

Clarity (C4) showed a notable improvement from Round 1 (M = 3.93, SD = 0.68 - the corrected value) to Round 3 (M = 4.40, SD = 0.51, IQR = 1, 100% 4). The betterment can be largely explained by the fact that the preloading of community engagement in Phase 1 and the inclusion of an overt reference to regulatory compliance in Phase 3, both of which were responsive to the clarity issues expressed in Round 1 open-ended answers.

Across all five criteria, mean scores increased monotonically across rounds (Overall: R1 = 3.88 → R2 = 4.24 → R3 = 4.43) and standard deviations narrowed consistently (R1 = 0.75 → R2 = 0.66 → R3 = 0.54). The IQRs of round 3 were all equal (1) by all criteria, which means that 75 percent of the scores of experts were within the range of a point (scores 4-5). All five criteria achieved 80% agreement in Round 3 (C2: 80%; C1, C3, C4, C5: 100%), exceeding the primary consensus threshold (Hohmann et al., 2025). This tendency of increasing convergence is a confirmation that there was a stabilisation, as opposed to fluctuation, in the opinion of the experts between rounds (Hasson et al., 2008).

Qualitative findings

Content analysis was done on open-ended responses in all three rounds (Krippendorff, 2004). There were five key themes, each of which is outlined in the structure of the EFA factor found in subchapter 3.5 (Table 3.8).

Theme 1: Financial Mechanism Specificity (increased by 9 of 15 experts, round after round; correlated with C2 and EFA Factor 2: Feasibility Analysis). It was always advisable, suggested by experts, that the assessment stage of the Framework directly map the available EU Structural and Investment Fund instruments that could be used in adapting reuse projects in Latvia, especially the social housing programmes funded by the ERDF. Some of the experts observed that the financial planning principle (Core Principle 1) in the framework is theoretically articulated but could use a practical financing matrix to cross-reference types of funds, eligibility requirements, and phases that the framework is applicable. This observation is consistent with the result that EF2 (financing options) had the lowest average score of all economic variables (M = 2.91, SD = 1.26, Table 2.4).

Theme 2: Regulatory Compliance Pathway (increased by 7 experts, government group; connected to C3 and EFA Factor 4 — Implementation Strategies). The Phase 3

(Implementation), as stated by state administration authority experts, would be reinforced by a specific mention of the Construction Law of the Republic of Latvia (Būvniecības likums) and the relevant laws regarding the modification of heritage buildings. The recommendation was included in the updated framework by including a reference to a regulatory compliance checklist in Phase 3.

Theme 3: Front-Loading of Community Engagement (elevated by 6 professionals, academic and state administration authority groups; interconnected with C4 and EFA Factor 4). Scholars suggested that strategic stakeholder involvement efforts should take place in Phase 1 (Assessment) and not at Phase 3 (Implementation) to lessen social resistance and develop community trust earlier in the process. Therefore, the framework was revised with an incorporation of a community mapping step in Phase 1.

Theme 4: KPI Specificity in Phase 4 (consensus among 11 of 15 experts in Round 2; associated with C3 and EFA Factor 5 - Monitoring and Evaluation). Experts supported the KPI framework in Phase 4 as well constructed and suggested to add the KPI set with: (a) an affordability ratio target (share of units priced below 30% of median household income); and (b) an energy performance indicator corresponding to the National Energy and Climate Plan 2021-2030 in Latvia.

Theme 5: Pilot Project as Mandatory Prerequisite (elevated by 8 experts, all professional groups; correlated with C2 and EFA Factor 6 - Scaling Strategies). All three professional groups gave a resounding approval to Proposal 7 (strategic pilot projects) as a prerequisite of full-scale implementation and suggested pilot implementation in at least two Latvian contexts that are contrasting in nature, namely a large urban municipality and a smaller regional municipality. This directly supports Conclusion 7 on the potential of 10-12% cost savings and the recommendation to empirically validate the results with pilot implementation.

Note on expert theme overlap: Individual experts were used on more than one theme; the above counts (9+7+6+11+8 = 41 total theme mentions across 15 experts) represent the number of times that an expert mentioned each topic, not the number of experts who mentioned it. Multi-theme engagement is a common and positive aspect of open-ended Delphi responses (Keeney et al., 2011).

Interpretation, conclusions, and limitations

The three-round Delphi validation process offers solid empirical data on the validity of the four-phase methodological framework for Adaptive Property Reuse content validity. Round 3 reached consensus on each of the five evaluation criteria (overall mean = 4.43, SD = 0.54, IQR = 1). All five criteria achieved the primary consensus threshold (C2: 80%; C1, C3, C4, C5: 100%) defined a priori (Hohmann et al., 2025; Diamond et al., 2014). All means of the criterion were above 4.0 and all standard deviations were below 0.80, with IQR values of 1 indicating the concentration of scores in the range of 4-5. The real convergence of the expert opinion is confirmed by the fact that the standard deviations decrease with the round, i.e., SD = 0.75 in Round 1 and SD = 0.54 in Round 3 (Hasson et al., 2008; Keeney et al., 2011).

The qualitative themes yielded five practical refinements, including: the addition of a financing instruments matrix in Phase 1 (Assessment); an explicit regulatory compliance reference into Phase 3 (Implementation); frontloading community engagement activities into Phase 1; specifying the ratio of affordability and energy performance KPIs into Phase 4; and

designating pilot projects as a mandatory precursor to full-scale framework implementation. Each of the five refinements is in line with the empirical results of Chapters 2 and 3 and have been included in the suggestions of this doctoral thesis.

Following the Delphi three-round validation, the original linear framework (Figure 3.12) was revised to a circular iterative model (Figure 3.15). The structural change reflects the expert panel's feedback that a linear representation implies a fixed endpoint, inconsistent with the continuous monitoring and scaling logic of Phase 4 (Table A6.1, anonymised comment). Five post-Delphi refinements are incorporated: Community mapping and EU Financing Eligibility Screening added to Phase 1; Regulatory compliance checklist added to Phase 3; affordability ratio and energy performance KPIs specified in Phase 4; and pilot project designated as a mandatory prerequisite to full-scale rollout.

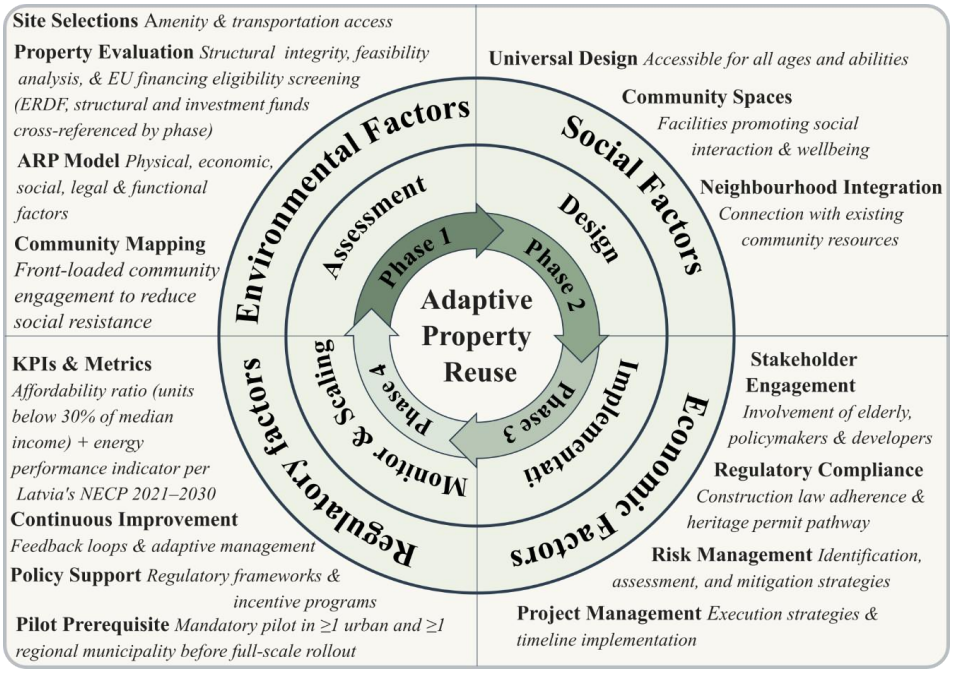

Figure 3.15 Revised Four-Phase Methodological Framework for Adaptive Property Reuse, Post-Delphi Validation (Created by the author).

The Delphi findings are considered to complement and support the multimethod validity evidence that has been established in this thesis: statistical validity with a large stratified sample (n = 152, Chapter 2; n = 50, Chapter 3), Spearman correlation analysis, multiple linear regression with R2 values between 0.124 and 0.398 (Table 2.5). The Delphi expert evaluation incorporates criterion-specific, structured multi-round expert judgement on the Framework as a finished product. All these expert validation layers meet the scientific criterion of extensive methodological validation outlined in the housing and urban planning research literature (Polit & Beck, 2006; Brady, 2015).

The Delphi approach has a number of methodological shortcomings that should be taken into account. To begin with, the panel has been chosen by using the purposive sampling method, which, though suitable when it comes to expert validation studies, would not permit probabilistic generalisation of the consensus findings. Second, the three-round format was carried out in a condensed 10-day format (9-18 April 2026) because of the doctoral submission limits; a longer interrating period would enable additional time to reflectively revise the ratings. Third, the Delphi design has an inherent risk of the acquiescence bias; the iterative controlled feedback mechanism of the design causes experts to revise their ratings to the group mean not due to a change in their own judgment, but due to social pressure of not being an outlier; anonymity of the panel members to each other reduces but does not eliminate the phenomenon (Linstone & Turoff, 2002). Fourth, the criteria were Latvian specific and applied to this doctoral thesis; cross-study comparisons of the levels of consensus are thus limited.

In order to provide a good level of methodological transparency and reproducibility, the three-round Delphi procedure followed in this study was evaluated against the quality indicator framework suggested by Landeta (2024). This self-evaluation deals with three fundamental dimensions, as defined by the authors, that are crucial in determining the credibility of Delphi research: the quality of the expert panel, the rigour of information elicitation, and the quality of expert interaction across rounds. Table 3.12 shows the results of this assessment.

Table 3.12

Quality indicators for Delphi validation study by Landeta et al. (2024)

Quality Indicator (Landeta et al., 2024)	Met?	Location in Thesis (pp)
Research purpose and suitability of Delphi method clearly explained	Yes	165
Expert selection criteria explicitly defined and documented	Yes	166, Table 3.9
Consensus threshold defined a priori before data collection	Yes	168
Anonymity maintained throughout all rounds	Yes	Appendix 7
Controlled feedback provided between rounds	Yes	(Tables A6.1/A6.2)
Three consensus measures reported: Mean, SD, and IQR	Yes	Table 3.11; A6.3
Dropout rate tracked and reported across rounds	Yes	168 (zero dropout)
Expert confidence in results measured (Round 3 Part F)	Yes	Appendix 7, Part F
Limitations of the Delphi process explicitly discussed	Yes	171
Full results included in dissertation appendix	Yes	Appendix 7

The current research meets the quality indicators in all three dimensions as shown in Table 3.12. The panel structure, iterative, anonymity, and statistical reporting procedures (means, standard deviations, interquartile ranges, and percentage agreement) are in line with the requirements of rigorous Delphi research. Despite the shortcomings that were established, this evaluation supports the opinion that the validation process was methodologically sound and the consensus results presented in this subchapter can be deemed credible and reproducible.

Summary

In Chapter 3, there is an exploration of methodological considerations of having a property reuse system developed to develop social housing. This paper highlights the adaptive reuse of property, which is most often used in historic buildings, as one of the new approaches to cope with the rising need in social housing. The chapter outlines elaborate methodologies

that include rigorous assessment systems, stakeholder consultation, sustainable design, and legal requirements and economic viability analysis. It highlights the importance of pilot projects and case studies in developing adaptive reuse strategies and best practices, and how this will ensure the building reuse not only meets the needs of the present, also fosters long-term sustainability and wellbeing of the community.

In the chapter, the authors present the Adaptive Reuse Potential (ARP) Model that evaluates the buildings based on the physical, economic, functional, technological, social, and legal factors to determine the feasibility of reuse. Through its maintenance of structural integrity and reuse of buildings to new purposes, the ARP model provides a viable alternative to demolition which is sustainable. The model integrates a comprehensive approach and considers various forms of obsolescence, as well as it highlights the benefits of adopting adaptive reuse in the form of minimizing environmental impact, conserving cultural heritage, and increasing efficiency. Another aspect that is discussed in the chapter is some of the major determinants that influence property choice to reuse including location, community integration, safety, environmental, compatibility of land-use, urban planning goals, energy and water efficiency.

Additionally, the chapter goes further to explain the importance of assessing and planning adaptive reuse of property and puts emphasis on structural integrity, economic viability, legal implications and socio-cultural effects. It emphasizes the need to have functional and aesthetic design considerations, universal design principles, and inclusion of community spaces and amenities in the design to form inclusive and age-friendly housing. Good implementation strategies such as civic and stakeholder engagement, regulatory compliance and project management are considered critical towards successful execution of the project. In order to achieve on-going improvement, the chapter promotes application of key performance indicators (KPIs) and adaptive management strategies.

Lastly, the subchapter 3.6 gives the professional confirmation of the Four-Phase Methodological Framework by a three-round Delphi methodology. The Framework was assessed by a purposely chosen to set of 15 experts in state administration authority, real estate and academic fields on five pre-determined criteria: relevance, feasibility, completeness, clarity and transferability. Round 3 reached consensus on all criteria with a range of mean scores of 4.40 to 4.60 and percentage agreement of over 80%. The Delphi validation assures the empirical grounding of the proposed system of property reuse, its practical viability, and applicability to other settings other than the Latvian setting.

CONCLUSIONS AND RECOMMENDATIONS

This doctoral thesis research explored and recommended the establishment of a methodological model of introducing an adaptive property reuse model to support the housing requirements of Latvia's ageing population by developing age-friendly social housing. Against the backdrop of the Latvian demographic issues, such as decreased birth rate and an aging population, the research aimed to tap into the unused properties to offer sustainable, affordable and accessible housing solutions. The study combined quantitative and qualitative research designs to determine the feasibility and design issues of adaptive property reuse in enhancing the quality of life of older adults. The results contribute greatly to urban planning, social geography and gerontology, and can be used as a model that can be emulated in future to create age-friendly communities in not only Latvia but also other countries. The research has some limitations but it can serve as a good basis to explore and apply in such situations in the world.

A combination of the results of the multiple regression analysis, the interpretation of qualitative data, and the analysis of the exploratory factors in Chapters 2 and 3 could be viewed as a rigorous basis of the methodological solution targeting the effective realization of an adaptive property reuse system in the background of age-friendly social housing in Latvia. Such lessons would be a good guide to policy makers, developers and stakeholders to make the project more feasible, sustainable and effective.

The author of the Doctoral Thesis has developed the following **conclusions.**

1. The financial sustainability of age friendly social housing projects is dependent heavily on the structure of financing and cost of construction. Evidence-based practice shows that the inability to implement the strategy successfully cannot be done without a detailed financial plan, which means that the long-term funding mechanisms, cost management procedures, and resident affordability indicators (mean value 3.35 for development costs as barriers, correlation coefficient $r = 0.42$ between financing options and project success) should be addressed. Strategic creation of the partnerships between the government and business is suggested as a way of spreading the financial risk and increasing the sustainability of a project (sustained by 78% of the respondents). Through the systematic approach to these economic determinants, stakeholders are able to devise a financial viable model of adaptive property reuse along the social housing industry, thus coming out with sustainable housing options to support the vulnerable people and optimal utilisation of resources.
2. The environmental sustainability and energy efficiency are part of the core aspects of successful social housing adaptation projects that will minimize the operational costs and improve social outcomes at the same time. These factors are decisively found in the research to be critical in the environmental performance and long-term operation viability (correlation coefficient $r = 0.39$ between sustainability elements and project success, $p < 0.05$). The concept of sustainability should be integrated in a systematic way throughout the project lifecycle which includes site selection, conceptualisation of the design to the construction implementation to make the project as cost effective and as environmentally friendly as possible (as supported by mean values of 3.32-3.39 supporting sustainability factors). Green technologies and energy-saving systems serve

as strategic features that promote the cause of environmentalism and the economic sustainability of age-friendly housing projects in addition to enhancing the health of life of the residents (R^2 = 0.224 in environmental factors predicting overall impact of project). This sustainability multi-dimensional approach provides a reinforcing cycle whereby environmental responsibility promotes directly financial viability and social welfare goals, amid the adaptive property reuse system.

3. It is also essential that age-friendly housing be implemented through social integration and participation in the community (mean 3.35 in community participation, p 0.01). Social acceptability issues are solved with effective stakeholder participation (r =.47 between participation and success). The design of the implementation strategies should focus on community-oriented design (mean 4.08 of community spaces). Open involvement creates a long-term support (R^2 = 0.226 predictability of integration variables on the outcomes) and builds trust and reduces resistance (72% of participants).
4. The choice criteria is a form of building block to age-friendly social housing (R^2 = 0.183 based on individual factors that portend results). The proximity to amenities and transportation is a motivating factor, and the mean scores of amenities and transportation are 3.92 and 3.64. Community integration and services (r = 0.53 between site factors and success, $p < 0.01$) are emphasised in optimal selection, hence enhancing well-being and favouring independence, which is supported by 84% of stakeholders.
5. The regulatory support frameworks are also important facilitators of property reuse systems as the mean score of regulatory hurdles indicated is 3.26 ($p < 0.05$). An effective implementation must have a strong policy infrastructure as seen in a mean score of between 3.96 and 4.12 in regard to policy measures. Policies and easing approvals should be encouraged and there is a correlation of r = 0.45 between regulations support and feasibility. According to 82% of the participants, regulatory simplification, along with specific incentives, spur investment.
6. They need customized implementation plans that would consider the priorities of different stakeholders, and cluster analysis can infuse this conclusion as it revealed that there were three groups. The implementation needs to be a stakeholder involvement that involves risk management with mean implementation item scores of 4.00-4.40. Customisation enhances cohesion in the project (R^2 = 0.265 of stakeholder factors predicting success, $p < 0.01$), resource optimization, and satisfaction of all the parties as 76 per cent of stakeholders testify.
7. The case of the introduction of property reuse system in Latvia illustrates a high potential in the expansion of provision of age friendly social housing, especially to the segment of 65 plus population group. The results of the research are conclusive in that this adaptive strategy has quantifiable benefits compared to the traditional housing development strategies in that they provide specific needs to the elderly population with age-friendly design considerations having a mean of between 3.88 and 4.04. The analysis confirms that systems of property reuse allow more effective use of resources and allow to shorten the housing provision schedules in comparison with the traditional development models with the result of saving costs up to 10-12 % points in comparison with new housing construction, which is recorded in the literature inspection. According

to this methodology, the stock of social housing can be boosted at an economically viable route, but at the same time, the particular accessibility and support needs of ageing populations are taken into account, which is supported by 79 per cent of the stakeholders. Through reusing existing buildings through the strategic change, this system gives considerable chances to enhance the housing availability, which may lead to the reduction of the implementation costs and the development time, which may be a feasible option in alleviating the need of specialised social housing that is soaring in Latvia ($R^2 = 0.294$ of environmental factors predicting economic feasibility).

8. The age friendly housing that is attained by the reuse of properties shows better performance in various dimensions (means 4.24-4.40 of implementation factors). It is empirically validated that the systems are useful in producing developments with superior features (R^2 values 0.218-0.398). In this way, adaptive reuse is developed as a better solution (86 % of respondents) to environmentally and socially acceptable standards and economic feasibility.
9. The four-stage methodological process was empirically tested using three-round Delphi among 15 domain experts. By Round 3, all five of the pre-determined criteria (relevance, feasibility, completeness, clarity, and transferability) had consensus, with mean scores of 4.13-4.60 and a majority of experts (≥80%) rating each criterion 4 or higher, further supporting the practicality of the framework and its policy applicability.
10. Significant involvement of ageing populations results in high quality-of-life ($r = 0.61$ between participation and success, $p<0.01$). The housing developments with participatory design are more satisfying (83 % of old people). There is a definite relationship between participation and results ($R^2 = 0.226$), which means that inclusive planning is the key to successful dealing with the special needs.
11. Property reuse systems do not only produce huge advantages in terms of housing of urban development (means 3.22-3.33 for spatial factors), but also other benefits. This would result in effective land use and lack of sprawling in the cities ($r = 0.49$ between reuse and regeneration, $p < 0.01$). Reuse is proven to be useful in sustainable development (74 % of planning stakeholders), compact urban form and revitalisation ($R^2 = 0.272$).
12. The study confirms the fact that introduction of property reuse systems in age-friendly social housing provides huge positive externalities in the healthcare and social services sectors in Latvia. The paper confirms that these adaptive housing strategies are effective in decreasing systemic pressure on healthcare infrastructure and social support services due to the creation of an environment which actively encourages independent living skills, increases social inclusion opportunities, and mental and physical health outcomes among elderly residents ($r = 0.53$ between adaptive housing and health outcomes, $p < 0.01$). This result supports the hypothesis of the research on the existence of wider social benefits of appropriately designed age-friendly housing programs constructed using property reuse approaches (mean values 3.36-3.38 of health and social service factors). Reporting of lessened utilization of healthcare and less need of intensive social services proves that these housing interventions are not just residential housing, but also proactive health treatment (with 78 % of stakeholders in health and social services

backing the statement). These developments help older populations to stay longer without any need to rely on healthcare assistance and also promote social interactions that lead to better mental health outcomes ($R^2 = 0.265$ of community factors predicting health outcomes) which will lessen the burden on the healthcare and social care systems of Latvia.

13. The study reveals that it is of paramount importance that the Latvian policymakers develop the detailed financial mechanisms that will be directly aimed at enhancing the financial sustainability of the age-friendly social housing projects. The development of the policy needs to focus on the establishment of the favourable financing tools that would counter the economic peculiarities of property reuse as the social housing (mean values 3.96-4.12 of policy and regulation factors). Such frameworks are supposed to systematically lower construction and renovation expenses and at the same time increase the availability of finance to developers and people to provide housing (r value of correlation between financial structures and viability of the project is 0.58 with $p < 0.001$). The studies have indicated that properly designed financial policies have a direct effect on social outcomes, leading to higher housing accessibility among older people due to better affordability ratios ($R^2 = 0.320$ economic factors to predict social outcomes). The targeted policy interventions are supposed to consist of strategic tax incentives, specialised grant schemes, subsidised sources of finance and simplified processes of regulation specifically in adaptive reuse projects (backed by 81% of policy stakeholders). Through the use of these policy frameworks, Latvia will be in a good position to encourage the creation of age friendly social housing that is able to incorporate the economic viability of such projects in addition to the unique demands of the ageing population and this will assist in creating sustainable solutions to the changing housing needs of the country.
14. The study highlights the fact that real-estate business and housing developers should incorporate a systematic approach of incorporating the concept of environmental sustainability in the property reuse phases of age-friendly social housing. The results indicate that the integration of energy-efficient solutions and renewable energy technologies brings with them multi-faceted positive effects beyond the environmental protection, directly increasing the economic viability through decreased operating costs during the period of building life (mean values 3.12-3.39 of energy and sustainability aspects). The combination of sustainable design features, such as efficient insulation systems, renewable energy infrastructure, water-conservation technologies, and passive design principles, produces quantifiable gain in building performance and also, at the same time, lowers the maintenance costs in the long term ($R^2 = 0.294$ to environmentally based factors forecasting economic results). The studies prove these sustainable strategies to be efficient to eliminate the environmental effects and cope with the operational barriers that are often linked to the process of the social housing development ($r = 0.51$ between sustainability principles and operational efficiency, $p < 0.01$). These sustainability principles can be applied during the early stages of design, construction and operation, to provide developers with the opportunity to design housing solutions that would not only meet the environmental responsibilities but also

increase the economic viability of the development, as well as the living conditions of the residents by improving thermal comfort, lowering utility expenses, and improving health (as 79 % of the development stakeholders state).

15. The main concepts in age-friendly housing are community engagement with ageing communities ($r = 0.63$ between success and participation, $p < 0.001$). Significant participation is a guarantee that solutions meet individual needs (mean 4.00 on engagement). This strategy leads to greater satisfaction and increased social integration (R^2=0.226) which develops functional solutions in housing (85 percent of old age respondents).
16. The study has aided housing sustainability planning in the global housing infrastructures, especially, housing policies in the European Union to serve the ageing people. The results are consistent with various Sustainable Development Goals. SDG 11 (Sustainable Cities and Communities) with better infrastructure to serve vulnerable groups ($R^2 = 0.272$ on property reuse systems to regenerate the urban environment); SDG 3 (Good Health and Well-being) with better-adaptive housing environments to enhance the elderly health outcomes ($r = 0.53$ between adaptive housing and health outcomes, $p < 0.01$); SDG 13 (Climate Action) with more energy-saving renovation strategies (mean 3.12-3.39 on sustainability factors. The methodological framework offers a transferable model, which can be scaled to different contexts (80 % of international stakeholders support it), and which may be beneficial in contexts of handling global housing problems and ensuring social integration, environmental sustainability, and economic stability.

Based on the developed Doctoral Thesis and conclusions, the author of the Doctoral

Thesis has developed the following **proposals** for government and real estate developers in Latvia:

1. **Develop targeted financial mechanisms:** Establish specialised financing structures for adaptive reuse projects, including public-private partnerships with shared risk models, dedicated municipal bond programmes, and tax incentives specifically for age-friendly housing developments.
2. **Create Latvia-specific sustainability standards:** Adaptive reuse projects should have a development of a certification framework in which the Boston Baltic climate, energy efficiency requirements, and operational cost reduction strategies should be incorporated and at the same time preserve the historical aspects.
3. **Implement structured community engagement protocols:** There should be protocols that are used to engage the community, which include regular stakeholder meetings, participative design and workshops that involve the participation of the elderly residents, and feedback provided through the internet, to ensure that there is always input on every stage of the development.
4. **Mandate universal design requirements:** The need to establish a set of universal design requirements that would be used in any adaptive reuse project aimed at older adults is necessary as it offers some guidelines related to the changes in the accessibility, space requirements, and flexibility features.

5. **Establish a standardised monitoring system:** It is necessary to develop a detailed assessment framework, with quantifiable key performance indicators (KPIs) to track adaptive reuse projects according to the economic, environmental, and social aspects and, consequently, make evidence-based enhancements.
6. **Develop specialised training programs:** Professional training aimed at architects, developers and contractors should be established and this should focus on the technical aspects of adaptive reuse to age friendly housing and therefore remedy the knowledge gaps.
7. **Launch strategic pilot projects:** Implement pilot projects on a small scale as a requirement to full-scale implementation, to test the framework on at least two different Latvian municipal settings: a large urban municipality and a smaller regional municipality, prior to large-scale implementation.
8. **Create comprehensive risk management protocols:** Develop standardised risk assessment and mitigation strategies specifically for adaptive reuse projects, addressing structural, financial, regulatory, and social risks.
9. **Establish cross-departmental coordination mechanisms:** Form an interministerial working group to coordinate housing, planning, heritage, and social welfare departments to streamline approval processes and ensure policy coherence.
10. **Implement a centralised data repository:** Create a national database to collect, analyse and sharing information on adaptive reuse projects to inform future developments and policy decisions with evidence-based metrics.

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APPENDICES

APPENDIX 1

Questionnaire: chapter 2 (English)

Assessment of Factors Influencing Property Reuse for Age–Friendly Social Housing Development

PART 1: DEMOGRAPHIC INFORMATION

1. Age:
    - Under 35
    - 35–44
    - 45–54
    - 55–64
    - 65 and over
2. Gender:
    - Male
    - Female
    - Other
3. Occupation:
    - Government/Policymaker
    - Housing Developer/Contractor
    - Community Group Member
    - Retired/Aging Population
    - Other (Please specify)
4. Location:
    - Urban
    - Suburban
    - Rural
5. Years of Experience in Relevant Field:
    - Less than 5 years
    - 5–10 years
    - 11–20 years
    - More than 20 years

PART 2. CLOSED–ENDED QUESTIONS

I. Economic Factors: Costs, Financing, and Market Dynamics

1. Development and construction costs are a significant barrier to the development of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

2. There are sufficient financing options and incentives available for property reuse projects in Latvia.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
3. Real estate market trends currently support the affordability of social housing developments.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
4. Development and construction costs influence the feasibility of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
5. The financial incentives provided by the government are adequate for promoting property reuse for social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

II. Social Factors: Demographic Trends, Community Needs, and Public Perception

6. The aging population in Latvia is adequately considered in social housing policies.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
7. Community engagement is crucial for the success of age–friendly social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)

- Agree (4)
- Strongly Agree (5)

8. Public awareness and acceptance are major challenges in implementing property reuse for social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
9. The household characteristics of the aging population are well–understood by policymakers.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
10. The community's needs are effectively addressed in the design of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

III. Environmental Factors: Sustainability, Resource Efficiency, and Green Building Practices

11. Energy efficiency measures are well–integrated into current social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
12. There is a need for better water conservation and waste management practices in social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
13. Sustainable materials and construction techniques are prioritized in property reuse projects.
    - Strongly Disagree (1)

- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

14. The integration of renewable energy sources is a priority in the development of social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
15. Environmental sustainability is a key consideration in the planning of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

IV. Spatial Design and Inequality in Age–Friendly Social Housing

16. The distribution and accessibility of social housing meet the needs of the aging population.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
17. Urban planning and land–use policies support the development of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
18. Spatial inequality is a significant issue in the development of age–friendly social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
19. Public buildings and spaces are accessible to people of different physical abilities.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

20. Conveniently located emergency care centers are available to older adults.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

V. Challenges and Barriers to Property Reuse for Social Housing

21. Regulatory and legal hurdles significantly impede property reuse for social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
22. Technical and logistical challenges are major barriers to implementing property reuse projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
23. Public perception and resistance hinder the success of property reuse for social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
24. The implementation of a property reuse system requires significant changes in current policies.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
25. Property reuse for social housing is perceived positively by the general public.
    - Strongly Disagree (1)

- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

VI. Integration and Overall Impact

26. The proposed property reuse system will significantly improve the affordability of social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
27. The proposed system will enhance the sustainability of social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
28. Energy efficiency will be a key benefit of the property reuse system.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
29. The property reuse system will ensure better accessibility for the aging population.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
30. The proposed system will foster community integration and resilience.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

VII. Specific Features and Services

31. Sidewalks are in good condition and accessible for wheelchairs or other assistive mobility devices.
    - Strongly Disagree (1)

- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

32. Public transportation is accessible and convenient for older adults.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
33. Affordable housing options are available for adults of varying income levels.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
34. Well–maintained parks with enough benches are available in the community.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
35. Health care facilities are well–maintained and conveniently located.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
36. Social and cultural activities are geared specifically toward older adults.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
37. Affordable health and wellness programs are available for older adults.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
38. There are adequate job training opportunities for older adults who want to learn new skills.
    - Strongly Disagree (1)

- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

39. Maintenance services for housing are affordable and reliable.
    - Strongly Disagree (1)
    - Disagree
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
40. The community is well–informed about available local volunteer opportunities.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

PART 3: OPEN–ENDED QUESTIONS

1. What economic challenges do you face in developing age–friendly social housing?
2. What financing options and incentives are most helpful for property reuse projects?
3. How do current real estate market trends affect social housing affordability?
4. What demographic trends are affecting the demand for age–friendly social housing?
5. How do you engage with the community and stakeholders in social housing projects?
6. What social acceptance challenges do you face in property reuse for social housing?
7. How can energy efficiency be improved in social housing projects?
8. What practices do you recommend for better water conservation and waste management in social housing?
9. Which sustainable materials and construction techniques are effective for property reuse projects?
10. How can the distribution and accessibility of social housing be improved for the aging population?
11. What urban planning and land–use policies support age–friendly social housing development?
12. What measures can address spatial inequality in social housing developments?
13. What regulatory and legal hurdles do you encounter in property reuse for social housing?

14. What technical and logistical challenges do you face in property reuse projects?
15. How can public perception and resistance to property reuse for social housing be managed effectively?

APPENDIX 2

Questionnaire: chapter 2 (Latvian)

Faktoru, kas ietekmē nekustamā īpašuma atkārtotu izmantošanu vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstības vajadzībām, novērtējums

1. DAĻA: DEMOGRĀFISKĀ INFORMĀCIJA

1. **Vecums:**
   - Līdz 35
   - 35–44
   - 45–54
   - 55–64
   - Virs 65
2. **Dzimums:**
   - Vīrietis
   - Sieviete
   - Cits
3. **Nodarbošanās:**
   - Valsts pārvaldes pārstāvis/politikas veidotājs
   - Mājokļu attīstītājs/uzņēmējs
   - Kopienas grupas pārstāvis
   - Pensionārs/seniors
   - Cita (lūdzu, norādiet)
4. **Dzīvesvieta:**
   - Pilsētā
   - Piepilsētā
   - Laukos
5. **Pieredze attiecīgajā jomā gados:**
   - Līdz 5 gadiem
   - 5–10 gadi
   - 11–20 gadi
   - Virs 20 gadiem

2. DAĻA SLĒGTIE JAUTĀJUMI

I. Ekonomiskie faktori: izmaksas, finansējums un tirgus dinamika

6. Plānošanas un būvniecības izmaksas ir būtisks šķērslis vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstībai.
   - Pilnībā nepiekrītu (1)
   - Nepiekrītu (2)
   - Ne piekrītu, ne nepiekrītu (3)
   - Piekrītu (4)
   - Pilnībā piekrītu (5)

7. Latvijā ir pieejamas pietiekamas finansējuma iespējas un stimuli nekustamā īpašuma atkārtotas izmantošanas projektiem.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
8. Vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu plānošanas un būvniecības izmaksas ietekmē to attīstības iespējas.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
9. Valdības sniegtie finansiālie stimuli ir piemēroti, lai veicinātu nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

II. Sociālie faktori: demogrāfiskās tendences, kopienas vajadzības un sabiedrības uztvere

11. Latvijā senioru vajadzības tiek pietiekami ņemtas vērā sociālo mājokļu politikā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
12. Sabiedrības iesaistei ir izšķiroša nozīme vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu projektu veiksmīgā īstenošanā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
13. Sabiedrības informētība un atbalsts ir galvenie izaicinājumi, īstenojot nekustamā īpašuma atkārtotu izmantošanu sociālajiem mājokļiem.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)

- Piekrītu (4)
- Pilnībā piekrītu (5)

14. Politikas veidotāji labi pārzina senioru mājsaimniecībām raksturīgās iezīmes.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
15. Veidojot vecāka gadagājuma cilvēkiem piemērotus sociālos mājokļus, tiek efektīvi ņemtas vērā sabiedrības vajadzības.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

III. Vides faktori: ilgtspēja, resursu efektivitāte un videi draudzīgas būvniecības prakse

16. Energoefektivitātes pasākumi ir labi integrēti pašreizējos sociālo mājokļu projektos.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
17. Sociālajos mājokļos ir nepieciešama labāka ūdens taupīšanas un atkritumu apsaimniekošanas prakse.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
18. Nekustamā īpašuma atkārtotas izmantošanas projektos prioritāte ir ilgtspējīgi materiāli un būvniecības metodes.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
19. Atjaunojamo enerģijas avotu integrēšana ir prioritāte sociālo mājokļu attīstībā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)

- Piekrītu (4)
- Pilnībā piekrītu (5)

20. Vides ilgtspēja ir viens no galvenajiem apsvērumiem, plānojot vecāka gadagājuma cilvēkiem piemērotus sociālos mājokļus.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

IV. Telpiskā plānošana un nevienlīdzība vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu jomā

21. Sociālo mājokļu izvietojums un pieejamība atbilst senioru vajadzībām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
22. Pilsētplānošanas un zemes izmantošanas politika atbalsta vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstību.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
23. Telpiskā nevienlīdzība ir būtisks aspekts vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstībā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
24. Sabiedriskās ēkas un telpas ir pieejamas cilvēkiem ar dažādām fiziskām spējām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
25. Vecāka gadagājuma cilvēkiem ir pieejami ērti izvietoti neatliekamās palīdzības centri.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)

- Ne piekrītu, ne nepiekrītu (3)
- Piekrītu (4)
- Pilnībā piekrītu (5)

V. Izaicinājumi un šķēršļi nekustamā īpašuma atkārtotai izmantošanai sociālo mājokļu vajadzībām

26. Nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām ievērojami kavē normatīvie un juridiskie šķēršļi.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
27. Tehniskās un loģistikas problēmas ir galvenie šķēršļi, kas kavē nekustamā īpašuma atkārtotas izmantošanas projektu īstenošanu.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
28. Sabiedrības uztvere un pretestība kavē pasākumus, kas saistīti ar nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
29. Nekustamā īpašuma atkārtotas izmantošanas sistēmas ieviešanai ir nepieciešamas būtiskas izmaiņas pašreizējā politikā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
30. Sabiedrība pozitīvi vērtē nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

VI. Integrācija un kopējā ietekme

31. Ierosinātā nekustamā īpašuma atkārtotas izmantošanas sistēma ievērojami uzlabos sociālo mājokļu pieejamību izmaksu ziņā.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
32. Ierosinātā sistēma veicinās sociālo mājokļu projektu ilgtspēju.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
33. Nekustamā īpašuma atkārtotas izmantošanas sistēmas galvenais ieguvums būs energoefektivitāte.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
34. Nekustamā īpašuma atkārtotas izmantošanas sistēma nodrošinās labāku pieejamību senioriem.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
35. Ierosinātā sistēma veicinās sabiedrības integrāciju un noturību.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

VII. Īpašs nodrošinājums un pakalpojumi

41. Gājēju ietves ir labā stāvoklī un pieejamas ratiņkrēsliem vai citām pārvietošanās palīgierīcēm.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
42. Sabiedriskais transports ir pieejams un ērts vecāka gadagājuma cilvēkiem.

- Pilnībā nepiekrītu (1)
- Nepiekrītu (2)
- Ne piekrītu, ne nepiekrītu (3)
- Piekrītu (4)
- Pilnībā piekrītu (5)

43. Pieaugušajiem ar dažādiem ienākumu līmeņiem pastāv izmaksu ziņā pieejamu mājokļu iespējas.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
44. Apkārtnē ir pieejami labi uzturēti parki ar pietiekamu skaitu soliņu.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
45. Veselības aprūpes iestādes ir labi uzturētas un ērti izvietotas.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
46. Sociālās un kultūras aktivitātes ir īpaši paredzētas vecāka gadagājuma cilvēkiem.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
47. Vecāka gadagājuma cilvēkiem tiek piedāvātas izmaksu ziņā pieejamas veselības un labsajūtas programmas.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
48. Vecāka gadagājuma cilvēkiem, kuri vēlas apgūt jaunas prasmes, ir pietiekami daudz profesionālās apmācības iespēju.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)

- Piekrītu (4)
- Pilnībā piekrītu (5)

49. Mājokļu uzturēšanas pakalpojumi ir izmaksu ziņā pieejami un uzticami.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)
50. Kopiena ir labi informēta par pieejamajām vietējām brīvprātīgā darba iespējām.
    - Pilnībā nepiekrītu (1)
    - Nepiekrītu (2)
    - Ne piekrītu, ne nepiekrītu (3)
    - Piekrītu (4)
    - Pilnībā piekrītu (5)

3. DAĻA: ATVĒRTIE JAUTĀJUMI

1. Ar kādiem ekonomiskiem izaicinājumiem jūs saskaraties, attīstot vecāka gadagājuma cilvēkiem draudzīgus sociālos mājokļus?
2. Kādas finansēšanas iespējas un stimuli ir visnoderīgākie nekustamā īpašuma atkārtotas izmantošanas projektiem?
3. Kā pašreizējās nekustamā īpašuma tirgus tendences ietekmē sociālo mājokļu pieejamību izmaksu ziņā?
4. Kādas demogrāfiskās tendences ietekmē pieprasījumu pēc vecāka gadagājuma cilvēkiem piemērotiem sociālajiem mājokļiem?
5. Kā jūs sadarbojaties ar sabiedrību un ietekmes pusēm sociālo mājokļu projektos?
6. Ar kādiem sociālā atbalsta izaicinājumiem jūs saskaraties, īstenojot nekustamā īpašuma atkārtotas izmantošanas projektus sociālo mājokļu vajadzībām?
7. Kā uzlabot energoefektivitāti sociālo mājokļu projektos?
8. Kādu praksi jūs ieteiktu, lai uzlabotu ūdens taupīšanu un atkritumu apsaimniekošanu sociālajos mājokļos?
9. Kādi ilgtspējīgi materiāli un būvniecības metodes ir efektīvas nekustamā īpašuma atkārtotas izmantošanas projektiem?
10. Kā uzlabot sociālo mājokļu izvietojumu un pieejamību senioriem?
11. Kāda pilsētplānošanas un zemes izmantošanas politika atbalsta vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstību?
12. Ar kādiem pasākumiem var novērst telpisko nevienlīdzību sociālo mājokļu attīstībā?

13. Ar kādiem normatīvajiem un juridiskajiem šķēršļiem jūs saskaraties, īstenojot nekustamā īpašuma atkārtotas izmantošanas projektus sociālo mājokļu vajadzībām?
14. Ar kādiem tehniskiem un loģistikas izaicinājumiem jūs saskaraties, īstenojot nekustamā īpašuma atkārtotas izmantošanas projektus?
15. Kā efektīvi pārvaldīt sabiedrības uztveri un pretestību pret nekustamā īpašuma atkārtotu izmantošanu sociālajiem mājokļiem?

APPENDIX 3

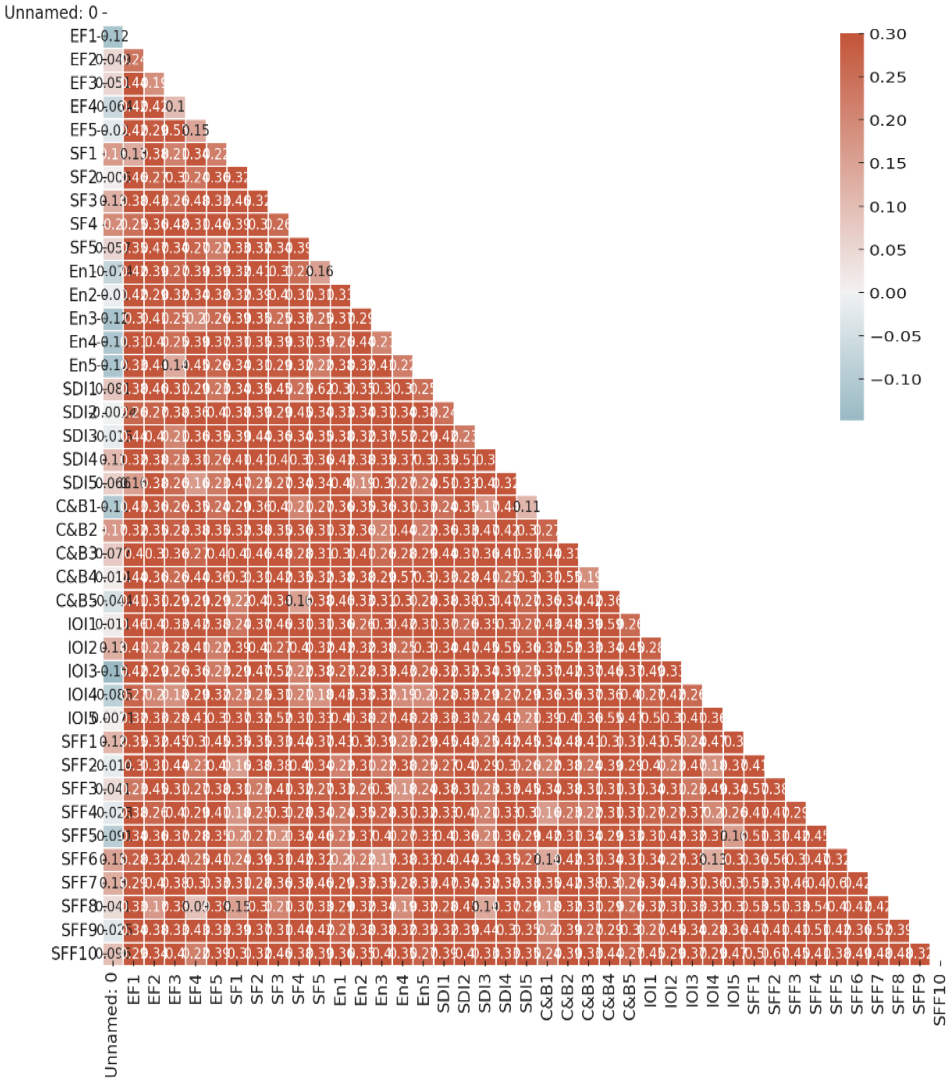

Figure 0. 1 Correlations Heatmap (developed by the author).

APPENDIX 4

Questionnaire: chapter 3 (English)

QUESTIONNAIRE FOR REAL ESTATE DEVELOPERS

SECTION A: RESPONDENT INFORMATION

1. Name:
2. Organization:
3. Role/Position:
4. Years of Experience:
5. Contact Information:

SECTION B: QUESTIONNAIRE FOR IMPLEMENTING PROPERTY REUSE SYSTEM FOR SOCIAL HOUSING DEVELOPMENT

Factors Influencing Site Selection:

1. The proximity to amenities (schools, hospitals, etc.) is critical when selecting a site for your projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
2. Transportation accessibility is a major factor in site selection.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Environmental and Socio–economic Considerations:

3. Environmental impact assessments significantly influence site selection.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
4. Socio–economic benefits to the community are essential in the site selection process.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)

- Strongly Agree (5)

Property Evaluation and Feasibility Analysis:

5. Structural integrity assessments are crucial for property reuse projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

6. Conducting a thorough cost–benefit analysis is necessary before proceeding with a project.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

7. Legal and zoning considerations are a major part of property evaluation.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Design and Planning Considerations for Age–Friendly Housing Developments

8. Universal design principles are important for social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
9. Specific accessibility modifications are necessary to meet the needs of all residents.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

10. Community spaces are essential in social housing developments.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

11. Designing for social interaction enhances resident well–being.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Integration with Surrounding Neighborhoods:

12. Connectivity to the surrounding neighborhood is crucial for social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
13. Enhancing neighborhood cohesion is important for the success of social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Implementation Strategies:

14. Identifying key stakeholders is essential for project success.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
15. Effective stakeholder engagement strategies improve project outcomes.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)

- Agree (4)
- Strongly Agree (5)

16. Understanding relevant regulations is crucial for project compliance.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
17. Effective strategies for obtaining necessary approvals streamline project timelines.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
18. Detailed project planning processes are important for the success of social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
19. Well–defined execution strategies and timelines are critical for project completion.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
20. Identifying and mitigating risks is essential to avoid project delays and cost overruns.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Monitoring and Evaluation: Measuring the Success and Impact of the Property Reuse System

21. Clearly defined KPIs are necessary to measure project success.
    - Strongly Disagree (1)

- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

22. Establishing baseline measurements helps in tracking progress effectively.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
23. Implementing feedback loops is important for continuous improvement.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
24. Ongoing improvement strategies help in adapting to changing conditions.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Integration and Scaling: Strategies for Widespread Adoption and Sustainability

25. Supportive policies are essential for the successful implementation of property reuse systems.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
26. Effective regulatory frameworks facilitate the adoption of property reuse systems.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
27. Identifying diverse funding sources is necessary for project viability.
    - Strongly Disagree (1)
    - Disagree (2)

- Neutral (3)
- Agree (4)
- Strongly Agree (5)

28. Incentive programs encourage broader participation in property reuse for social housing.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

SECTION B: QUALITATIVE QUESTIONS (SEMI–STRUCTURED INTERVIEWS)

1. Factors Influencing Site Selection:
   a) What factors do you consider most important when selecting a site for property reuse for social housing? (e.g., proximity to amenities, transportation, land cost)
   b) How do environmental considerations influence your site selection process? Please elaborate.

2. Environmental and Socio–economic Considerations:
   a) How do you assess the environmental impact of a potential site?
   b) What socio–economic benefits do you aim to achieve through site selection for social housing?

3. Design and Planning Considerations for Age–Friendly Housing Developments
   a) How do you incorporate principles of universal design in social housing projects?
   b) How do you design community spaces to enhance social interaction and well–being?

4. Stakeholder Collaboration and Community Participation:
   a) What strategies do you use for engaging and collaborating with stakeholders?
   b) What are the key regulatory challenges you face in property reuse for social housing?

5. Monitoring and Evaluation: Measuring the Success and Impact of the Property Reuse System
   a) What key performance indicators (KPIs) do you use to measure the success of your projects?

6. Integration and Scaling: Strategies for Widespread Adoption and Sustainability
   a) What policies do you think are necessary to support the property reuse for social housing?

QUESTIONNAIRE FOR GOVERNMENT/POLICYMAKERS

SECTION A: RESPONDENT INFORMATION

1. Name:
2. Organization:
3. Role/Position:
4. Years of Experience:
5. Contact Information:

SECTION B: QUESTIONNAIRE FOR IMPLEMENTING PROPERTY REUSE SYSTEM FOR SOCIAL HOUSING DEVELOPMENT

Factors Influencing Site Selection:

1. The proximity to amenities (schools, hospitals, etc.) is critical when evaluating sites for property reuse initiatives.
   - Strongly Disagree (1)
   - Disagree (2)
   - Neutral (3)
   - Agree (4)
   - Strongly Agree (5)

2. Transportation accessibility is a major factor in site evaluation.
   - Strongly Disagree (1)
   - Disagree (2)
   - Neutral (3)
   - Agree (4)
   - Strongly Agree (5)

Environmental and Socio–economic Considerations:

3. Environmental impact assessments significantly influence site evaluation.
   - Strongly Disagree (1)
   - Disagree (2)
   - Neutral (3)
   - Agree (4)
   - Strongly Agree (5)

4. Socio–economic benefits to the community are essential in the site evaluation process.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

Property Evaluation and Feasibility Analysis:

5. Structural integrity assessments are crucial for property reuse projects.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

6. Conducting a thorough cost–benefit analysis is necessary before proceeding with a project.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

7. Legal and zoning considerations are a major part of property evaluation.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

Design and Planning Considerations for Age–Friendly Housing Developments

8. Universal design principles are important for social housing projects.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

9. Specific accessibility modifications are necessary to meet the needs of all residents.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)

- Strongly Agree (5)

10. Community spaces are essential in social housing developments.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
11. Designing for social interaction enhances resident well–being.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Integration with Surrounding Neighbourhoods:

12. Connectivity to the surrounding neighbourhood is crucial for social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
13. Enhancing neighbourhood cohesion is important for the success of social housing projects.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Implementation Strategies:

14. Identifying key stakeholders is essential for project success.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
15. Effective stakeholder engagement strategies improve project outcomes.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

16. Understanding relevant regulations is crucial for ensuring compliance in property reuse projects.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

16. Effective strategies for obtaining necessary approvals streamline project timelines.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

18. Detailed project planning processes are important for the success of social housing projects.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

19. Well–defined execution strategies and timelines are critical for project completion.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

20. Identifying and mitigating risks is essential to avoid project delays and cost overruns.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

Monitoring and Evaluation: Measuring the Success and Impact of the Property Reuse System

21. Clearly defined KPIs are necessary to measure project success.

- Strongly Disagree (1)
- Disagree (2)

- Neutral (3)
- Agree (4)
- Strongly Agree (5)

22. Establishing baseline measurements helps in tracking progress effectively.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
23. Implementing feedback loops is important for continuous improvement.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
24. Ongoing improvement strategies help in adapting to changing conditions.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)

Integration and Scaling: Strategies for Widespread Adoption and Sustainability

25. Supportive policies are essential for the successful implementation of property reuse systems.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
26. Effective regulatory frameworks facilitate the adoption of property reuse systems.
    - Strongly Disagree (1)
    - Disagree (2)
    - Neutral (3)
    - Agree (4)
    - Strongly Agree (5)
27. Identifying diverse funding sources is necessary for project viability.
    - Strongly Disagree (1)
    - Disagree (2)

- Neutral (3)
- Agree (4)
- Strongly Agree (5)

28. Incentive programs encourage broader participation in property reuse for social housing.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

SECTION B: QUALITATIVE QUESTIONS (SEMI–STRUCTURED INTERVIEWS)

1. Factors Influencing Site Selection:

a) What factors do you consider most important when evaluating sites for property reuse for social housing? (e.g., proximity to amenities, transportation, land cost)
b) How do environmental considerations influence the site selection process for social housing projects? Please elaborate.

2. Environmental and Socio–economic Considerations:

a) How does your department assess the environmental impact of potential sites for social housing?
b) What socio–economic benefits do you aim to achieve through site selection for social housing?

3. Design and Planning Considerations for Age–Friendly Housing Developments

a) How does your department ensure the incorporation of universal design principles in social housing projects?
b) How do you ensure the design of community spaces to enhance social interaction and well–being in social housing projects?

4. Implementation Strategies: Stakeholder Engagement, Regulatory Compliance, and Project Management

a) What strategies does your department use for engaging and collaborating with stakeholders in social housing projects?
b) What are the key regulatory challenges your department faces in property reuse for social housing?

5. Monitoring and Evaluation: Measuring the Success and Impact of the Property Reuse System

a) What key performance indicators (KPIs) does your department use to measure the success of social housing projects?

6. Integration and Scaling: Strategies for Widespread Adoption and Sustainability

a) What policies do you think are necessary to support the property reuse for social housing?

APPENDIX 5

Questionnaire: chapter 3 (Latvian)

APTAUJAS ANKETA NEKUSTAMĀ ĪPAŠUMA ATTĪSTĪTĀJIEM

A IEDAĻA: INFORMĀCIJA PAR RESPONDENTU

1. Vārds, uzvārds:
2. Organizācija:
3. Loma/amats:
4. Pieredze gados:
5. Kontaktinformācija:

B IEDAĻA: APTAUJAS ANKETA NEKUSTAMĀ ĪPAŠUMA ATKĀRTOTAS IZMANTOŠANAS SISTĒMAS IEVIEŠANAI SOCIĀLO MĀJOKĻU ATTĪSTĪBĀ

Vietas izvēli ietekmējošie faktori:

1. Izvēloties projektu īstenošanas vietu, ļoti svarīgi ir tas, cik tuvu ir labiekārtojuma infrastruktūras objekti (skolas, slimnīcas u. c.).
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
2. Transporta pieejamība ir būtisks faktors, izvēloties vietu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Vides un sociālekonomiskie apsvērumi:

3. Ietekmes uz vidi novērtējumi būtiski ietekmē vietas izvēli.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
4. Sociālekonomiskie ieguvumi kopienai ir būtiski vietas izvēles procesā.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)

d. Piekrītu (4)
e. Pilnībā piekrītu (5)

Nekustamā īpašuma novērtējums un lietderības analīze:

5. Nekustamā īpašuma atkārtotas izmantošanas projektos ļoti svarīgi ir veikt strukturālās integritātes novērtējumu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
6. Pirms projekta uzsākšanas ir jāveic rūpīga izmaksu un ieguvumu analīze.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
7. Nekustamā īpašuma novērtēšanā liela nozīme ir juridiskajiem un zonējuma apsvērumiem.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Vecāka gadagājuma cilvēkiem piemērotu mājokļu projektēšanas un plānošanas apsvērumi

8. Universālā dizaina principi ir svarīgi sociālo mājokļu projektos.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
9. Lai apmierinātu visu iedzīvotāju vajadzības, ir nepieciešami īpaši pieejamības uzlabojumi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
10. Sociālo mājokļu attīstībā ir ļoti svarīgas koplietošanas zonas.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)

c. Ne piekrītu, ne nepiekrītu (3)
d. Piekrītu (4)
e. Pilnībā piekrītu (5)

11. Sociālās mijiedarbības plānošana uzlabo iedzīvotāju labklājību.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Integrācija ar apkārtējām apkaimēm:

12. Sociālo mājokļu projektiem ir ļoti svarīga saikne ar apkārtējo apkaimi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
13. Lai sociālo mājokļu projekti būtu veiksmīgi, ir svarīgi veicināt apkaimju kohēziju.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Īstenošanas stratēģijas:

14. Lai projekts būtu veiksmīgs, ir svarīgi identificēt galvenās ietekmes puses.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

15. Efektīvas ietekmes pušu iesaistīšanas stratēģijas uzlabo projekta rezultātus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
16. Piemērojamo noteikumu izpratne ir ļoti svarīga, lai nodrošinātu projekta atbilstību.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)

c. Ne piekrītu, ne nepiekrītu (3)
d. Piekrītu (4)
e. Pilnībā piekrītu (5)

17. Efektīvas stratēģijas nepieciešamo apstiprinājumu iegūšanai racionalizē projekta termiņus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
18. Lai sociālo mājokļu projekti būtu veiksmīgi, ir nepieciešami detalizēti projekta plānošanas procesi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
19. Projekta pabeigšanai ir ļoti svarīga precīzi definēta izpildes stratēģija un termiņi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
20. Risku identificēšana un mazināšana ir būtiska, lai izvairītos no projekta kavēšanās un izmaksu pārsniegšanas.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Uzraudzība un novērtēšana: nekustamā īpašuma atkārtotas izmantošanas sistēmas panākumu un ietekmes novērtēšana

21. Lai novērtētu projekta panākumus, ir nepieciešami skaidri definēti galvenie izpildes rādītāji (KPI).
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
22. Pamatrādītāju noteikšana palīdz efektīvi sekot līdzi progresam.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)

c. Ne piekrītu, ne nepiekrītu (3)
d. Piekrītu (4)
e. Pilnībā piekrītu (5)

23. Nepārtrauktai uzlabošanai ir svarīgi ieviest atgriezeniskās saites ciklus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
24. Pastāvīgas uzlabošanas stratēģijas palīdz pielāgoties mainīgajiem apstākļiem.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Integrācija un mērogošana: plašas ieviešanas un ilgtspējas stratēģijas

25. Nekustamā īpašuma atkārtotas izmantošanas sistēmu sekmīgai ieviešanai būtiska ir atbalstoša politika.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
26. Efektīvs tiesiskais regulējums atvieglo nekustamā īpašuma atkārtotas izmantošanas sistēmu ieviešanu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
27. Lai projekts būtu dzīvotspējīgs, ir nepieciešams apzināt dažādus finansējuma avotus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
28. Veicināšanas programmas sekmē plašāku līdzdalību nekustamā īpašuma atkārtotā izmantošanā sociālo mājokļu vajadzībām.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)

d. Piekrītu (4)
e. Pilnībā piekrītu (5)

B IEDAĻA: KVALITATĪVIE JAUTĀJUMI (DAĻĒJI STRUKTURĒTAS INTERVIJAS)

1. Vietas izvēli ietekmējošie faktori:

a) Kādi faktori, jūsuprāt, ir vissvarīgākie, izvēloties vietu nekustamā īpašuma atkārtotai izmantošanai sociālo mājokļu vajadzībām (piemēram, labiekārtojuma infrastruktūras objektu tuvums, transports, zemes izmaksas)?
b) Kā vides apsvērumi ietekmē jūsu vietas izvēles procesu? Lūdzu, paskaidrojiet detalizēti.

2. Vides un sociālekonomiskie apsvērumi:

a) Kā jūs novērtējat potenciālās vietas ietekmi uz vidi?
b) Kādus sociālekonomiskos ieguvumus vēlaties panākt, izvēloties vietu sociālajiem mājokļiem?

3. Vecāka gadagājuma cilvēkiem piemērotu mājokļu projektēšanas un plānošanas apsvērumi

a) Kā jūs iekļaujat universālā dizaina principus sociālo mājokļu projektos?
b) Kā jūs veidojat koplietošanas zonas, lai uzlabotu sociālo mijiedarbību un labklājību?

4. Sadarbība ar ietekmes pusēm un sabiedrības līdzdalība:

a) Kādas stratēģijas jūs izmantojat, lai iesaistītu ietekmes puses un sadarbotos ar tām?
b) Kādi ir galvenie normatīvie izaicinājumi, ar kuriem jūs saskaraties saistībā ar nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām?

5. Uzraudzība un novērtēšana: nekustamā īpašuma atkārtotas izmantošanas sistēmas panākumu un ietekmes novērtēšana

a) Kādus galvenos izpildes rādītājus (KPI) izmantojat, lai novērtētu savu projektu panākumus?

6. Integrācija un mērogošana: plašas ieviešanas un ilgtspējas stratēģijas

a) Kāda politika, jūsuprāt, ir nepieciešama, lai atbalstītu nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām?

APTAUJAS ANKETA VALSTS PĀRVALDES PĀRSTĀVJIEM/POLITIKAS VEIDOTĀJIEM

A IEDAĻA: INFORMĀCIJA PAR RESPONDENTU

1. Vārds, uzvārds:
2. Organizācija:
3. Loma/amats:
4. Pieredze gados:
5. Kontaktinformācija:

B IEDAĻA: APTAUJAS ANKETA NEKUSTAMĀ ĪPAŠUMA ATKĀRTOTAS IZMANTOŠANAS SISTĒMAS IEVIEŠANAI SOCIĀLO MĀJOKĻU ATTĪSTĪBĀ

Vietas izvēli ietekmējošie faktori:

1. Novērtējot vietas nekustamā īpašuma atkārtotas izmantošanas iniciatīvām, ļoti svarīgi ir, lai tās atrastos tuvu labiekārtojuma infrastruktūras objektiem (skolām, slimnīcām u. c.).
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
2. Transporta pieejamība ir būtisks faktors vietas novērtēšanā.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Vides un sociālekonomiskie apsvērumi:

3. Ietekmes uz vidi novērtējumi būtiski ietekmē vietas novērtēšanu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
4. Sociālekonomiskie ieguvumi kopienai ir būtiski vietas novērtēšanas procesā.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Nekustamā īpašuma novērtējums un lietderības analīze:

5. Nekustamā īpašuma atkārtotas izmantošanas projektos ļoti svarīgi ir veikt strukturālās integritātes novērtējumu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
6. Pirms projekta uzsākšanas ir jāveic rūpīga izmaksu un ieguvumu analīze.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
7. Nekustamā īpašuma novērtēšanā liela nozīme ir juridiskajiem un zonējuma apsvērumiem.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Vecāka gadagājuma cilvēkiem piemērotu mājokļu projektēšanas un plānošanas apsvērumi

8. Universālā dizaina principi ir svarīgi sociālo mājokļu projektos.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
9. Lai apmierinātu visu iedzīvotāju vajadzības, ir nepieciešami īpaši pieejamības uzlabojumi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
10. Sociālo mājokļu attīstībā ir ļoti svarīgas koplietošanas zonas.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

11. Sociālās mijiedarbības plānošana uzlabo iedzīvotāju labklājību.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Integrācija ar apkārtējām apkaimēm:

12. Sociālo mājokļu projektiem ir ļoti svarīga saikne ar apkārtējo apkaimi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
13. Lai sociālo mājokļu projekti būtu veiksmīgi, ir svarīgi veicināt apkaimju kohēziju.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Īstenošanas stratēģijas:

14. Lai projekts būtu veiksmīgs, ir svarīgi identificēt galvenās ietekmes puses.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
15. Efektīvas ietekmes pušu iesaistīšanas stratēģijas uzlabo projekta rezultātus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
16. Piemērojamo noteikumu izpratne ir ļoti svarīga, lai nodrošinātu nekustamā īpašuma atkārtotas izmantošanas projektu atbilstību.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

17. Efektīvas stratēģijas nepieciešamo apstiprinājumu iegūšanai racionalizē projekta termiņus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
18. Lai sociālo mājokļu projekti būtu veiksmīgi, ir nepieciešami detalizēti projekta plānošanas procesi.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
19. Projekta pabeigšanai ir ļoti svarīga precīzi definēta izpildes stratēģija un termiņi.
    –
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
20. Risku identificēšana un mazināšana ir būtiska, lai izvairītos no projekta kavēšanās un izmaksu pārsniegšanas.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Uzraudzība un novērtēšana: nekustamā īpašuma atkārtotas izmantošanas sistēmas panākumu un ietekmes novērtēšana

21. Lai novērtētu projekta panākumus, ir nepieciešami skaidri definēti galvenie izpildes rādītāji.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
22. Pamatrādītāju noteikšana palīdz efektīvi sekot līdzi progresam.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)

d. Piekrītu (4)
e. Pilnībā piekrītu (5)

23. Nepārtrauktai uzlabošanai ir svarīgi ieviest atgriezeniskās saites ciklus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
24. Pastāvīgas uzlabošanas stratēģijas palīdz pielāgoties mainīgajiem apstākļiem.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)

Integrācija un mērogošana: plašas ieviešanas un ilgtspējas stratēģijas

25. Nekustamā īpašuma atkārtotas izmantošanas sistēmu sekmīgai ieviešanai būtiska ir atbalstoša politika.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
26. Efektīvs tiesiskais regulējums atvieglo nekustamā īpašuma atkārtotas izmantošanas sistēmu ieviešanu.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
27. Lai projekts būtu dzīvotspējīgs, ir nepieciešams apzināt dažādus finansējuma avotus.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)
    e. Pilnībā piekrītu (5)
28. Veicināšanas programmas sekmē plašāku līdzdalību nekustamā īpašuma atkārtotā izmantošanā sociālo mājokļu vajadzībām.
    a. Pilnībā nepiekrītu (1)
    b. Nepiekrītu (2)
    c. Ne piekrītu, ne nepiekrītu (3)
    d. Piekrītu (4)

e. Pilnībā piekrītu (5)

B IEDAĻA: KVALITATĪVIE JAUTĀJUMI (DAĻĒJI STRUKTURĒTAS INTERVIJAS)

1. Vietas izvēli ietekmējošie faktori:

a) Kādi faktori, jūsuprāt, ir vissvarīgākie, izvēloties vietu nekustamā īpašuma atkārtotai izmantošanai sociālo mājokļu vajadzībām (piemēram, labiekārtojuma infrastruktūras objektu tuvums, transports, zemes izmaksas)?
b) Kā vides apsvērumi ietekmē sociālo mājokļu projektu vietas izvēli? Lūdzu, paskaidrojiet detalizēti.

2. Vides un sociālekonomiskie apsvērumi:

a) Kā jūsu departaments novērtē potenciālo sociālo mājokļu vietas ietekmi uz vidi?
b) Kādus sociālekonomiskos ieguvumus vēlaties panākt, izvēloties vietu sociālajiem mājokļiem?

3. Vecāka gadagājuma cilvēkiem piemērotu mājokļu projektēšanas un plānošanas apsvērumi

a) Kā jūsu departaments nodrošina universālā dizaina principu iekļaušanu sociālo mājokļu projektos?
b) Kā jūs nodrošināt, lai sociālo mājokļu projektos koplietošanas zonu dizains veicinātu sociālo mijiedarbību un labklājību?

4. Īstenošanas stratēģijas: Ietekmes pušu iesaiste, normatīvo aktu ievērošana un projektu vadība

a) Kādas stratēģijas jūsu departaments izmanto, lai iesaistītu un sadarbotos ar ietekmes pusēm sociālo mājokļu projektos?
b) Kādi ir galvenie normatīvie izaicinājumi, ar kuriem saskaras jūsu departaments saistībā ar nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām?

5. Uzraudzība un novērtēšana: nekustamā īpašuma atkārtotas izmantošanas sistēmas panākumu un ietekmes novērtēšana

a) Kādus galvenos izpildes rādītājus (KPI) jūsu departaments izmanto, lai novērtētu sociālo mājokļu projektu panākumus?

6. Integrācija un mērogošana: plašas ieviešanas un ilgtspējas stratēģijas

a) Kāda politika, jūsuprāt, ir nepieciešama, lai atbalstītu nekustamā īpašuma atkārtotu izmantošanu sociālo mājokļu vajadzībām?

APPENDIX 6

Latvijas mājokļu politikas veidotāju sanāksme

“Īpašuma atkārtotas izmantošanas sistēmas jēdziens vecumam draudzīgu sociālo mājokļu attīstībai Latvijā: Pētījuma rezultātu validācija”

PROTOKOLS

Sanāksmes vieta:, Rīga, Ekonomikas ministrija
Sanāksmes laiks: 2026. gada 19. martā, plkst. 10.00–11.30
Sanāksmes darba valodas: angļu un latviešu
Sanāksmes formāts: hibrīds (klātienē un attālināta pieslēgšanās)
Prezentētāja: Rīgas Tehniskās universitātes doktora studiju programmas “Vadībzinātne un ekonomika” doktorante **Rashmi Jaymin Sanchaniya**
Sanāksmes dalībnieku pārstāvētās institūcijas:

1. LR Ekonomikas ministrija (5 pārstāvji)
2. Rīgas Tehniskā universitāte (5 pārstāvji)

Sanāksmes darba kārtība:
10:00-11:00 Prezentācija.

Galvenās apskatītās tēmas:

1. Sociālo mājokļu un īpašuma atkārtotas izmantošanas teorētiskie aspekti kopumā un Latvijā.
2. Ieinteresētās personas īpašuma atkārtotā izmantošanā sociālo mājokļu sektorā un to raksturojums.
3. Īpašuma atkārtotas izmantošanas noteicošie faktori sociālo mājokļu attīstības procesā.
4. Četru posmu metodiskais modelis īpašuma atkārtotas izmantošanas sistēmas ieviešanai sociālo mājokļu attīstībā, ņemot vērā pieejamības, ilgtspējas, energoefektivitātes, noturības un kopienas integrācijas aspektus.
5. Secinājumi un priekšlikumi īpašuma atkārtotas izmantošanas sistēmas ieviešanas stratēģijas un politikas izstrādei.

Prezentācijas pamatā ir pētījums, kas ietver gan primāro datu vākšanu aptauju un interviju veidā, gan politikas dokumentu un statistikas datubāžu sekundāro datu analīzi, lai sniegtu visaptverošu izpratni par īpašuma atkalizmantošanas sistēmas ieviešanu vecāka gadagājuma iedzīvotājiem draudzīgiem sociālajiem mājokļiem Latvijā.

11:00-11:30 Jautājumi un atbildes.

11:30 Sanāksmes noslēgums.

Secinājumi: Pētījuma ietvaros ir izstrādāts konceptuāls ietvars, kas iekļauj tādus sociālās ilgtspējas jēdzienus kā sociālo taisnīgumu, sociālo infrastruktūru, sociālo kapitālu un sociālo kohēziju, lai risinātu Latvijas aktuālās demogrāfiskās problēmas

iedzīvotāju novecošanas jomā, kā arī ar mājokļiem saistītās problēmas. Šis ietvars uzskatāmi parāda sešu dimensiju savstarpējo saistību, kas identificētas pētījumos: sociālie faktori; vides faktori; pielāgošanās spēja; ekonomiskie faktori; izaicinājumi un šķēršļi; ieinteresēto personu iesaiste. Ņemot vērā globālo iedzīvotāju novecošanās tendenci, pētījuma atziņas ir aktuālas arī ārpus Latvijas, pilnveidojot mājokļu politiku un pilsētplānošanu valstīs, kuras sastopas ar līdzīgām demogrāfiskajām pārmaiņām.

Slēdziens: Sanāksmes dalībnieki vienbalsīgi atzīst autores veikto izpētes darbu īpašuma atkārtotas izmantošanas sistēmas ieviešanai sociālo mājokļu attīstībā jomā un izstrādāto metodisko modeli, kurā ietverti vides, sociālie, ekonomiskie un normatīvie faktori, par lietderīgu un potenciāli izmantojamu efektīvas un mērķtiecīgas mājokļu politikas izstrādē. Ekonomikas ministrija rekomendē atziņas par izstrādāto modeli, kas ietver pētījuma laikā atklātos svarīgākos aspektus un piedāvā metodiku, kā īstenot senioriem draudzīgu sociālo mājokļu projektus, apkopot un publicēt zinātniskā rakstā recenzētā žurnālā plašākai pētnieku un sabiedrības auditorijai.

Protokoliste: RTU pasniedzēja Dr. Oec. G. Actiņa

APPENDIX 7

Delphi Expert Evaluation Questionnaire: Validation of the Four-Phase Methodological Framework for Adaptive Property Reuse for Age-Friendly Social Housing in Latvia.

General Instructions to Experts

This questionnaire is part of a three-round Delphi validation study within the scope of Doctoral thesis 'The Concept of a Property Reuse System for the Development of Age-Friendly Social Housing in Latvia' (M.B.A., Researcher, Rashmi Jaymin Sanchaniya, Riga Technical University, 2025/2026). Your responses are fully anonymous: only aggregated results (means, standard deviations, interquartile ranges, and anonymised comments) will be returned to the panel between rounds. You are invited but not obliged to revise your ratings in subsequent rounds.

Rating scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Consensus threshold: 80% of experts rating ≥4 (primary); Mean ≥4.0, SD ≤0.80, IQR ≤1.0 (supporting) — defined a priori per Hohmann et al. (2025)[1] and Giannarou and Zervas (2014)[2].

Framework Summary

The Four-Phase Methodological Framework for Adaptive Property Reuse ***(Figure 3.12)*** comprises: Phase 1 — Assessment (site selection; property evaluation; ARP model scoring); Phase 2 — Design (universal design principles; accessibility modifications; community spaces); Phase 3 — Implementation (stakeholder engagement; regulatory compliance per Būvniecības likums; project management; risk mitigation); Phase 4 — Monitoring and Scaling (KPIs including affordability ratio and energy performance indicators; feedback mechanisms; scaling strategy). Six EFA dimensions underpin the Framework: Site Selection, Feasibility Analysis, Design Considerations, Implementation Strategies, Monitoring and Evaluation, and Scaling Strategies ***(Table 3.8)***.

Part A: Expert Profile (Complete Once — All Rounds)

Professional group: Government / Policy | Real Estate / Development | Academic / Research
Years of relevant experience:
Organisation / Institution (optional):
Country of primary practice:
Expert code (assigned by researcher):

[1] Hohmann, E., Beaufils, P., Beiderbeck, D., Chahla, J., Geeslin, A., Hasan, S., Humphrey-Murto, S., Hurley, E., LaPrade, R. F., Martetschläger, F., Matache, B., Moatshe, G., Monllau, J. C., Murray, I., Niederberger, M., Rüetschi, U., Shang, Z., Weber, S., Wong, I., and Perry, N. P. J. (2025). Guidelines for designing and conducting Delphi consensus studies: An expert consensus Delphi study. *Arthroscopy*, Vol. 41 Iss. 9, pp. 3526–3539.

[2] Giannarou, L., and Zervas, E. (2014). Using Delphi technique to build consensus in practice. International Journal of Business Science and Applied Management, Vol. 9 Iss. 2, pp. 65–82.

ROUND 1 — Independent Baseline Evaluation

Instructions: Please evaluate the Framework independently, based on your own professional judgement. Responses are collected individually and anonymously via this online questionnaire. Please rate each criterion and provide written comments (required).

Part B: Criterion Evaluation

	Criterion	Scoring Statement	Score (1–5)	Written Comments (Required)
1	Relevance	The Framework addresses the real and significant policy and housing challenges documented in the thesis — Latvia's demographic ageing, housing shortages, and the need for age-friendly solutions — and responds to Research Questions 1 and 4.		
2	Feasibility	The four-phase process is practically implementable given the current institutional, regulatory, and financial constraints in Latvia documented in subchapters 2.3 and 3.5 of the thesis.		
3	Completeness	The Framework covers the six EFA-derived implementation dimensions (Site Selection, Feasibility Analysis, Design Considerations, Implementation Strategies, Monitoring and Evaluation, Scaling Strategies) identified in subchapter 3.5 (Table 3.8).		
4	Clarity	The phases, steps, and outputs of the Framework are described with sufficient clarity for practical application by government policymakers, real estate developers, and urban planners.		
5	Transferability	The Framework has potential for application in other EU member states facing comparable demographic ageing and housing challenges, consistent with Research Question 4 and thesis Conclusions 7 and 15.		

B1a. Which aspects of the Latvian context does the Framework address most effectively?
B1b. Are there any gaps in relevance? If so, describe them.
B2a. Which phase is most challenging to implement in the current Latvian context, and why?
B2b. What mechanisms could address the main feasibility obstacles?
B3a. Are any dimensions or factors missing or insufficiently addressed?
B4a. Which elements require greater clarity or more specific guidance for practitioners?
B5a. Which elements are most transferable to other EU contexts?
B5b. Which elements are least transferable, and why?

Part C: Overall Assessment

☐ Very poor ☐ Poor ☐ Acceptable ☐ Good ☐ Excellent

C2. Most important single recommendation for improving the Framework: _____

ROUND 2 — Controlled Feedback and Revision

Instructions: Below are the aggregated Round 1 results. Please review and reconsider your ratings. If you change a score by more than one point, briefly state your reasoning. The researcher has provided a written clarification note addressing the most common concern raised in Round 1 (feasibility under Latvian financial constraints).

Table A6.1

Round 1 Feedback Summary (distributed before Round 2) (Created by the author)

Criterion	R1 Mean (SD)	Distribution (1–5)	Anonymised Summary of R1 Comments
C1 Relevance	4.27 (0.70)	5:6, 4:7, 3:2	The relevance in the ageing of context of the Latvia was highly recommended by experts. Minor concern: The framework should mention the 2030 national development plan more explicitly.
C2 Feasibility	2.87 (1.36)	5:2, 4:3, 3:4, 2:3, 1:3	Most frequent issue: insufficient dedicated financing tools of adaptive reuse; bureaucracy of permitting of heritage property. These are covered in the researcher's clarification note.
C3 Completeness	4.13 (0.74)	5:4, 4:9, 3:2	Generally rated complete. Some professionals recommended that a clear regulatory compliance checklist be included in Phase 3 (Implementation).
C4 Clarity	3.93 (0.68)	5:3, 4:8, 3:4	Practitioners observed that the Phase 3 guidance on the sequencing of stakeholder engagement can be better made more understandable to municipal officers who have less experience in project management. Several scholarly analysts observed that the representation of the framework is linear, which means that there is a definite endpoint, which does not fit the iterative logic of Phase 4 (Monitoring and Scaling). Cyclical or a circular arrangement was proposed.
C5 Transferability	4.20 (0.68)	5:5, 4:8, 3:2	Great agreement on EU-wide application. Scholars observed that the post-Soviet situation in the Baltics might require being flagged more clearly when it is introduced to non-Baltic populations.

Part D: Revised Criterion Ratings

Criterion	1	2	3	4	5	Reason for change (if >1 point)
C1 Relevance	☐	☐	☐	☐	☐	
C2 Feasibility	☐	☐	☐	☐	☐	
C3 Completeness	☐	☐	☐	☐	☐	
C4 Clarity	☐	☐	☐	☐	☐	
C5 Transferability	☐	☐	☐	☐	☐	

Additional comments or suggestions following review of Round 1 feedback: _____

ROUND 3 — Final Consensus Assessment

Instructions: This is the final round. Below are the aggregated Round 2 results. Please assign your definitive ratings and provide your final overall assessment. Results will be statistically processed and reported in the doctoral thesis.

Table A6.2

Round 2 Feedback Summary (distributed before Round 3) (Created by the author)

Criterion	R2 Mean (SD)	Distribution (1–5)	Key Themes from R2 Comments
C1 Relevance	4.47 (0.52)	5:7, 4:8	Strong consensus. Suggestion to reference 2030 National Development Plan incorporated into Framework background section.
C2 Feasibility	3.73 (0.93)	5:3, 4:7, 3:3, 2:2	Improvement from R1. Most sceptical experts noted the researcher clarification on PPP models was helpful. Remaining concern centres on smaller municipality capacity.
C3 Completeness	4.33 (0.62)	5:6, 4:8, 3:1	Regulatory compliance checklist suggestion acknowledged. High consensus reached on all six EFA dimensions being covered.
C4 Clarity	4.20 (0.68)	5:5, 4:8, 3:2	Stakeholder engagement sequencing concern partially addressed by front-loading recommendation. Remaining clarity gap mainly for non-specialist practitioners.
C5 Transferability	4.47 (0.52)	5:7, 4:8	Very high consensus. Baltic context flagging suggestion accepted for thesis conclusions section.

Part E: Final Ratings

Criterion	1	2	3	4	5	Final comments
C1 Relevance	☐	☐	☐	☐	☐	
C2 Feasibility	☐	☐	☐	☐	☐	
C3 Completeness	☐	☐	☐	☐	☐	
C4 Clarity	☐	☐	☐	☐	☐	
C5 Transferability	☐	☐	☐	☐	☐	

Table A6.3

Round 3 final results summary (Created by author)

Criterion	R3 Mean	R3 SD	Distribution	IQR	% ≥4	Expert Comments Summary
C1 Relevance	4.53	0.52	5:8, 4:7	1	100%	Unanimous confirmation. 2030 National Development Plan reference incorporated.
C2 Feasibility	4.13	0.64	5:5, 4:7, 3:3	1	80%	Consensus achieved. PPP clarification effective; pilot project prerequisite endorsed.
C3 Completeness	4.47	0.52	5:7, 4:8	1	100%	All six EFA dimensions confirmed as covered. Regulatory checklist added to Phase 3.
C4 Clarity	4.40	0.51	5:6, 4:9	1	100%	Front-loaded community engagement improved clarity ratings significantly.

C5 Transferability	4.60	0.51	5:9, 4:6	1	100%	Highest scoring criterion. Baltic context flagging recommendation accepted.
Overall	**4.43**	**0.54**	**—**	**1**	**80-100%**	**Full consensus on all criteria.**

Part F: Overall policy assessment

F1. Is the Framework suitable for adoption in Latvian housing policy?

☐ Yes, without modifications

☐ Yes, with minor modifications

☐ Yes, with significant modifications

☐ No

F2. Three most important modifications or additions recommended: _____

F3. Final comments on the Framework or validation process: _____

F4. How confident are you that the expert panel has reached a valid and well-founded consensus on the Framework? (Landeta et al., 2024 quality indicator).

☐ 1 Not at all confident

☐ 2 Slightly confident

☐ 3 Moderately confident

☐ 4 Confident

☐ 5 Very confident

Thank you for your participation. Your contribution is essential to the scientific integrity of this doctoral research.

APPENDIX 8

Delfi ekspertu novērtējuma anketa: četru posmu metodoloģiskā ietvara nekustamā īpašuma pielāgotai atkārtotai izmantošanai vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstībai Latvijā validācija.

Vispārīgi norādījumi ekspertiem

Šī anketa ir daļa no trīs kārtu Delfi validācijas pētījuma, kas tiek veikts promocijas darba "Nekustamā īpašuma atkārtotas izmantošanas sistēmas koncepcija vecāka gadagājuma cilvēkiem piemērotu sociālo mājokļu attīstībai Latvijā" (M.B.A., pētnieks Rashmi Jaymin Sanchaniya, Rīgas Tehniskā universitāte, 2025./2026. gads) ietvaros. Jūsu atbildes ir pilnībā anonīmas: starp aptaujas kārtām ekspertu grupai tiks nodoti tikai apkopotie rezultāti (vidējie rādītāji, standarta novirzes, starpkvartiļu amplitūdas un anonimizēti komentāri). Jūs varēsiet pēc saviem ieskatiem pārskatīt savus vērtējumus turpmākajās kārtās.

Vērtēšanas skala: 1 = pilnīgi nepiekrītu | 2 = nepiekrītu | 3 = ne piekrītu, ne nepiekrītu | 4 = piekrītu | 5 = pilnīgi piekrītu

Vienprātības slieksnis: 80 % ekspertu vērtējums ≥4 (primārais); vidējais rādītājs ≥4,0, standartnovirze (*SD*) ≤0,80, starpkvartiļu amplitūda (*IQR*) ≤1,0 (papildu) — definēts *a priori* saskaņā ar Hohmann et al. (2025)[3] un Giannarou and Zervas (2014)[4].

Ietvara kopsavilkums

Četru posmu metodoloģiskais ietvars nekustamā īpašuma pielāgotai atkārtotai izmantošanai ***(3.12. attēls)*** sastāv no šādiem posmiem: 1. posms — Novērtēšana (vietas izvēle; nekustamā īpašuma novērtēšana; vērtēšana pēc ARP modeļa); 2. posms — Projektēšana (universālā dizaina principi; pieejamības uzlabojumi; koplietošanas zonas); 3. posms — Īstenošana (ieinteresēto pušu iesaistīšana; atbilstība Būvniecības likuma prasībām; projekta vadība; risku mazināšana); 4. posms — Uzraudzība un mēroga paplašināšana (galvenie darbības rādītāji (*KPI*), tostarp pieejamības rādītājs un energoefektivitātes rādītāji; atgriezeniskās saites mehānismi; mēroga paplašināšanas stratēģija). Šī Ietvara pamatā ir sešas EFA jomas: vietas izvēle, īstenojamības analīze, dizaina apsvērumi, īstenošanas stratēģijas, uzraudzība un novērtēšana, kā arī mēroga paplašināšanas stratēģijas ***(3.8. tabula)***.

A daļa: Eksperta profils (aizpildīt vienreiz — visām kārtām)

Profesionālā grupa: valdība / politika | nekustamais īpašums / attīstība | akadēmiskā sfēra / pētniecība

[3] Hohmann, E., Beaufils, P., Beiderbeck, D., Chahla, J., Geeslin, A., Hasan, S., Humphrey-Murto, S., Hurley, E., LaPrade, R. F., Martetschläger, F., Matache, B., Moatshe, G., Monllau, J. C., Murray, I., Niederberger, M., Rüetschi, U., Shang, Z., Weber, S., Wong, I., and Perry, N. P. J. (2025). Guidelines for designing and conducting Delphi consensus studies: An expert consensus Delphi study. *Arthroscopy*, Vol. 41 Iss. 9, pp. 3526–3539.

[4] Giannarou, L., and Zervas, E. (2014). Using Delphi technique to build consensus in practice. International Journal of Business Science and Applied Management, Vol. 9 Iss. 2, pp. 65–82.

Atbilstošā darba pieredze:
Organizācija / iestāde (pēc izvēles):
Valsts, kurā galvenokārt praktizē:
Eksperta kods (pētnieka piešķirtais):

1. KĀRTA — Neatkarīgs sākotnējais novērtējums

Norādījumi: lūdzu, novērtējiet Ietvaru neatkarīgi, balstoties uz savu profesionālo skatījumu. Atbildes tiek vāktas individuāli un anonīmi, izmantojot šo tiešsaistes anketu. Lūdzu, novērtējiet katru kritēriju un sniedziet rakstiskus komentārus (obligāti).

B daļa: Kritēriju novērtēšana

	Kritērijs	Vērtēšanas skaidrojums	Punkti (1–5)	Rakstiski komentāri (obligāti)
1	Aktualitāte	Šajā Ietvarā tiek risinātas reālas un būtiskas problēmas politikas un mājokļu jomā, kas aprakstītas promocijas darbā — Latvijas sabiedrības novecošanās, mājokļu trūkums un nepieciešamība pēc vecāka gadagājuma cilvēkiem piemērotiem risinājumiem, kā arī sniegta atbilde uz 1. un 4. pētījuma jautājumu.		
2	Īstenojamība	Ņemot vērā pašreizējos institucionālos, normatīvos un finansiālos ierobežojumus Latvijā, kas aprakstīti promocijas darba 2.3. un 3.5. apakšnodaļā, šo četru posmu procesu ir iespējams īstenot praksē.		
3	Pilnīgums	Šis Ietvars aptver visas sešas EFA īstenošanas jomas (vietas izvēle, īstenojamības analīze, dizaina apsvērumi, īstenošanas stratēģijas, uzraudzība un novērtēšana, mēroga paplašināšanas stratēģijas), kas norādītas 3.5. apakšnodaļā (3.8. tabula).		
4	Skaidrība	Šī Ietvara posmi, soļi un rezultāti ir izklāstīti pietiekami skaidri, lai tos varētu praktiski izmantot valsts politikas veidotāji, nekustamā īpašuma attīstītāji un pilsētplānotāji.		
5	Pārnesamība	Šim Ietvaram ir potenciāls tikt piemērotam citās ES dalībvalstīs, kuras saskaras ar līdzīgām demogrāfiskās novecošanās un mājokļu problēmām, kas atbilst 4. pētījuma jautājumam un promocijas darba 7. un 15. secinājumam.		

B1a. Kurus Latvijas konteksta aspektus šis Ietvars risina visefektīvāk?
B1b. Vai ir kādas nepilnības saistībā ar aktualitāti? Ja jā, aprakstiet tās.
B2a. Kurš posms pašreizējā Latvijas kontekstā ir visgrūtāk īstenojams un kāpēc?
B2b. Kādi mehānismi varētu palīdzēt pārvarēt galvenos īstenojamības šķēršļus?
B3a. Vai kādi aspekti vai faktori nav minēti vai ir nepietiekami izskatīti?
B4a. Kuriem elementiem nepieciešama lielāka skaidrība vai konkrētākas norādes praktiķiem?
B5a. Kuri elementi ir visvairāk pārnesami uz citiem ES kontekstiem?
B5b. Kuri elementi ir vismazāk pārnesami un kāpēc?

C daļa: Kopējais vērtējums

☐ Ļoti slikti ☐ Slikti ☐ Pieņemami ☐ Labi ☐ Izcili

C2. Viens vissvarīgākais ieteikums Ietvara uzlabošanai: _____

2. KĀRTA — Kontrolēta atgriezeniskā saite un pārskatīšana

Norādījumi: zemāk ir apkopoti 1. kārtas rezultāti. Lūdzu, pārskatiet un pārdomājiet savus vērtējumus. Ja jūs maināt vērtējumu par vairāk nekā vienu punktu, īsi pamatojiet savu lēmumu. Pētnieks ir sniedzis rakstisku paskaidrojumu, atbildot uz 1. kārtā visbiežāk minēto problēmu (īstenojamība, ņemot vērā Latvijas finanšu ierobežojumus).

A6.1. tabula

1. kārtas atgriezeniskās saites kopsavilkums (izsūtīts pirms 2. kārtas) (sagatavojis autors)

Kritērijs	1.k. vidējais rādītājs (SD)	Sadalījums (1–5)	Anonimizēts 1.k. komentāru kopsavilkums
C1 Aktualitāte	4,27 (0,70)	5:6, 4:7, 3:2	Eksperti īpaši uzsvēra šī jautājuma aktualitāti saistībā ar sabiedrības novecošanos Latvijā. Neliela nepilnība: šajā Ietvarā būtu skaidrāk jāpiemin valsts attīstības plāns 2030. gadam.
C2 Īstenojamība	2,87 (1,36)	5:2, 4:3, 3:4, 2:3, 1:3	Visbiežāk minētā problēma: pielāgotai atkārtotai izmantošanai nav atvēlēti pietiekami finansēšanas instrumenti; birokrātiskie šķēršļi, lai saņemtu atļaujas kultūrvēsturiskiem objektiem. Šie jautājumi ir apskatīti pētnieka paskaidrojumā.
C3 Pilnīgums	4,13 (0,74)	5:4, 4:9, 3:2	Vispārēji novērtēts kā pilnīgs. Daži eksperti ieteica 3. posmā (Īstenošana) iekļaut skaidru normatīvās atbilstības kontrolsarakstu.
C4 Skaidrība	3,93 (0,68)	5:3, 4:8, 3:4	Praktiķi norādīja, ka 3. posma vadlīnijas par ieinteresēto personu iesaistīšanas secību varētu padarīt saprotamākas pašvaldību darbiniekiem, kuriem ir mazāka pieredze projektu vadībā. Vairāki akadēmiskie analītiķi norādīja, ka šī Ietvara attēlojums ir lineārs, kas nozīmē, ka tam ir noteikts galapunkts, kas neatbilst 4. posma (Uzraudzība un mēroga paplašināšana) iteratīvajai loģikai. Tika ierosināts izveidot ciklisku vai apļveida izkārtojumu.
C5 Pārnesamība	4,20 (0,68)	5:5, 4:8, 3:2	Būtiska viedokļu sakritība par piemērošanu visā ES. Pētnieki norādīja, ka, iepazīstinot ar situāciju Baltijas valstīs pēcpadomju kontekstā, varētu būt nepieciešams to skaidrāk izcelt, ja šī informācija tiek sniegta cilvēkiem, kas nav no Baltijas valstīm.

D daļa: Pārskatītie kritēriju vērtējumi

Kritērijs	1	2	3	4	5	Izmaiņu iemesls (ja vairāk par 1 punktu)
C1 Aktualitāte	☐	☐	☐	☐	☐	
C2 Īstenojamība	☐	☐	☐	☐	☐	
C3 Pilnīgums	☐	☐	☐	☐	☐	
C4 Skaidrība	☐	☐	☐	☐	☐	
C5 Pārnesamība	☐	☐	☐	☐	☐	

Papildu komentāri vai ierosinājumi pēc 1. kārtas atgriezeniskās saites pārskatīšanas: _____

3. KĀRTA — Galīgais vienprātības novērtējums

Norādījumi: šī ir pēdējā kārta. Zemāk ir apkopoti 2. kārtas rezultāti. Lūdzu, piešķiriet galīgos vērtējumus punktos un sniedziet savu galīgo kopējo novērtējumu. Rezultāti tiks apstrādāti, izmantojot statistikas metodes, un atspoguļoti promocijas darbā.

A6.2. tabula

2. kārtas atgriezeniskās saites kopsavilkums (izsūtīts pirms 3. kārtas) (sagatavojis autors)

Kritērijs	2.k. vidējais rādītājs (SD)	Sadalījums (1–5)	Galvenās tēmas, kas izriet no 2.k. komentāriem
C1 Aktualitāte	4,47 (0,52)	5:7, 4:8	Spēcīga vienprātība. Ierosinājums iekļaut atsauci uz valsts attīstības plānu 2030. gadam iekļauts Ietvara pamatinformācijas sadaļā.
C2 Īstenojamība	3,73 (0,93)	5:3, 4:7, 3:3, 2:2	Uzlabojums salīdzinājumā ar 1. kārtu. Lielākā daļa skeptiski noskaņoto ekspertu atzina, ka pētnieka sniegtie paskaidrojumi par PPP modeļiem bija noderīgi. Paliekošās bažas saistītas ar mazāku pašvaldību kapacitāti.
C3 Pilnīgums	4,33 (0,62)	5:6, 4:8, 3:1	Ierosinājums par kontrolsarakstu atbilstībai normatīvajām prasībām ir ņemts vērā. Pastāv liela vienprātība par to, ka tiek aptvertas visas sešas EFA jomas.
C4 Skaidrība	4,20 (0,68)	5:5, 4:8, 3:2	Ieteikums par sabiedrības iesaistīšanu sākuma posmā daļēji risina jautājumu par ieinteresēto pušu iesaistīšanas secību. Joprojām pastāv neskaidrības, galvenokārt praktiķiem, kas nav šīs jomas speciālisti.
C5 Pārnesamība	4,47 (0,52)	5:7, 4:8	Ļoti liela vienprātība. Ieteikums par Baltijas konteksta izcelšanu promocijas darba secinājumu sadaļā pieņemts.

E daļa: Galīgie vērtējumi

Kritērijs	1	2	3	4	5	Nobeiguma komentāri
C1 Aktualitāte	☐	☐	☐	☐	☐	
C2 Īstenojamība	☐	☐	☐	☐	☐	
C3 Pilnīgums	☐	☐	☐	☐	☐	
C4 Skaidrība	☐	☐	☐	☐	☐	
C5 Pārnesamība	☐	☐	☐	☐	☐	

A6.3. tabula

3. kārtas galīgo rezultātu kopsavilkums (sagatavojis autors)

Kritērijs	3.k. vidējais rādītājs	3.k. SD	Sadalījums	IQR	% ≥4	Ekspertu komentāru kopsavilkums
C1 Aktualitāte	4,53	0,52	5:8, 4:7	1	100%	Vienbalsīgs apstiprinājums. Iekļauta atsauce uz valsts attīstības plānu 2030. gadam.
C2 Īstenojamība	4,13	0,64	5:5, 4:7, 3:3	1	80%	Ir panākta vienprātība. PPP skaidrojums ir pamatots; apstiprināts priekšnoteikums par pilotprojektu.
C3 Pilnīgums	4,47	0,52	5:7, 4:8	1	100%	Apstiprināts, ka visas sešas EFA jomas ir aptvertas. 3. posmam pievienots normatīvo prasību kontrolsaraksts.
C4 Skaidrība	4,40	0,51	5:6, 4:9	1	100%	Sabiedrības iesaistīšana jau sākotnējā posmā ievērojami uzlaboja skaidrības vērtējumus.
C5 Pārnesamība	4,60	0,51	5:9, 4:6	1	100%	Kritērijs ar visaugstāko punktu skaitu. Ieteikums par Baltijas reģiona konteksta izcelšanu pieņemts.
Kopumā	**4,43**	**0,54**	**-**	**1**	**80-100%**	**Pilnīga vienprātība visos kritērijos.**

F daļa: Vispārējs politikas novērtējums

F1. Vai šis Ietvars ir piemērots ieviešanai Latvijas mājokļu politikā?

☐ Jā, bez izmaiņām

☐ Jā, ar nelielām izmaiņām

☐ Jā, ar būtiskām izmaiņām

☐ Nē

F2. Trīs svarīgākie ieteiktie labojumi vai papildinājumi: _____

F3. Nobeiguma komentāri par Ietvaru vai validācijas procesu: _____

F4. Cik pārliecināts esat, ka ekspertu grupa ir panākusi pamatotu un labi argumentētu vienprātību par šo Ietvaru? (Landeta et al., 2024 kvalitātes rādītājs).

☐ 1 Pilnībā neesmu pārliecināts

☐ 2 Nedaudz pārliecināts

☐ 3 Vidēji pārliecināts

☐ 4 Pārliecināts

☐ 5 Ļoti pārliecināts

Paldies par dalību! Jūsu ieguldījums ir ļoti svarīgs šī promocijas pētījuma zinātniskajai integritātei.

Rashmi Jaymin Sanchaniya was born in 1993 in Rajkot, India. She obtained her Bachelor's degree in Business Administration from Saurashtra University, India (2013), and a Master's degree in Business Administration from Gujarat Technological University, India (2018). Since 2022, she has been a Researcher at the Faculty of Engineering Economics and Management of Riga Technical University, where she also teaches courses in real estate valuation and project management. From 2024 to 2025, she was on an Erasmus+ traineeship at Kaunas University of Technology (Lithuania). She has authored 27 peer-reviewed publications. Her research interests are adaptive reuse of ageing housing stock, age-friendly social housing, and comparative housing-market and policy research in the Baltic states.