

Department of Built Environment

Infill development in growing urban areas:

experiences in Finnish housing companies and
perspectives of owner-occupiers

Tuulia Puustinen

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Abstract

Continuing urbanization and calls for sustainable urban development have led to increasing urgency to housing intensification in growing metropolitan areas worldwide. Despite potential benefits, intensification policies face many regulatory, financial, policy and social barriers. In addition, the property ownership structure complicates intensification in many urban areas in which the property ownership is often organized through different apartment ownership systems. Collective decision-making of owners is required in order to infill.

The aim of this dissertation is to contribute to the knowledge about the possibilities of infill development on sites owned by housing companies, the Finnish version of apartment ownership. The research is limited to infill development involving construction of a new residential apartment building(s) on a site of a housing company. The dissertation focuses on the factors that support and facilitate the process within the housing company and the implications of the collective decision-making on the infill possibilities, the main focus being on the latter. To address the aim, a mixed method approach was applied. The empirical research includes a multiple-case study, qualitative content analysis of semi-structured theme interviews and a survey-instrument.

Three main factors that support and facilitate infill development were identified: 1) the role of the public sector and its policies, 2) the need to use professional help and advice during the infill process, and 3) the necessary preconditions for the collective decision-making. The findings on preconditions for collective decision-making relatedly show, firstly, that the perceived disadvantages of infill development are unevenly distributed among the shareholders, especially due to the location of the infill development on the plot and its consequences, such as loss of views from windows. This challenge should be addressed in relation to possible devaluation of the apartments in question. Furthermore, an improved comprehension of non-monetary considerations of owner-occupiers could support the infill process. In addition, there is a need to establish mechanisms to balance the uneven distribution of perceived disadvantages among the shareholders. Secondly, the implications concern governance practices and procedures related to the infill process that are often informal but affect the process. These practices should be developed further, allowing also better shareholder inclusion in the process.

This thesis contributes to the academic research on infill development, as well as on the implications of apartment ownership structures on densification possibilities. The dissertation provides empirical findings from an institutional setting that has received less attention in the literature. This thesis contributes to the evidence base of this research area by concentrating on the views and experiences of owner-occupiers and the people managing the decision-making process. In addition to academic contribution, this thesis has several policy and practical implications to be utilized in Finland.

Keywords Infill development, housing company, collective decision-making, owner-occupiers

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Täydennysrakentaminen kasvavilla kaupunkialueilla: kokemuksia suomalaisissa asunto-osakeyhtiöissä ja asukasosakkaiden näkökulmia

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Kaupungistuminen sekä kestävä kaupunkikehityksen vaatimukset vahvistavat täydennysrakentamisen merkitystä monilla kasvavilla kaupunkiseuduilla maailmanlaajuisesti. Potentiaalisista hyödyistä huolimatta täydennysrakentamisella on useita sääntelyllisiä, taloudellisia, poliittisia sekä sosiaalisia esteitä. Lisäksi erilaiset kerrostalojen omistusasumisen muodot vaikeuttavat täydennysrakentamista useilla kaupunkialueilla. Täydennysrakentamiseen vaaditaan tällöin omistajien yhteistä päätöksentekoa.

Tämän väitöskirjan tavoite on tuottaa tietoa täydennysrakentamisen mahdollisuuksista asunto-osakeyhtiön tontilla. Tutkimus on rajattu uuden tai uusien kerrostalojen rakentamiseen taloyhtiön tontilla. Tutkimus tarkastelee tekijöitä, jotka tukevat ja edistävät prosessia taloyhtiön sisällä, sekä yhteisen päätöksenteon vaikutuksia täydennysrakentamismahdollisuuksiin. Tutkimuksen pääpaino on yhteisessä päätöksenteossa. Tutkimuksessa hyödynnetään monimenetelmällistä lähestymistapaa. Empiirinen tutkimus käsittää monitapaustutkimuksen, puolistrukturoitujen teemahaastattelujen laadullisen sisällönanalyysin ja kyselyn. Tutkimuksessa tunnistettiin kolme prosessia tukevaa päätekijää: 1) julkisen sektorin ja sen harjoittaman politiikan rooli, 2) tarve käyttää ammattimaista apua ja neuvontaa täydennysrakentamisprosessin aikana sekä 3) tarvittavat edellytykset yhteiselle päätöksenteolle. Yhteisen päätöksenteon edellytyksiin liittyvät tulokset osoittavat, että täydennysrakentamisen koetut haitat jakautuvat epätasaisesti osakkaiden kesken johtuen erityisesti täydennysrakentamisen sijoittumisesta tontilla ja sen seurauksista, kuten maisemamenetyksestä tiettyjen asuntojen ikkunanäkymien osalta. Tämä haaste tulee huomioida erityisesti kyseisten asuntojen mahdollisen arvonlaskun osalta. Myös osakkaiden ei-rahallisten näkökantojen syvempi ymmärtäminen tältä osin saattaisi tukea täydennysrakentamisprosessia. Lisäksi on tarve luoda mekanismeja, jotka mahdollistaisivat täydennysrakentamisen koettujen haittojen epätasaisen jakautumisen tasapainottamisen osakkaiden kesken. Toiseksi vaikutukset koskevat yhteisen päätöksentekoprosessin käytäntöjä ja menettelytapoja, jotka ovat usein epämuodollisia, mutta vaikuttavat prosessiin. Prosessin käytäntöjä tulee kehittää mahdollistaen myös osakkaiden paremman osallistumisen prosessiin.

Tämä työ edistää tieteellistä tutkimusta täydennysrakentamiseen sekä kiinteistön omistusrakenteen vaikutuksista tiivistämisen liittyen. Tutkimus tuottaa empiirisiä tuloksia institutionaalisesta ympäristöstä, joka on saanut vähemmän huomiota tutkimuskirjallisuudessa. Lisäksi tutkimus tuo esille asukasosakkaiden sekä yhteistä päätöksentekoa johtavien henkilöiden näkökulman. Akateemisen panoksensa lisäksi tutkimus ehdottaa useita käytännön päätelmiä hyödynnettäväksi Suomessa.

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List of Publications

This doctoral dissertation consists of a summary and of the following publications which are referred to in the text by their numerals

- 1.** Puustinen, T., Viitanen, K. 2015. Infill development on collectively owned residential properties: understanding the decision-making process - case studies in Helsinki. *Housing, Theory and Society*, volume 32, issue 4, pages 472–498. ISSN: 1403-6096. <http://dx.doi.org/10.1080/14036096.2015.1053979>.
- 2.** Puustinen, T., Pennanen, K., Falkenbach, H., Arvola, A., Viitanen, K. 2017. Financing major repairs in apartment buildings through infill development: exploring views and benefit requirements of the owner-occupiers. *Property Management*, volume 5, issue 5, pages 508–527. ISSN: 0263-7472. <http://dx.doi.org/10.1108/PM-08-2016-0045>.
- 3.** Puustinen, T., Pennanen, K., Falkenbach, H., Viitanen, K. 2018. The distribution of perceived advantages and disadvantages of infill development among owners of a commonhold and its' implications. *Land Use Policy*, volume 75, pages 303-313. ISSN: 0264-8377. <https://doi.org/10.1016/j.landusepol.2018.03.051>.

Author's Contribution

Publication 1: Infill development on collectively owned residential properties: understanding the decision-making process - case studies in Helsinki.

The author was responsible for initiating, executing and writing the paper. The co-author and the thesis advisor provided advice, comments and suggestions.

Publication 2: Financing major repairs in apartment buildings through infill development: exploring views and benefit requirements of the owner-occupiers.

The author was responsible for initiating and writing the paper. The survey instrument was planned in co-operation with REPSU research consortium members. The author was responsible for planning the survey questions utilized in the paper and the analyses provided in the paper. The co-authors provided advice, comments and suggestions.

Publication 3: The distribution of perceived advantages and disadvantages of infill development among owners of a commonhold and its' implications.

The author was responsible for initiating and writing the paper. The interviews were carried out in co-operation with VTT Technical Research Centre of Finland as a part of the REPSU research project. The author and representatives of VTT conducted 10 semi-structured theme interviews, respectively. The author executed the data analysis provided in the paper. The co-authors provided advice, comments and suggestions.

1. Introduction

1.1 Motivation and background of the study

Continuing urbanization and calls for sustainable urban development have led to increasing urgency to housing intensification in growing metropolitan areas globally (e.g. OECD 2012). Compact City, Smart Growth and other densification policies typically aim to prevent sprawl and reduce carbon emissions, facilitate the use of public transport, preserve biodiversity and contribute to socially viable living environments (e.g. Wheeler 2001; Kyttä et al. 2011; OECD 2012; Ruming et al. 2012). The core of these policies lies in residential infill development, which refers to new development within the boundaries of existing, built-up urban and suburban areas in contrast to new greenfield development (McConnell and Wiley 2010). On a municipal level, intensification presents several advantages. These include savings on infrastructure and service costs, the potential to maintain and develop public transport and other services, attracting new investment in the area, growing the tax base and producing more housing options. In addition, densification can help to revitalize both worn-out inner cities and ageing suburban neighbourhoods (Danielsen et al. 1999; Wheeler 2001; Steinacker 2003; Landis et al. 2006; McConnell and Wiley 2010; Newton 2013; Hamilton and Kellett 2017).

Despite many potential benefits, there are also various regulatory, financial, policy and social barriers to intensification policies. Infill development may be hampered by local land use regulations, such as local zoning standards and complex, costly and slow permission procedures (Farris 2001; Wheeler 2001; McConnell and Wiley 2010). Parking regulations can also make otherwise viable infill projects financially unfeasible (Wheeler 2001). Land ownership and challenges in land assembly are another potential source of complications. Fragmented land ownership in potential infill areas and the reluctance of some owners to sell can considerably increase the costs of development (Farris 2001; Shoup 2008). Moreover, possible legal problems related to parcel assembly may make infill projects less attractive to developers (McConnell and Wiley 2010). Compared to greenfield development, site preparations and the need for brownfield cleanup may cause additional costs and risks for developers (Wheeler 2001; Farris 2001). Wheeler (2001) points out that local government disinterest and fiscal disincentives may also present barriers to infill development in cer-

tain institutional settings. Furthermore, the co-ordination risks and complexities of public-private partnerships may hamper infill development (Farris 2001).

In addition to these challenges, the opposition of local residents is typically regarded as one of the main barriers for infill development (e.g. Danielsen et al. 1999; Farris 2001; Wheeler 2001; McConnell and Wiley 2010). This opposition often grows out of concerns and risks of adverse effects at the local level (McConnell and Wiley 2010; Kyttä et al. 2013). The negatively perceived externalities of infill development include changes in the physical environment, such as loss of green areas, recreational areas, parking opportunities, open space and sunlight. Residents may also feel that infill development infringes on their privacy. Other negative externalities include increased traffic volumes and overcrowding of local services and infrastructure (Vallance et al. 2005; Clegg 2008; McConnell and Wiley 2010; Kyttä et al. 2011; McCrea and Walters 2012; Ruming et al. 2012; Cook et al. 2013; Arvola and Pennanen 2014; Virtanen et al. 2015). In addition, residents may be concerned about the potential decline in house values (Dear 1992; Fischel 2001; Downs 2005) and about the arrival of tenants and other new groups into established neighbourhoods (Cook et al. 2013; Ruming 2014). Cinyabuguma and McConnell (2013) argue that the incentive for local residents to block infill development derives from the uneven distribution of costs and benefits between individual neighbourhoods and the city level. The costs of new development, such as loss of open space and congestion, are borne by local inhabitants, while the benefits of population growth are reaped by the city as a whole. Furthermore, research suggests that while people may well support intensification as a policy principle, they do not necessarily want to see infill development next to their own homes (Ruming 2014; Doberstein et al. 2016).

The opposition of local residents is often referred to as NIMBY (Not In My Back Yard) conflicts. However, this concept has attracted much criticism in the literature on land use conflicts as it tends to suggest that residents are selfish, egoistic and unjustifiably concerned with promoting their self-interest (e.g. Gibson 2005; Wolsink 2006; Ruming et al. 2012; Ruming 2014). Instead, many commentators have suggested that local opposition should be seen as a legitimate expression of democracy that addresses complex and possibly contradicting values, interests, objectives and motivations of stakeholders (Gibson 2005; Wolsink 2006; Ruming et al. 2012; Ruming 2014; Wolsink 2016; Eranti 2017). Indeed, many subjective considerations expressed by local residents are associated with densification. They may feel that infill development will impact on an integral and valued part of their living environment (McConnell and Wiley 2010). Decision-making relating to infill development concerns an essential aspect of their life, their home (Nykänen et al. 2013; Doberstein et al. 2016). Rather than being just a financial asset, the home carries a wide range of symbolic meanings that have to do with personal identity, for instance (e.g. Mallett 2004; Mazanti 2007; Doberstein et al. 2016). Furthermore, intensification may unsettle residents' "psycho-social dimensions of home life" (Cook et al. 2013, p. 133).

Other subjective values connected to intensification include, for instance, attachment, emotion and meaning attached to a place or place experiences (Ruming et al. 2012; Kytä et al. 2013) and the neighbourhood's character and identity (Vallance et al. 2005; Arvola and Pennanen 2014). In sum, residents' views on infill development comprise a complex and varied mix of subjective factors of a physical, environmental, financial, social, emotional and symbolic nature (e.g. McConnell and Wiley 2010; Ruming et al. 2012; Cook et al. 2013).

In many inner city and suburban areas, intensification is greatly complicated by the property ownership structure (e.g. Webb and Webber 2017; Laine et al. 2018; Leshinsky et al. 2018). Properties are often multi-owned housing developments or under similar apartment ownership arrangements. Infill development therefore requires collective decision-making by the owners, who are often residents at the same time. The operational and governance challenges stemming from the apartment ownership structure in urban renewal have been highlighted in many jurisdictions (e.g. Sherry 2006; Christudason 2009 and 2010; Easthope et al. 2013; Harris and Gilewicz 2015; Troy et al. 2015 and 2017; Webb and Webber 2017; Crommelin et al. 2018; Leshinsky et al. 2018). These challenges concern hold-out problems, owners' conflicting interests and values, the rights of minority owners and balancing between collective and individual interests (Christudason 2009 and 2010; Easthope et al. 2013; Harris and Gilewicz 2015; Troy et al. 2015 and 2017; Webb and Webber 2017; Leshinsky et al. 2018).

There are two alternative approaches to intensification in the context of multi-owned housing developments. The first is the termination of the scheme as a legal entity, and further demolition and rebuilding with higher densities (e.g. Sherry 2006; Christudason 2009; Easthope et al. 2013; Harris and Gilewicz 2015; Troy et al. 2017; Webb and Webber 2017). This type of intensification is often referred to as urban renewal or regeneration. The second alternative, which is the focus of this thesis, is to generate moderate intensification through the planning system, with a multi-owned housing development deciding to allow new residential construction on its site or additional levels (Hauge et al. 2012; Puustinen and Viitanen 2015; Troy et al. 2015, p. 20). The specific focus of this dissertation is on infill development possibilities on sites owned by limited liability housing companies, the Finnish version of apartment ownership. The site of a housing company provides a special and complex institutional setting for densification, similarly as its counterparts abroad. However, there is still a limited understanding and evidence of the preconditions for infill development from the perspective of the housing company's ownership structure and the requirement of collective decisions.

1.2 Research problem, questions and scope

The aim of this dissertation is to contribute to the knowledge about the possibilities of infill development on sites owned by housing companies. The research is limited to infill development that involves the construction of a new residential apartment building or buildings on the site of a housing company. The focus is on factors that support and facilitate the process within the housing company

and on the implications of the collective decision-making for the possibilities of infill development. The main emphasis of the dissertation is on the collective decision-making, which is a special feature of a housing company setting.

The perspective of the research is of the owner-occupiers and the housing company management. Although they are key actors as decision-makers and as people managing the process in the housing companies, there is limited prior understanding of their viewpoints and experiences related to infill development decision-making process.

Two research questions were formulated for the thesis:

RQ1. What factors support and facilitate the infill development process in housing companies?

The first research question is concerned with identifying and analysing the factors that support and facilitate the infill development process in housing companies. As described above, the literature suggests that there are many regulatory, policy, financial and social barriers to infill development in general and additional challenges that relate specifically to the apartment ownership structure and the requirement of collective decision-making. Many of these challenges and the possibilities of infill development in general are significantly affected by the institutional framework. RQ1 explores the factors that support the infill development process in the Finnish institutional environment.

The legal form for organizing apartment ownership varies widely between countries and jurisdictions, as well as the respective legislations governing property relations. In Finland, apartment ownership is organized through a housing company system. In the housing company model, the ownership is indirect. Shareholders own shares instead of real estate units, and the defined shares allow the owner to gain possession of a particular apartment or some other part of the building or site (Limited Liability Housing Companies Act 1599/2009, later referred as LLHCA). The housing company is the juridical entity that owns the real property and manages its common parts, although it is governed by the shareholders. Other forms for organizing apartment ownership include systems in which owners own the apartment individually, but ownership of the common parts of the building and the site is collective (Lujanen 2010). These systems include, for instance, condominiums in the U.S., Canada and many European countries as well as strata titles in Australia. Instead, for instance, in some legal forms owners are regarded as co-owners of the property, with an exclusive right to occupy a particular apartment. Examples of these systems include housing co-operatives in the U.S. and Norway. Lujanen (2010) broadly categorizes the former systems under 'dualistic' apartment ownership model and the latter systems under 'unitary' model. It should be noted that there can be major legal differences also between systems under 'dualistic' model and between systems under 'unitary' model. Despite the variation in juridical applications and legislations governing the property relations, all apartment ownership systems require owners' collective decision-making concerning the common parts of the buildings and sites as apartment owners do not have the right

to exploit parts of the common property individually without express permission (see e.g. Falkenbach and Nuuja 2007).

The urban planning framework, the administrative structure of the housing company, and the institutional framework for collective decision-making in Finland are presented in detail in Papers 1 and 3 of this dissertation (Puustinen and Viitanen 2015, pp. 477-480; Puustinen et al. 2018, p. 306). It should be noted that infill development on sites owned by housing companies is relevant only in areas where there is demand for new housing, particularly in growing urban areas. The empirical scope of the research is limited to the suburban areas in Helsinki capital region, including municipalities of Helsinki, Espoo, Vantaa and Kauniainen. Identifying the factors that support and facilitate the process enables assessing the possibilities of infill development for housing companies in the current law and policy frameworks in Finland and also to reaching a deeper understanding of the necessary preconditions for the collective decision-making.

One important incentive for allowing higher densities on sites owned by housing companies is to gain financial benefits, which can be used to cover the costs of major repairs, improvements and other common expenses. Financial benefits may serve as a tradeoff for shareholders in their decision to accept intensification. The need of major repairs in apartment buildings - especially in suburban areas in Finland - is evident. Most of the building stock in these areas was mass-produced in 1960-1970's, and is currently facing an urgent need of expensive major repairs of the common parts of the buildings, such as refitting of water and sewage pipelines, and façade and energy retrofits (e.g. Kuronen et al. 2011). The maintenance backlog in suburban apartment buildings is one of the biggest challenges facing the Finnish housing sector today, as almost one-fourth of the Finnish population, approximately 1.5 million people, live in these areas (Ministry of Environment 2014). For tax reasons it is unlikely that housing companies are interested in launching infill development projects without financial needs. They could, in theory, earn a profit from infill development and pay dividends to shareholders, but these profits would be subject to tax and therefore would not be in the best interest of either the housing company or its shareholders (Lujanen 2010, p. 189). In practice, then, any profits from exploiting common resources are used for common expenses, such as major repairs or improvements. In the case of infill development, the housing company is liable to pay 20 per cent corporate tax on revenue generated unless it is able to subtract a sufficient amount of costs for the same tax year (Nykänen et al. 2013). The timing of infill development and major repairs or improvements is therefore crucial.

The scope of RQ1 is limited to exploring the decision-making process within the housing company from the point of view of the housing company and its owner-occupiers. Owner-occupiers represent a majority of shareholders in Finnish housing companies as it is estimated that roughly 70% of the apartments are owned by owner-occupiers (Kero 2018). The study is limited to situations in which the housing company on freehold applies for new building rights

and an amendment to the existing detailed plan from the municipality. Importantly, official municipal zoning processes relating to infill development are beyond the scope of this research. In addition, cases excluded from the study are those in which the housing company has existing building rights in a detailed plan (to be used for infill development) and in which the plot of the housing company is leased. In both these cases the preconditions for collective decision-making differ as compared to infill development on freehold site with no unused building rights.

The second research question derives from the findings of RQ1 and deepens the understanding on the collective decision-making and its implications in the context of infill development on sites owned by housing companies.

RQ2. How does the collective decision-making and its implications affect the possibilities of infill development on sites owned by housing companies?

RQ2 concentrates on the implications of the collective decision-making, focusing in closer detail on the governance of the process, the implications of conflicting shareholder interests and values, and the distribution of the perceived advantages and disadvantages of infill development among shareholders. Infill development requires several collective decisions by shareholders in general assemblies and substantial preparation by the board and the housing manager. Based on the literature on governance issues and challenges in the context of co-owned residential properties internationally, RQ2 addresses several aspects that occur alongside the formal process but that are difficult to legislate. These are often of an informal nature and typically relate to innate challenges in the governance of co-owned residential properties, such as the inclusion of owners in the processes, communication, trust, transparency of the process, the role of people managing the process (e.g. executive committees, housing managers) and power and information imbalances in collective decision-making.

In addition, RQ2 analyses the necessary preconditions for the collective decision-making by exploring the complexity of owner-occupiers' views on infill development as a means of financing major repairs in their housing company and the importance of understanding the local context and owner-occupiers' monetary and non-monetary interests in infill projects. Furthermore, RQ2 is concerned with the perceived fairness of how the advantages and disadvantages of infill development are distributed within the housing company and among shareholders. The focus is on the owner-occupiers' experiences and perceptions and on the implications of these perceptions for the infill process and possibilities. Although these issues are examined in the Finnish institutional context, it is important to stress that this thesis is not a legal study and that the legality of infill decisions is beyond the scope of this research.

The perceived fairness of the distribution of the advantages and disadvantages of infill development is approached through the concept of distributive justice. Distributive justice can be understood in terms of how stakeholders perceive the fairness of the distribution of the costs and benefits of an outcome of the process

(see e.g. Peltonen et al. 2008 on distributive justice in public land use conflicts). It should be noted that although the perceived fairness of the distribution of advantages and disadvantages of infill development is approached through the concept of distributive justice, applying and/or expanding the theory on social justice (Rawls 1972) is out of the scope of this thesis. In this thesis, the exploration of the distributive justice of infill development decision is limited within the boundaries of a housing company and among its shareholders (see e.g. Goedkoop and Devine-Wright 2016 on distributive justice in the context of shared ownership). The distributive justice of infill decisions relates to the equality of shareholders, the legitimacy of different claims over the infill development decision based on perceived advantages and disadvantages, and whether and how to balance the disadvantages of infill development among shareholders. Understanding the perceptions of stakeholders can help to understand the implications of distributive justice for the infill development process and possibilities.

Understanding the implications of collective decision-making for infill development possibilities is a crucial foundation for assessing the challenges faced during the process in the current institutional framework. It can also pave the way to better practices of collective decision-making.

1.3 Research methodology

This research aims to contribute to knowledge about the infill development possibilities on the sites owned by housing companies. To reach the aim, a mixed method approach is applied. In the core of the research problem, there is a real-life and topical phenomenon with limited prior empirical evidence from the perspective of housing company management and owner-occupiers. The research is practice-oriented and explorative. The philosophical underpinnings of the research are grounded in pragmatism, which emphasizes the importance of the research problem and the pluralistic approaches that can yield the best understanding of the phenomenon investigated (Patton 1990; Tashakkori and Teddlie 1998; Creswell 2003). Instead of committing to any particular research philosophy (quantitative or qualitative paradigms in particular), pragmatic knowledge claims allow the freedom to choose among many possible approaches. Pragmatic knowledge claims are problem-centred, pluralistic and real-world oriented, and consider the consequences of actions. It is also important to understand the context (Creswell 2003). The strategies of inquiry in pragmatism employ both qualitative and quantitative methods, once the purpose for using mixed methods is established (Creswell 2003). Greene et al. (1989, p. 259) identify five purposes for choosing the mixed method approach: 1) triangulation (seeking convergence of results from different methods), 2) complementarity (seeking elaboration, enhancement or clarification of the results from one method with the results from another), 3) development (using the results from one method to inform or develop the other method), 4) initiation (discovering contradictions and explanations for those contradictions) and 5) expansion (extending the breadth and range of inquiry). In the mixed method approach, the

strategies of inquiry encompass to collect data either sequentially or simultaneously to best understand the research problem (Creswell 2003).

In order to contribute to the knowledge about infill possibilities on the sites owned by housing companies and answer to the research questions, a mixed method approach was regarded as the most suitable approach. The same methods and data sources are used to address both research questions (Table 1).

Table 1. Research methods and data collection/sources of the thesis.

Research questions	Articles	Research methods	Data collection/sources
RQ1. What factors support and facilitate the infill development process in housing companies?	1,2,3	Multiple case study Qualitative content analysis of semi-structured theme interviews Descriptive statistics, qualitative analysis of open answers	10 semi-structured theme interviews with people managing the decision-making process 20 semi-structured theme interviews with owner-occupiers Survey of 894 owner-occupiers
RQ2. How does the collective decision-making and its implications affect the possibilities of infill development on sites owned by housing companies?	1,2,3	Multiple case study Qualitative content analysis of semi-structured theme interviews Descriptive statistics, qualitative analysis of open-ended responses	10 semi-structured theme interviews with people managing the decision-making process 20 semi-structured theme interviews with owner-occupiers Survey of 894 owner-occupiers

The research design of this thesis comprises three components of which two are qualitative (multiple case study and qualitative content analysis of semi-structured theme interviews) and one employs both quantitative and qualitative data and methods (survey instrument). The multiple case study provides a holistic understanding of infill processes in housing companies from the perspective of factors that support and facilitate the infill development processes in current policy and institutional frameworks (RQ1) and of governance practices and procedural aspects related to these processes (RQ2). The qualitative content analysis of semi-structured theme interviews gives insight into owner-occupiers' views on the perceived advantages and disadvantages of infill development and their distribution among shareholders, which contribute to the both research questions (RQ1 and RQ2). The descriptive statistics of the survey responses as well as the thematic analysis of the open-ended responses contribute to the understanding of owner-occupiers' views on infill development on their housing company's site and on the benefits they require in order to accept infill development. Thus, the results contribute to both RQ1 (the viability of infill development in the current policy framework and cost structure) and RQ2 (owner-occupiers' views on infill development and the role of monetary and non-monetary considerations).

The multiple case study and qualitative content analysis of semi-structured theme interviews yield a deeper understanding of the phenomenon in focus both from the point of view of housing company management and from the

point of view of owner-occupiers who have first-hand experience of infill processes. The survey instrument, for its part, enables an exploration of owner-occupiers' views on infill development on the site of their housing company in hypothetical scenarios, with a large sample and generalization possibilities. Importantly, the qualitative findings complement the quantitative survey results and to some extent help to explain them (see 3.3. 'Evaluation of the research'). In addition to the complementary purpose of the mixed method approach, the use of several data sources and research methods makes it possible to identify inconsistencies in the findings and to explain them in the form of triangulation (Patton 1999, p. 248), which is discussed in section 3.3 'Evaluation of the research'. The following paragraphs describe the research and data collection methods used in the papers of this dissertation.

Paper 1 involved a multiple case study of ongoing and completed infill development processes in five case housing companies in suburban areas in Helsinki with a view to exploring the key issues and stages of the collective decision-making processes. The case study approach enables the examination of a particular real-life phenomenon in its real-life context by using multiple sources of evidence (Yin 2009) and so offers the best possibility to gain a holistic view of the subject in focus (Robson 2002). Following a replication logic, a multiple case study helps to understand generic processes occurring across cases (Miles and Huberman 1994). Furthermore, it can show why certain results are predicted in certain cases, and contrasting in others (Yin 2009). A multiple case study was considered the most appropriate method for this study for the reasons mentioned above and because of the topicality of the phenomenon and the lack of previous empirical research concerning the infill development decision-making process.

The cases were selected for the study collectively by the research consortium members as the same cases were investigated in a larger multidisciplinary project funded by the Academy of Finland and conducted in co-operation with Aalto University and VTT Technical Research Centre of Finland in 2011-2015 ('Research on Resident-driven Infill Development Possibilities – Case Study in Urban Areas in Finland' REPSU). This dissertation is part of the REPSU project. The cases were selected among ca. 11 housing companies after an introduction by representatives of the Helsinki City Planning Department of infill development projects on sites owned by housing companies in the suburbs of Helsinki. Case selection criteria was aimed to ensure the variation in the data, regarding the completeness and length of the processes as well as different infill scenarios. The data were collected in semi-structured theme interviews with the housing managers and chairs of the boards of the five case housing companies. It was assumed that these individuals had key roles in governing and preparing the infill development decision-making process and therefore were best informed about the process in these housing companies. As the research took the perspective of the housing company and its management, the main interest was to explore the experiences of the people managing the process rather than those of other stakeholders, such as municipal officials or developers. Thus, no municipal or other documents were used as data in the case studies. Moreover, the

study focused on several issues that were typically not officially documented during the process. These included, e.g., negotiations and contacts between the management and other actors involved in the process, operations of the people in the management of the process, disputes and communication during the process and rationales for choices made during the process. Excluding other data sources was considered necessary for guaranteeing anonymity to the interviewees who discussed these partly sensitive, personal and delicate issues. The names and locations of the case housing companies were not made public in the REPSU research project for the reasons mentioned above as well as in order to guaranteeing the anonymity of owner-occupiers interviewed in the project.

Paper 2 is based on survey data. The survey into respondents' views on infill development in their neighbourhood and on the site of their housing company was conducted as part of the REPSU project in co-operation with Aalto University and VTT. It targeted owner-occupiers living in apartment buildings in suburban Helsinki, the growing capital region. For purposes of sampling, key considerations for reaching the target group were the potential for infill development in the area and the age of the building stock. In total, 22 areas in the municipalities of Helsinki, Espoo, Vantaa and Kauniainen were selected for the study. Surveys were sent out to 4,286 households living in private apartment buildings (housing companies) in February 2014. The total number of respondents included in the study was 894. The generalizability of the results in relation to the sample and its representativeness, along with special characteristics of Finnish suburbs, are discussed in detail in Paper 2 (Puustinen et al. 2017, pp. 516-517).

The aim of Paper 2 was to investigate owner-occupiers' views on infill development as a means of financing major repairs in apartment buildings and the financial benefits they require in order to accept infill development near their homes (on the plot of their housing company). To achieve this aim, and to ensure the internal validity of the findings, a two-part study design was employed that allowed the inclusion of both abstract and concrete survey questions. In addition, the complexity of respondents' decision-making related to infill development was considered in the questions incorporated in part 2, which furthermore included an open-ended question. The study was exploratory in nature, and descriptive statistics were used to analyse the data. Furthermore, analyses were carried out to identify any statistically significant differences in responses based on respondents' socio-economic characteristics. The open-ended responses were classified and analysed based on content.

In Paper 3, the empirical part of the study involved 20 semi-structured theme interviews with owner-occupiers living in four housing companies in three neighbourhoods in the city of Helsinki. The interviews were conducted as a part of the REPSU research project in collaboration with Aalto University and VTT. The author of this thesis and representatives of VTT conducted 10 interviews each. The four housing companies, all built in the 1950s, had made a decision on or were currently in the process of deciding on infill development on their site as a means of financing upcoming major repairs. The four case housing companies are the same as in Paper 1. The fifth case housing company in Paper

1 was excluded from the analysis in Paper 3 due to difficulties in recruiting interviewees. Only one eligible interview of an owner-occupier was conducted in the fifth case. It should be noted that none of the interviews in Paper 1 and Paper 3 is double-counted: the interviews of chairs and housing managers of Paper 1 are not included in Paper 3, and interviews of Paper 3 do not include interviews of the chairs and housing managers in a role of an owner-occupier. The study used the method of qualitative content analysis (Tuomi and Sarajärvi 2009), and the first steps of the analysis were data-driven and inductive. The interviews were transcribed and coded based on their contents into 13 categories, which were further conceptualized and re-organized into three broad themes with sub-categories. Because a cross-case comparison indicated that the interviewees' views towards infill development cannot be differentiated based on varying levels of financial benefits in different cases, but rather on the basis of the perceived physical effects of infill development, the analysis was done without separating the cases. This same finding led to the use of an abductive approach in the second phase of the analysis, allowing for an exploration of the findings through the data and the literature.

1.4 Structure of the thesis

This dissertation consists of three academic research papers and a summary. All three papers address both of the research questions. All the papers are peer-reviewed and published in international academic journals.

Paper 1 studied the key stages and issues of collective decision-making process related to infill development on sites owned by housing companies in suburban areas in Helsinki using a multiple case study method. It contributes to RQ1 by identifying, analysing and discussing factors supporting the infill process in the current legal and land use planning frameworks. RQ2 is addressed by analysing and discussing challenges related to governance practices and procedural aspects of the process.

Paper 2 explored owner-occupiers' views on financing major repairs by means of infill development and the benefits they expected to see in exchange for their acceptance of infill development in the proximity of their homes (on the site of their housing company), using data collected with a survey instrument. Paper 2 addresses RQ1 by discussing the potential of infill development given the current cost structure and policy instruments in Finland and RQ2 by highlighting the complexity of owner-occupiers' monetary and non-monetary considerations in infill projects and the importance of understanding local context in infill projects.

Paper 3 conceptualized the role and effects of collective decision-making and examined the distribution of perceived advantages and disadvantages in the infill context. It contributes to RQ1 by exploring the distributive justice of infill development decisions from the perspective of the housing company ownership structure and its implications for infill development processes on sites owned by housing companies. RQ2 is addressed in Paper 3 by discussing the distribu-

tive justice of a collective decision to infill, and by highlighting the need to discuss the legitimacy of different claims over the infill development decision based on perceived advantages and disadvantages, as well as the need to establish mechanisms that make it possible to balance the uneven distribution of disadvantages.

The summary is divided into three sections. This section has the background and motivation for the study, the research problem and research questions, the research methodology employed in the study as well as the structure of the research. Section 2 summarizes each of the three published research papers. Section 3 summarizes the findings of the study and discusses the overall contribution of the research. In addition, section 3 includes an evaluation of the research and suggestions for further studies.

2. Summaries of the research papers

This section summarizes the three papers included in this dissertation. Each summary describes the objectives, methods, findings and contribution of the paper concerned to this dissertation.

2.1 Paper 1: Infill Development on Collectively Owned Residential Properties: Understanding the Decision-making Process – Case Studies in Helsinki

The objective of this paper was to develop an understanding of collective decision-making process concerning infill development from the perspective of housing company management. The paper identified and analysed key stages and issues of the decision-making process. There was limited prior empirical evidence on the topical, real-life phenomenon, which was therefore approached using a multiple case study method. Following discussions with the Helsinki City Planning Department about ongoing and completed infill development projects on sites owned by housing companies, five case companies from suburban areas in Helsinki were selected for the study. The data consisted of semi-structured theme interviews with housing managers and chairs of the boards of the five housing companies. A legislative and land use planning framework steering the decision-making process was described as a background for the analysis, along with an administrative outlook on housing companies. Furthermore, indicative stages of the decision-making process related to infill development were outlined to provide a wider context and structure for the process.

The findings of Paper 1 suggested that there is no established process for decision-making concerning infill development within housing companies. The contribution of Paper 1 to RQ1 and RQ2 lies in helping to identify factors that support the infill development process on sites owned by housing companies and to recognize pitfalls related to collective decision-making by exploring real-world cases from the perspective of those directly involved in the process. The main findings of Paper 1 and their contribution to addressing the research questions are presented below.

The findings of the Paper 1, firstly, highlighted the importance of the public sector in supporting the infill development process in housing companies. The role of the public sector and its policies in enabling infill development is widely acknowledged in the literature (e.g. Farris 2001; Wheeler 2001; McConnell and Wiley 2010; and Nykänen et al. 2013; Puustinen 2016 in the context of housing

companies in Finland). The findings of Paper 1 are in line with the existing literature. The findings indicated that municipal authorities play a crucial role in facilitating the decision-making process. As land use planning is controlled by municipal authorities, it is important that clear conditions are set out for infill development and that the process is actively supported once it has started in the housing company. The role of municipal authorities and their policies proved to be important with respect to land use fees as well. The findings indicated that the land development fee could steer the amount of applied building rights down below the fee limit of 1m euros (in Helsinki), leading to new, smaller residential buildings.

Secondly, the findings of Paper 1 underscored the lay nature of housing companies and the implications of this for the process. The role of professionals in the field of real estate or law, such as professional consultants, developers and/or professionals in the management of the process is important in enabling infill development. Their help was deemed essential for lay housing companies with respect to legislative advice, the progress of the actual process or maximizing the profit by timing the property sale in order to avoid taxation. Interestingly, pre-contracts with developers were made in only two cases. The early inclusion of developers would benefit the housing company as pre-contracts help to reduce uncertainties and to ensure more accurate budgeting. Information about the financial benefits of infill development was not easily accessible in any of the cases. Estimates were based on discussions with consultants or municipal officials, the knowledge and expertise of management or people close to management, or even on pure intuition. Early negotiations with municipal officials were crucial to gaining an estimate of the amount of building rights and the possible land development fee, and thus to calculating the potential profits from the infill development.

Thirdly, especially in relation to RQ2, the findings of Paper 1 highlighted various challenges in different aspects of the collective decision-making process. Many of these challenges have to do with the governance of the process but are often of an informal nature, occurring alongside the formal process. These are the inclusion of shareholders in the process from an early stage, shareholders opportunity to contribute to process, trust in management, transparency of the process and managerial operations, communication with shareholders and the role of people in managerial positions in collective decision-making. In addition, some challenges appeared to relate to the distribution of the disadvantages of infill development among shareholders.

The findings indicated that it is important that shareholders make the principal decision concerning the joint interest of finding out the possibilities for infill development together before much of the planning takes place. The board of the housing company is responsible for preparing the agenda for the general assembly, but in the case of infill development it is particularly beneficial to include shareholders as early on as possible as it seems to add to the transparency and equality of the whole process and to reduce mistrust in management. Priority should also be given to further communication related to the project and the transparency of actions taken by people in managerial positions. Overall, it

seems that initiation of the infill development decision-making process rests with just one or two active individuals in the housing company, and that progress of this process depends on their industriousness, spare time and ability to endure stress. At the same time, they have more control over the process than other shareholders as they are the best informed, they speak to the architects and participate in the planning process, and also maintain contact and negotiate with the municipal planners.

As for opposition to infill development in both ongoing and completed cases, most shareholders who were opposed lived in buildings that were closest to the proposed infill development and were in the minority. In completed cases, some residents from the nearest buildings had moved out, apparently because of the infill development. These findings indicated that the disadvantages of infill development primarily affect residents living next to the infill development. This raises a question on the distributive justice of infill development and its' implications on infill development process on the sites owned by housing companies. This was further analyzed in Paper 3 of this dissertation.

2.2 Paper 2: Financing major repairs in apartment buildings through infill development - Exploring views and benefit requirements of the owner-occupiers

Paper 2 set out to study owner-occupiers' views on infill development as a way of financing major repairs in apartment buildings and the financial benefits they required in exchange for their acceptance of infill development near their homes (on the site of their housing company). The data were drawn from a large survey (N=894) of owner-occupiers' views on infill development in their neighbourhood and on the site of their housing company in the Helsinki capital area. Descriptive statistics techniques were used as the main method of the study. In addition, a nonparametric Kruskal Wallis test (at the 0.05 level) was used to analyse whether respondents' socio-economic characteristics explained any variation in their assessments of the required relative and concrete financial benefits from infill development. The responses to the open-ended question were classified and analysed by content.

The two-part study design made it possible to frame the questions both in abstract terms (benefits as a proportion of the overall costs of major repairs in the housing company over the next ten years) and in concrete terms (sufficient financial benefits in euro value). The findings of Paper 2 indicated that the financial benefits that owner-occupiers require in order to accept infill development are significant, amounting to around two-thirds of the costs of major repairs over the next ten years or over 75 per cent of an (imagined) upcoming pipeline repair. The results of part 1 indicated that almost half of the respondents (49.8%) would most likely support the infill development if the financial benefits covered half of the costs. A higher level of financial benefits would increase the proportion of owner-occupiers willing to support the infill development: 64.1 per cent would support it if it covered two-thirds of the expenses of the repairs, and up to 79.2 per cent if it covered all the costs (Figure 1).

In part 2, almost one-third of the respondents (32.7 per cent) gave an exact euro sum that would be an acceptable tradeoff for them. The required sums are considerable, covering the full cost of the imagined pipeline repair in studios, almost 90 per cent of the costs in one-bedroom apartments, over 80 per cent of the costs in two-bedroom apartments and 75 percent of the costs in apartments with three or more bedrooms. A little over one third of the respondents (38.1 percent) were unable to say, 16.2 per cent said that no amount of financial benefits would be enough and 11.7 per cent that their views of the infill development are unaffected by the amount of financial benefits.

The responses to the open-ended question highlighted the complexity of the respondents' decision-making relating to infill development, with financial issues appearing as only one of the issues considered. Many other concerns were also raised about infill development and its consequences, such as fears of adverse changes in the living environment.

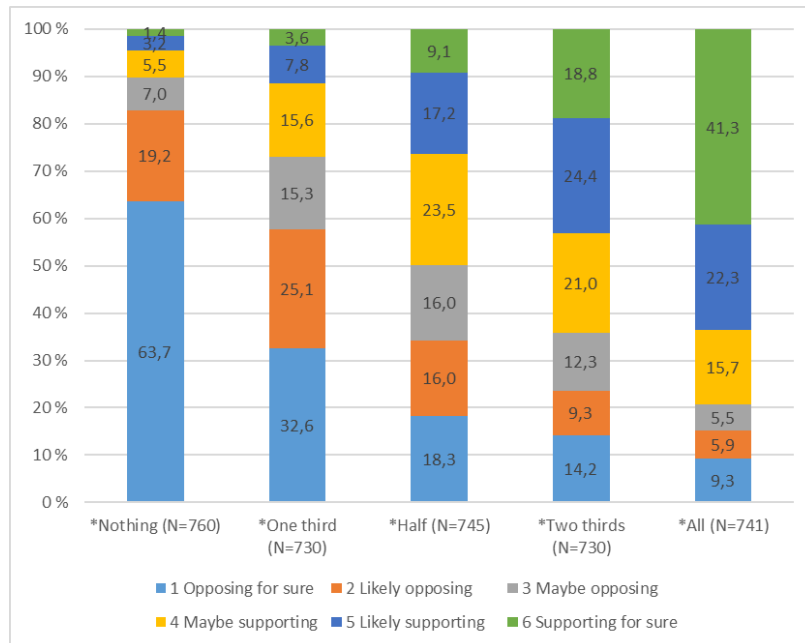


Figure 1. Proportion of respondents opposing and supporting infill development if it covered * of the costs of major repairs in the housing company over the next ten years. 'Cannot tell' responses are excluded (Puustinen et al. 2017)

In different compensation scenarios based on socio-economic factors (household income, labour force status and education), statistical differences between the respondents' views (support/oppose) on infill development were only found in the scenario where the infill development would cover none of the costs of major repairs. This clearly underscores the complexity of decision-making relating to infill development for owner-occupier, and the limited role of financial considerations in it. No statistical differences (at 0.05 level) were found between the required financial benefits in euro terms based on the respondents' socio-economic characteristics.

These results implied that, in the Finnish case, financial benefits from infill development do not easily work as a trade-off for owner-occupiers, at least in scenarios where they weigh the benefits in theoretical terms. It seems that in exchange for their acceptance of infill development and higher densities, owner-occupiers will expect to see substantial profitability. The contribution of Paper 2 to RQ1 lies in demonstrating that the potential of infill development as a means of financing major repairs in ageing housing companies is somewhat limited by the current cost structure and policy instruments and the significance of public authorities and their policies in enabling infill development. The public authorities' policy decisions have a major bearing on the feasibility of infill development for private landowners. If this type of infill development is wished to be implemented in a larger scale, extensive policy considerations are needed. Although the public authorities in Finland are keen

to support and encourage infill development, the land development fee takes a significant part off the returns from the sale of building rights and can even make the development unprofitable. The need for a land development fee can be called into question as the infrastructure costs are lower infill development cases than in newbuild areas (Hamilton and Kellett 2017). The rearrangement of parking space and taxes can also add significant costs, as the indicative example case scenario in Paper 2 illustrated. As far as taxation is concerned, it seems that infill development should be planned and prepared well ahead of major repairs in order to get the revenues and costs entered for the same year. This, however, may be difficult because of the uncertainties and long duration of the process. In the light of the findings of Paper 2, the authorities should consider reducing or removing the land development fee, relaxing parking restrictions and revising tax practices in order to make infill development more profitable for housing companies and thus a more feasible way for urban regeneration.

Furthermore, the results of Paper 2 contribute to RQ2 by demonstrating the complexity and importance of non-monetary considerations for owner-occupiers in their decision-making on infill development. Around one-fifth of the respondents indicated that no amount of financial benefits would be enough to win their support for infill development. The open-ended responses also highlighted many other factors than monetary considerations, such as concerns over adverse effects on livability and the living environment. These findings are in line with evidence reported earlier in the literature, which demonstrate the complexity of residents' views about housing intensification (e.g. Vallance et al. 2005; Clegg 2008; McConnell and Wiley 2010; McCrea and Walters 2012; Virtanen et al. 2015). In addition, analysis of the open-ended responses indicated that understanding the local context and residents' place experiences in successful infill development projects (McCrea and Walters 2012; Kytä et al. 2013) are also important to financing major repairs by infill development.

2.3 Paper 3: The distribution of perceived advantages and disadvantages of infill development among owners of a commonhold and its implications

The objective of Paper 3 was twofold. First, the theoretical purpose of the paper was to conceptualize the role and effects of collective decision-making in the context of infill development on sites owned by commonholds, which was defined as a form of apartment possession where ownership is organized through a legal structure that divides the property into private and common parts (Falkenbach and Nuuja 2007, p. 11). Second, the aim of the empirical part of the paper was to investigate how owner-occupiers perceive the advantages and disadvantages of infill development and how these are distributed among owners. Method of the study was qualitative content analysis. The data consisted of semi-structured theme interviews with 20 owner-occupiers living in four housing companies in three neighbourhoods in the city of Helsinki. Built in the 1950s, the four housing companies had made the decision or were in the process of deciding on infill development on their site as a means of financing upcoming major repairs.

The theoretical part of the study examined the distributive justice of the infill development decision and presented a general decision-making framework from individual decision-making to collective decisions concerning infill development from an institutional perspective (Figure 1). In this study, the distributive justice was approached as perceived fairness of the distribution of the benefits and costs of the outcome of the process (see e.g. Peltonen et al. 2008). While the monetary benefits of infill development are distributed proportionally equally among the owners, that is not necessarily the case with the negatively perceived effects of infill development due the location of the new development on the plot. For example, views from some apartments may be affected, which can be reflected both in the values of those apartments and in the housing needs of the owners in question. The design of common elements and parts, and changes in the complexes, can have a major effect on both the common areas and individual apartments of a condominium, often with different impacts on different apartment owners (Leslie 2017).

Infill development on sites owned by housing companies differs from many typical local land use conflicts (often called NIMBY situations) where residents will try to impact or prevent the new development through planning process (see e.g. Eranti 2017). The ownership structure of a housing company requires that shareholders make collective decisions concerning the exploitation of the common parts of the property. Thus, aspects of community resistance and questions of the fairness of the decision will come to have a bearing already in the phase of collective decision-making. The operational and governance challenges stemming from the commonhold ownership structure in urban renewal, for example, have been pointed out in other jurisdictions as well (Christudason 2009; Easthope et al. 2013; Easthope et al. 2014; Harris and Gilewicz 2015; Troy et al. 2015 and 2017; Webb and Webber 2017; Crommelin et al. 2018).

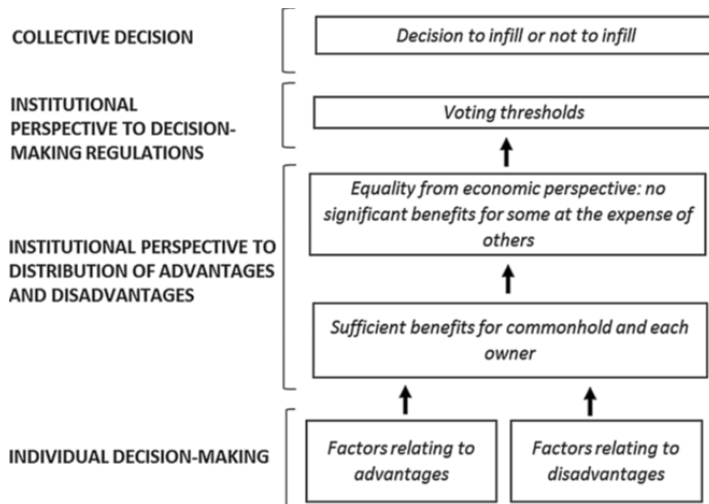


Figure 1. General decision-making framework from individual decision-making to collective decisions concerning infill development from an institutional perspective (Puustinen et al. 2018)

The findings of Paper 3 suggest that the trade-off that different owners are making in their decision-making is remarkably different with respect to the disadvantages of infill development. For the purpose of analysing these findings, the interviewees were classified into two groups (those who emphasized the advantages and those who emphasized the disadvantages of infill development) in relation to three themes that emerged from the data (Table 2). These themes were 1) relative location and physical effect of infill development, 2) significance of monetary benefits and perceived disadvantages of infill development and 3) distributive justice of infill development. The findings indicated that, in general, owner-occupiers' views on the perceived advantages and disadvantages of infill development differ according to the relative location of their apartment and the physical effects of infill development.

The interviewees who stressed the disadvantages of infill development tended to live close by to new development and perceived or feared direct negative effects from infill development. Many of them felt that after infill development and its consequences, their apartment values would decrease as they suffered the most adverse effects from infill development (for instance through loss of views, increasing traffic and restlessness). It was not, however, easy and straightforward to estimate the impact on apartment value, as many thought that a completed pipeline renovation would have a positive effect. Importantly, many of the interviewees who emphasized the disadvantages of infill development based their arguments not only on financial risks and threats to their apartment value and other negative externalities of infill development, but also on the emotional and natural values they attached to the plot, place attachment and the importance of their residential choice. In their decision-making, the monetary benefits were not conclusive and in general, especially in the unfinished cases, the opponents interviewed seemed to have a higher required rate of return towards infill development than those who emphasized the advantages, or they were unwilling to sell at any price.

Table 2. General summary of differences between interviewees emphasizing the advantages and disadvantages of infill development in their decision-making based on nine subcategories (Puustinen et al. 2018)

Themes	Subcategories	Interviewees who emphasize advantages (10)	Interviewees who emphasize disadvantages (10)
1 Relative location and physical effect of infill development	<i>I Apartment location in relation to infill development</i>	Distant (one exception)	Close (one exception)
	<i>II Effect of infill development</i>	No or small direct effect (one exception)	Concrete effect (one exception due the new road line)
2 Significance of monetary benefits and perceived disadvantages of infill development	<i>III Values attached to part of the plot planned to be developed</i>	Resource; no significant natural values	Natural and emotional values; place attachment; importance of the residential choice
	<i>IV Perceived disadvantages of infill development</i>	No perceived disadvantages; or minor disadvantages, such as a bit longer route to a grocery store	Loss of views and nature; increased traffic; inconveniences of construction time; possibility of rental buildings; irritating neighbors, increased crowding; new road line on the yard; more trash trucks due to easement contract; lights of cars to own windows; possible negative effect on the value of the apartment
	<i>V Impact of infill development on the apartment values</i>	Positive impact; no impact; executed pipeline repair's positive effect	Negative impact depends on where the apartment is located within the commonhold ; hard to estimate; executed pipeline repair's positive effect; no effect
	<i>VI Views on monetary benefits</i>	Monetary benefits important; for one the monetary benefits are not conclusive; some do not remember the amount of financial benefits/their proportion of the repair costs	Monetary benefits are not conclusive; scepticism towards any monetary benefits
	<i>VII Required rate of return for infill development</i>	Lower required rate of return	Higher required rate of return; or unwillingness to sell at any price; perceived high economic risks
3 Distributive justice of infill development	<i>VIII Perceived distribution of advantages and disadvantages</i>	Fair in monetary terms, unequal distribution of non-monetary disadvantages	Unequal distribution of disadvantages
	<i>IX Need for compensation mechanisms</i>	No need for compensation (everybody benefits economically)	Compensation should be thought about

The interviewees who emphasized the advantages of infill development generally lived farther away from the infill development, and perceived or feared no direct effects. They considered the monetary benefits important and conclusive in their decision-making. They thought there were no perceived disadvantages from infill development for themselves, or they considered them to be of minor significance.

The distribution of the advantages and disadvantages of the infill development among shareholders was addressed by almost all interviewees. Most of them thought that some shareholders would be affected by the location of infill development more than others, especially because of loss of views from the windows, increased traffic and re-location of parking spaces, '*depending on who will have it (the infilled building) in front of them*'. Many interviewees, both those who perceived direct physical effects from the infill development and those who did not, summarized shareholders' central arguments on infill development within the housing company concerning either the significance of financial benefits or the loss of views based on the location of the infill development. There was little discussion about balancing or compensating disadvantages for shareholders most affected by the infill development. In most of the interviews, interviewees were asked of how the advantages and disadvantages are distributed within the housing company and what they think of that distribution. These relatively abstract questions were chosen in order to allow the interviewees to phrase their thoughts without too much leading by the interviewer. Some interviewees brought up the compensation themselves – either its necessity or redundancy. The compensation was directly asked in three of the interviews. In these three interviews, the question of the compensation was regarded as a natural step in the flow of the semi-structured theme interview, and not as a leading question.

Paper 3 contributes to RQ1 and RQ2 by assessing the distributive justice of the infill development decision from the perspective of the housing company ownership structure and its implications. The findings have policy implications with respect to shareholder equality, the rights of minority and majority shareholders, and how fairness and justice are valued in the institutional framework steering collective decision-making. The findings of Paper 3 suggested that there is a need for institutional development to facilitate the measurement and balancing of the uneven distribution of perceived disadvantages of infill development among shareholders. This relates to the effects of infill development on the value of individual apartments but also to the need to contemplate the role and legitimacy of owner-occupiers' non-monetary values regarding infill development. The findings of Paper 3 pointed at the need to discuss the legitimacy of different claims over the infill development decision based on perceived advantages and disadvantages. Understanding conflicts arising from the uneven distribution of the disadvantages from infill development could assist developing tools aimed at mitigating or avoiding such conflicts and developing mechanisms for balancing the uneven distribution of disadvantages. Furthermore, better apprehension of the residents' needs could benefit the designing of infill schemes with more sensitivity to local context. Platforms provided by Finnish Real Estate Federation could be suitable forums for discussing these issues due to organization's

prominence and expertise in the context of housing companies. Relevant parties in this discussion are municipal authorities, property lawyers and experts in organizations that provide assistance and instructions for housing companies in Finland (e.g. in Finnish Real Estate Federation, Finnish Real Estate Management Federation) as well as those closely involved in the infill process in practice: shareholders of housing companies, housing managers and developers.

3. Discussion and conclusions

3.1 Summary of the research

The overall aim of this dissertation was to contribute to the knowledge about the possibilities of infill development on sites owned by housing companies in Finland. This aim was addressed through two research questions.

The first research question was concerned with factors that support and facilitate the infill development process in housing companies. In line with the existing literature on obstacles to infill development in general, the results of this dissertation show that infill development on the site of a housing company faces many regulatory, policy, financial and social barriers as well as specific challenges related to the lay nature and ownership structure of the housing company. Three main supportive factors were identified: 1) the role of the public sector and its policies, 2) the need to use professional help and advice during the infill process, and 3) the necessary preconditions for the collective decision-making.

Firstly, in relation to RQ1, the findings of the thesis suggest that the decision-making process in housing companies is heavily affected by the public sector and its policies. The role of the public sector in supporting and facilitating infill development on sites owned by housing companies is recognized in the literature (Nykänen et al. 2013; Helsinki-Uusimaa Regional Council 2015; Puustinen 2016) and is expected in the context of the Finnish top-down planning system. The present findings complement prior research and highlight the public sector's contribution to making infill development a viable option for housing companies. The significance of the public sector's role is shown through zoning control and many regulatory, policy and financial barriers for infill development. Furthermore, the findings of this thesis indicate that through their active support and the provision of preconditions for the infill scheme, municipal authorities have a crucial role with regard to the success of the decision-making process in the housing company.

Zoning control and regulatory, policy and financial barriers to infill development. In Finland, municipalities have control over land use planning on a detailed plan level, and typically, the housing companies seeking permission for infill development have to apply to the municipal authorities for an amendment to the existing detailed plan and for new building rights. The findings of Papers 1 and 2 emphasize the significance of the public sector and its policies in making infill development a viable and profitable option for housing companies by determining the extent of building rights and infill potential, the land use fee,

parking requirements and taxes to be levied. Paper 2 showed that, theoretically at least, owner-occupiers require substantial financial benefits in exchange for their acceptance of infill development on the site of their housing company. This suggests that in cases where there is a clear need to cover common expenses, such as the costs of upcoming major repairs, the requirement for a considerable financial incentive is significant. On this basis it may be concluded that the potential of infill development as a means of financing major repairs in ageing housing companies is somewhat limited given the current cost structure and policy instruments (see also 3.3 'Evaluation of the research').

The need for active support from the municipality from the outset of the process. In bottom-up planning where the land is privately owned, it is particularly important to have close interaction and co-development with the municipal authorities (Nykänen et al. 2013; Puustinen 2016). The significance of active support from municipal authorities for the process was clearly shown in Paper 1, which explored ongoing and completed real-world infill development projects from the perspective of those managing the process in the housing company. The findings suggest it is essential that municipal authorities set clear preconditions for infill development from the outset and that they actively support the process once it is underway. Importantly, their support and advice will mitigate the risks and uncertainties involved in the process. In addition, the findings highlight the need to develop new forms of co-operation between the housing company and municipal authorities in planning infill schemes (see also Laine and Leino 2013; Leino et al. 2017; Laine et al. 2018).

The need to use professional help and advice during the infill process. The findings of the thesis highlighted the implications of the lay nature of housing companies for the infill process. One distinctive feature of housing companies, as of many of its counterparts in other jurisdictions, is that shareholders and board members are typically non-professionals in the real estate field. In the context of infill development, required assistance relate legal counselling on how to execute infill development, progress of the actual development process and timing issues with a view to avoiding taxation (see also Nykänen et al. 2013; Puustinen 2016) and, importantly, estimates of the profitability of infill development. Furthermore, an early bidding process to recruit a developer and signing a pre-contract with that developer would reduce the uncertainties involved in the process. Professional consultancy is required at different stages of the process. In the case of infill development, the housing company's new role in producing residential spaces instead of only owning and maintaining them (Leino et al. 2017) reflects the extended range of private governance in cities as well as the challenges embedded in the lay nature of these arrangements and its implications (e.g. McKenzie 2011; Easthope et al. 2014).

The necessary preconditions of collective decision-making. Even though collective decision-making in a housing company can be regarded as a democratic and relatively efficient with majority decisions required *per se* (Lujanen 2010), the present thesis argues that the housing company's ownership structure and the requirement of collective decision-making have many implications that affect the infill development possibilities on a site owned by a housing company.

The preconditions for collective decision-making are essential in supporting the process within housing companies. These preconditions relate to governance practices that have to do with the process and its procedures, and to the distributive justice of the infill decision. The second research question of this dissertation was derived from findings concerning these preconditions, and addressed the collective decision-making process and its implications in more detail.

Governance practices and procedural aspects related to the process. Despite formal procedures of the collective decision-making process concerning infill development within the housing company (Puustinen and Viitanen 2015, pp. 479), the findings of this thesis show that the collective decision-making process is unestablished, and shaped and characterized by many issues occurring alongside the formal process. Many of them are informal and difficult to monitor or to legislate. Nonetheless, they seem to affect the possibilities of infill development via increased risks and uncertainties in the process and via power and information imbalances among shareholders. These issues concern the early inclusion of shareholders in the process, their opportunity to contribute to decision-making process and to the defining of the collective preconditions for the infill development scheme, trust in management, transparency of the process and managerial operations, communication with shareholders and the role of people in managerial positions in collective decision-making. The earlier literature has pointed out similar challenges related to governance practices and procedural aspects in collective decision-making in multi-owned residential developments internationally (e.g. Easthope 2009; Easthope et al. 2012; Hauge et al. 2012 and 2013; Guilding et al. 2014; Buessler et al. 2017; Reid et al. 2017; Crommelin et al. 2018).

It is clear from this thesis that people in management positions in housing company, namely the housing manager, the chair of the board and possibly the board members play a pivotal role in the infill process. By law (LLHCA, Ch.7, 1-2§, 8§), the board, typically consisting of a small number of shareholders, is responsible for preparing the agenda for the general assembly. This role alone means they have more control over the process than other shareholders as they are the best informed about the process, they speak to the architects and participate in the planning process and negotiate with the municipal planners. The results further indicate that initiation and progress of the infill process seem to depend largely on just one or two active individuals in the management of the housing company. This finding highlights the importance of their expertise and knowledge on issues related to infill development (or their need to consult professional advice, see above), their project management skills and the trust they enjoy among shareholders. Similar challenges have been identified internationally in studies on management of multi-owned housing developments, drawing attention to the absence of easily accessible information that is required to make qualified decisions, the lack of formal training (McKenzie 2011, p. 2; Easthope et al. 2012) and owners' dissatisfaction with committee members' actions (Guilding et al. 2014). Research suggests that owners' possible dissatisfaction with the actions of an executive committee derives from the belief that the members of such a committee are acting in their own economic interest and using

their knowledge to further their own rather than the collective interest (Easthope et al. 2012; Reid et al. 2017). In addition, Paper 3 indicated that some shareholders might have limited knowledge about the legislation steering collective decision-making and their rights. The literature on multi-owned housing developments has pointed at similar challenges stemming from owners' limited understanding of their rights and responsibilities concerning management, the legislation steering management and collective decision-making and/or the issues within their jurisdiction (Bounds 2010; Easthope et al. 2012). However, as the decisions made are binding upon all owners regardless of whether they are involved in the decision-making process, they do not have the privilege of remaining 'sleeping' members of a corporation unlike ordinary stockholders in a business corporation, for example (Yip and Forrest 2002).

By law (LLHCA, ch.6, 3-5§), the general assembly of a housing company is required to be held only once a year unless otherwise stated in the articles of association, seen necessary by the general assembly or demanded by the board, or an auditor, an operations inspector or shareholders with a total of one tenth (1/10) of all shares (or a smaller proportion as provided in the articles of association). General assemblies are usually convened for purposes of decision-making on issues set out on the agenda instead of dialogue. The same applies to many of its counterparts abroad (Buessler et al. 2017). Systematic communication about the process was arranged in only one of the cases studied in Paper 1. Some briefings related to infill scheme were held outside the general assemblies in most of the cases. In most of the cases studied in Paper 1, the people in management roles felt they had failed in their communication with shareholders to some degree. Above described power and information imbalances among shareholders highlight the importance of the early inclusion of shareholders in the process, as well as the need for improved information sharing and opportunities for dialogue and discussion.

The findings of the research indicate that it is important that shareholders make the principal decision concerning the joint interest of finding out the possibilities for infill development before the planning process advances very far. The early inclusion of shareholders in collective decision-making seems to add to the transparency of the process and to reduce mistrust in management. It has been shown that the fairness and transparency of a process and the equitable treatment of owners are also important in the context of strata termination (Crommelin et al. 2018). Information sharing and communication makes it easier for shareholders to contribute to the collective decision-making process and to mitigate disputes. Furthermore, the importance of launching the process collectively points at the need to chart and define collective benefit requirements for infill development and the boundary conditions for the infill development scheme in the housing company as early in the process as possible. These results are in line with the literature which underscores the importance of understanding residents' needs, access to clearly presented information and a broad enough time frame for owners to make informed decisions, for instance in successful collective renovation schemes (Hauge et al. 2013; see also Hauge et al. 2012).

The distributive justice of infill decisions and its implications. Paper 3 showed that the experienced disadvantages of infill development are unevenly distributed among shareholders, especially due to the location of the infill development on the plot and its consequences, such as loss of views from the windows, increased traffic or restlessness. This affects the housing needs and residential choices of the shareholders in question. Thus, the tradeoff that different shareholders are making in their decision-making varies widely with respect the disadvantages of infill development. The arguments of interviewees who emphasized the disadvantages of infill development referred not only to the potential adverse effects on their apartment value and other negative externalities of infill development, but also to the emotional and environmental values they attached to the plot, place attachment and the importance of their residential choice. For them, monetary benefits were not the decisive factor. Paper 2 demonstrated the complexity and importance of non-monetary considerations for owner-occupiers in their decision-making on infill development, as well. Around one-fifth of the respondents indicated that no amount of financial benefits would be enough to win them over to support for infill development. The open-ended responses also suggested that many other factors than monetary considerations, such as concerns over the loss of livability and milieu due to infill development, were considered important to the respondents' decision-making (see also McCrea and Walters 2012; Kytä et al. 2013 on the importance of understanding the local context in infill projects).

It is apparent from these results that there is a need for further research on the potentially heterogeneous impact of infill development on the value of different apartments, and on how to address that impact among shareholders. There is also a need to contemplate the role and legitimacy of owner-occupiers' non-monetary considerations regarding infill development. This particularly concerns shareholders who are most affected by infill development. An improved understanding of the conflicts arising from the uneven distribution of perceived disadvantages – both monetary and non-monetary – will facilitate the development of tools aimed at mitigating or avoiding such conflicts (see also Easthope et al. 2014 on the importance of a better appreciation of the complexity and nature of shared ownership systems and the tensions arising among stakeholders). A better understanding and appreciation of shareholders' conflicting interests and values could benefit defining collective preconditions for infill development schemes and the designing of schemes that are more sensitive to their context, as well as support and facilitate dialogue between stakeholders.

3.2 Contribution of the research

Private sites owned by multi-owned residential developments or under similar apartment ownership arrangements are facing increased pressure to intensify residential land use in many growing urban areas globally. The present dissertation contributes to the academic research on infill development and its challenges by exploring possibilities for infill development in one of these institutional settings: on a site owned by a housing company in Finland.

This thesis argues that, as suggested by the literature on infill development in general (e.g. Farris 2001; Wheeler 2001; McConnell and Wiley 2010), the public sector and its policies play a key role in facilitating infilling in the context of housing companies. This is reflected in many regulatory, financial and policy barriers for infill development in the Finnish institutional environment and top-down land use planning system. The findings suggest that with the current cost structure and policy instruments, the potential of infill development in the context of housing companies will remain somewhat limited. In addition, the findings of this thesis highlight the importance of the role of municipal authorities in providing clear preconditions for infill development from the outset and actively supporting the process once it is underway in order to alleviate uncertainties and risks involved in the process.

These findings have policy implications as well. If infill development on sites owned by housing companies is wished to happen in a larger scale, several issues need to be addressed. The public authorities should consider reducing or removing the land development fee, relaxing parking restrictions and revising tax practices in order to make infill development more profitable for housing companies and thus a more viable way of densification (see also Nykänen et al. 2013; Ministry of Environment 2014).

Although the public authorities are in favour of infill development (e.g. Government Programme 2015; City of Helsinki 2016), the existing land development fee severely detracts from the profitability of infill development for housing companies. The need and rationale for such a fee can be questioned as the infrastructure costs are lower in infill development than in newbuild areas (e.g. Hamilton and Kellett 2017). The question over the land use fee is a political one, and about who has the right to benefit from the increase in the land value in cases where there is a political pressure and need for an intensified land use, through densification in established urban areas.

In Finland, parking requirements are determined on the detailed plan level by municipal authorities. The requirements vary between and within municipalities. The costs of providing new parking arrangements can be substantial, especially if underground parking is required. It should be noted that there have been new developments in this area since the research for this thesis was conducted. Under its latest strategy, the city of Helsinki is to phase in a new market-based parking system, starting from new residential areas (City of Helsinki 2017). In order to avoid paying 20 per cent corporate tax on infill development, housing companies should plan and prepare their projects well ahead of major repairs so that they can enter the revenues from infill development and the costs

from major repairs in the same year. This, however, is challenging because of the uncertainties and the long duration of both processes.

In addition, the role of municipal planning departments in facilitating this type of infill development requires more discussion. Based on the findings of the thesis, it is clear that housing companies need municipal support and advice, and that new forms of co-operation could benefit the process. However, the findings also indicate that by setting strict preconditions for infill development, the municipal authorities can make infill development process within the housing company more uncertain and difficult. This suggests that the role of municipal planning departments may need to shift towards providing consultancy rather than defining and approving the preconditions one-sidedly. It should be noted that since the research conducted in Paper 1, the city of Helsinki has developed its advisory services for infill development (City of Helsinki 2019).

As stated above, the findings of this thesis clearly indicated that the public sector and its policies play a crucial role in facilitating infill development in the context of private housing companies. These findings reflect the complexity and interdependency of relationships between multi-owned housing developments and local public governments internationally (McKenzie 2011). In the U.S. context, McKenzie (2011) has explored the blurring and evolving boundaries between local public governments and common interest developments (such as condominiums), possible future pathways of their relationship and related societal and institutional implications. The works of McKenzie could provide interesting theoretical perspectives also to the relationships between private and local public governance in facilitating desired housing intensification outcomes and in redeveloping ageing neighbourhoods in the context of housing companies in Finland. This remains an area to be studied further. Another potentially useful theoretical conceptualization in this area concerns Webster's (2002) theorization of urban realm as a set of multiple overlapping and interlacing club realms of shared consumption, 'clubs within clubs; cities within cities' (Webster 2002, p. 400). In his view, multi-owned housing developments can be understood as private 'consumption clubs', which assign property rights over shared goods to its members and exclude nonmembers. Theorizing housing companies as private club realms and exploring their role in facilitating housing intensification and neighbourhood redevelopment and its wider societal implications could provide interesting avenues for further research.

The main contribution of this thesis concerns the implications of the apartment ownership structure for the potential of densification in growing urban areas. To the author's knowledge, the dissertation in hand is the first study to focus on the implications of the apartment ownership structure and required collective decision-making for the possibilities on infill development on the sites of collectively owned residential properties. The main incentive for this type of infill development is to obtain financing for major repairs or improvements in the ageing buildings. Prior research has focused on the operational and governance challenges presented by the apartment ownership structure in urban renewal. There, urban renewal refers to the termination of the residential development as a legal entity, further demolition and rebuilding with higher

densities (Sherry 2006; Christudason, 2009 and 2010; Easthope et al. 2013; Harris and Gilewicz 2015; Troy et al. 2015 and 2017; Webb and Webber 2017; Leshinsky et al. 2018). Furthermore, research on limited liability housing companies, which is the focus here, contributes to the literature on implications of different apartment ownership structures for the possibilities of densification. So far, research on the implications of property title on urban consolidation has mainly concentrated on dualistic apartment ownership systems, such as condominiums and strata titles. The dissertation provides empirical findings from an institutional setting that has received less attention in the literature.

Furthermore, this thesis contributes to the evidence base in this area by exploring the viewpoints and actual experiences of owner-occupiers and the people managing the collective decision-making process in housing companies. Although they hold a core position in decision-making, there is still only limited prior knowledge about their views. The focus of the empirical research here is on grassroots practices and on the implications of collective decision-making on the ground. The dissertation therefore makes a strong practical contribution as well.

This thesis contributes to the literature on the implications of the required collective decision-making for the possibilities of densification by, firstly, exploring the distributive justice of the infill development decision from the owner-occupiers' perspective, and the role of owners-occupiers' monetary and non-monetary considerations from the perspective of distributive justice.

The findings of this thesis showed that infill development has heterogeneously perceived effects on different apartments based on how they are located in relation to infill construction. Thus, the tradeoff the shareholders are making in their decision-making is different with respect to the disadvantages. If infill development is to happen on a larger scale, this challenge needs to be addressed in relation to possible devaluation of the apartments in question. There is also a need to contemplate the role and legitimacy of owner-occupiers' non-monetary considerations regarding infill development.

In Finnish housing companies the revenues generated from infill development are allocated among shareholders to cover the costs of major repairs or other common expenses in proportion to the payment criteria for the charge for common expenses (i.e. maintenance charges collected as set out in the housing company's articles of association) (LLHCA, Ch.3). Maintenance charges are typically based on the apartment's floor area or the number of shares owned by the shareholder (Puustinen et al. 2018, p. 305). Infill development can, however, alter the attributes of individual apartments considerably and thus affect their value negatively. If infill development significantly reduces the value of a specific apartment, the project would probably require the consent of the individual shareholder(s) in question (HE 24/2009, p. 150; LLHCA, ch.5, 9§, ch.6, 31-33§, 37§). To the author's knowledge, there is no legal example cases or standards for the measurement of the possible negative economic impact of infill development. Research is needed on how to address this challenge, and its possible solutions. The Limited Liability Housing Companies Act currently provides for no mechanism for balancing the effects of infill development on apartment values. It

should be noted that the LLHCA (1599/2009, amendments up to 193/2019 included) was recently revised in order to facilitate renewal (demolition of the existing buildings and rebuilding with higher densities) in the context of housing companies. The implications of these amendments remain an important research area out of the scope of this thesis.

This thesis furthermore demonstrated that owner-occupiers' decision-making relating to infill development is complex and that monetary factors have a somewhat limited role in their decision-making. An exploration of how the perceived advantages and disadvantages of infill development are distributed within the housing company provided more detailed insight into the respective role of owner-occupiers' monetary and non-monetary considerations. As a rule, interviewees who emphasized the disadvantages of infill development had apartments near the infill construction and experienced or feared direct negative effects on their apartments and on their housing needs. The perceived disadvantages included various negative externalities of infill development (e.g. loss of views, increased traffic). Moreover, emotional and environmental values attached to the plot and residential choices figured prominently in these interviewees' decision-making. The tradeoff that shareholders are making within the housing company therefore extends beyond monetary considerations.

It is probably impossible to balance sentimental values. However, if infill development is to happen on a larger scale on sites owned by housing companies, it will be necessary to acknowledge and contemplate the role of owner-occupiers' non-monetary considerations as well. Similar tensions have been observed between financial and social values in housing in urban renewal in the context of strata termination (Troy et al. 2017; see also Christudason 2009). The challenge of whether and how to recognize owners' social values within the legal framework steering shared ownership systems remains. In the context of dualistic systems, these questions have been addressed especially in the context of moral understanding of property rights (Sherry 2013, p. 284; Troy et al. 2017). In the Finnish housing company system, these issues need to be considered against equality principle by the law (LLHCA, ch.1, 10§), which defines the equality of shareholders and protects the rights of the minority. For the time being the equality principle does not address other than economically adverse consequences of infill development (HE 24/2009, pp. 31). Although the equality principle does not take into account shareholders' non-monetary considerations, the argument made here is that a closer understanding of these considerations could support the infill process. Principles of equality apply also in the dualistic systems (e.g. Christudason 2009 and 2010). Application and theorization of equality principles in dualistic systems could be a fruitful avenue for further research.

Based on this thesis it is argued that there is a need to establish and develop mechanisms that can help to balance the uneven distribution of perceived disadvantages among shareholders. For instance, a housing company could provide window glasses with improved soundproofing for apartments most affected by increased traffic volumes, or provide pre-emption for new parking or storage spaces if they are rearranged in connection with infill development. As each real

estate is different and unique, it is clear that no fit-for-all solution exists. Exploring possible mechanisms with which to balance disadvantages remains an important avenue for further research. Incentives for finding a common interest to balance shareholders' different (non-monetary as well as monetary) interests could help to reduce the occurrence of conflicts, ensure that infill development reaches its full potential on the plot, and enable infill development in a large number of cases. Furthermore, early identification of shareholders' collective preconditions for infill development, including their subjective considerations as well as monetary requirements, could substantially benefit the infill process. As in urban regeneration processes in general, understanding stakeholders' conflicting interests and values and promoting stakeholder engagement in planning processes are potential pathways for achieving more socially sustainable outcomes (e.g. Kytä et al. 2011 and 2013; Glackin and Dionisio 2016).

Moreover, this thesis explored the implications of collective decision-making in relation to the literature on governance practices and procedures that are often informal but that have a considerable impact on the process. Based on the results it is argued that there is a need to develop and put to use 'best practices' of infill development on sites owned by housing companies. Guidelines are needed for governance and management practices and to enable better shareholder inclusion in the process. These issues are also relevant to better understanding shareholders' various interests and considerations in relation to infill development and to facilitating dialogue and interaction. Outsourcing project management to an unbiased facilitator could be beneficial for the process. The possibility of outsourcing remains an area for further research.

3.3 Evaluation of the research

The quality of this research is primarily evaluated based on the criteria put forward by Robson (2002), including the validity, reliability and generalizability of flexible research designs. In essence, the criteria is aimed to assess qualitative research. However, the nature of the quantitative component of this thesis (descriptive statistics of the survey results) is acknowledged in the evaluation and discussion related to triangulation. In this summary, the evaluation is primarily focused on the methodology and the findings of thesis as a whole, as the quality of the research conducted for individual articles is evaluated in the respective papers. In addition, this section provides a complementary evaluation of some aspects of internal and external validity and reliability in relation to individual papers.

Validity, or internal validity, relates to the accuracy of the research (Robson 2002, p. 170; Miles and Huberman 1994, p. 178). Internal validity refers to the truthfulness of the conclusions drawn from the research, and especially in qualitative studies relates to the researcher and respondent bias as well as the neutrality of the research. Internal validity can be enhanced by prolonged involvement, member checking, negative case analysis, triangulation, peer debriefing, as well as audit trail (Robson 2002, pp. 172-177).

Prolonged involvement is relevant above all to case studies. However, it was not used in the multiple case study in Paper 1. Prolonged involvement would undoubtedly have benefited the validity of research in cases involving ongoing infill development processes, but time constraints of the research project meant that this was not possible. In addition, negative case analysis (e.g. Patton 1999, pp. 554-555) of unsuccessful infill cases could have shed useful light on the pitfalls of the process, and thus, remains an avenue for further studies. The accuracy of the multiple case study was enhanced by interviewing two key actors in different management positions in each of the case housing companies, and by compiling process descriptions of each infill project that were subsequently validated by sending them back to the interviewees for checking and approval. The latter process of 'member checking' reduces the threat to validity as well as the risk of researcher bias (Robson 2002, pp. 174-175).

Triangulation strengthens research by combining different methods or data sources, including the use of both qualitative and quantitative approaches (Patton 1999, p. 247; Robson 2002, p. 174). It reduces threats to the validity of the findings as well as researcher and respondent bias (Robson 2002, p. 174). Triangulation is typically regarded as the main advantage of the mixed method approach (Robson 2002, p. 371). The purpose of triangulation is not to demonstrate that different data sources or methods of study produce similar findings, but to establish the consistency of findings based on different sources and to find explanations for any inconsistencies observed (Patton 1999, p. 248). In this thesis both data triangulation and methodological triangulation were used. In addition, a VTT researcher who conducted seven of the semi-structured theme interviews in Paper 3 reviewed and validated the findings of the qualitative content analysis in Paper 3, although investigator triangulation was not used *per se*.

Different data sources and different types of inquiry are sensitive to different real-world nuances and therefore may yield somewhat different findings and provide opportunities for a deeper understanding of the relationship between the research method and the phenomenon being investigated (Patton 1999, p. 248). This is particularly clear in the case of the present findings: the findings from the qualitative and quantitative components of the research show inconsistencies that reflect both the strengths and weaknesses of qualitative and quantitative research approaches. In essence, these inconsistencies relate to the amount and role of financial benefits required of infill development.

Paper 2 showed that the theoretical benefit requirements of the owner-occupiers to accept infill development on the site of their housing company are very considerable. The results of Paper 2 are drawn from an extensive survey. These results can to some extent be reassessed in the light of the findings of Paper 1 and 3.

The findings from the qualitative components of the research complement the quantitative findings and allow a deeper understanding of the phenomenon in focus and stakeholders' views on that phenomenon in a real-world context and situation. The findings of Paper 2 reflect the respondents' views in hypothetical

scenarios: they did not necessarily have an actual need to finance common expenses in their housing companies. Furthermore, the idea of using infill development as a way of financing major repairs may sound very theoretical and difficult to grasp in a situation where there are no real plans for infill development.

The infill cases in Papers 1 and 3 represent real-world situations where owner-occupiers had an actual need to finance major repairs. The findings of the multiple case study in Paper 1 indicated that neither people's willingness to initiate and persist with the infill process nor the subsequent smoothness of the process depend directly on the amount of financial benefits. The case in which the financial benefits covered and in fact exceeded the costs of the pipeline renovation was the most complex and difficult one, involving years of disputes. In other cases the estimated or realized benefits were much smaller, covering approximately 30-40 per cent of the pipeline repair (if known). The findings of Paper 3 suggested that owner-occupiers' level of required benefits varies within the housing company. In the case of ongoing infill processes, the interviewees who suffered no direct physical effects from the planned infill development often seemed to be content with a notably lower level of financial benefits. For many of those fearing direct physical effects from infill development, the required rate of return was substantially higher.

The inconsistencies seen in the findings suggest that there may be some bias in the survey findings on owner-occupiers' hypothetical benefit requirements in exchange for their acceptance of infill development. This possibly stems from the difficulties in assessing the benefits in the hypothetical scenarios of an imagined pipeline repair and imagined infill development. This potential source of difficulty was acknowledged already in the planning phase of the survey and taken into account in the twofold question framing, the wording of questions and in the inclusion of an open-ended question. Despite these efforts to strengthen the validity of the survey design, the triangulation made it clear that the survey responses may be slightly biased. In addition, the qualitative analysis revealed important nuances in owner-occupiers' views regarding financial benefits. Overall then, the data sources and qualitative methods employed in the thesis complement the quantitative component by providing empirical evidence in specific, real-world cases where owner-occupiers were able to assess the advantages and disadvantages of infill development in an actual case. Furthermore, the qualitative component made it possible to explore the variation in owner-occupiers' views within the housing company.

Another interpretation of the survey findings is to suggest that the responses may reflect status quo bias or endowment effect with regard to the current state of the respondents' living environment (see Downs 2005; McConnell and Wiley 2010, p. 6; Nykänen et al. 2013, p. 29). Behavioural economic theories suggest that people are risk and loss averse and have a tendency to emphasize the possibility of loss over potential gains. This applies first and foremost to people's decision-making and judgement under uncertainty (Kahneman and Tversky 1979). One implication of such loss aversion is status quo bias, as identified by Samuelson and Zeckhauser (1988). The endowment effect, then, suggests that

people demand more to give up an object than they would be willing to acquire it (Thaler 1980).

Peer debriefings concerning the papers included in this thesis were held throughout the research process. Paper 1 was peer debriefed by a researcher from the REPSU research consortium. Papers 2 and 3 were peer debriefed by research team colleagues at research seminars held at Aalto University. In addition, all the papers were reviewed by the respective co-authors. All the papers were also blind peer-reviewed before publication in the respective academic journals.

Researcher and respondent bias are threats to the objectivity of research and thus to internal validity (Robson 2002, p. 174). These threats can be reduced by audit trail comprising all the information relevant to the research. The audit trail material of this thesis includes the audiotapes and transcriptions of all the interviews conducted in Papers 1 and 3. Processed materials include the process descriptions that were member checked (see above) and the coding and theming of the qualitative content analysis in Paper 3. As for the quantitative component, the audit trail material includes the survey questionnaire, the survey data and the SPSS and Excel calculation matrices used in Paper 2. The audit trail material has been archived.

Reliability has to do with the repeatability of research (Yin 2009). In this thesis, reliability is enhanced through triangulation (Robson 1993, p. 406, see above for the context of this study), detailed and systematic documenting of the research methods and the findings in the respective papers and in the summary, and through the peer reviews of the papers in connection with the publishing processes.

Generalizability, or external validity, refers to the extent to which the conclusions from the research can be generalized or applied to other situations. In the context of qualitative research, the analogous concept is transferability, which is the extent to which the results of a study can be transferred to other contexts (Lincoln and Guba 1985). Transferability can be considered from at least two dimensions. The first relates to the description of the method/s employed. In this thesis the methods used were described in detail in Papers 1 and 2. The qualitative content analysis presented in Paper 3 was described in more detail in this summary of the thesis. The second dimension concerns the transferability of the results, both the representativeness of the samples and the transferability of the findings to other contexts and cases.

The sample in Paper 3 remained limited (20 semi-structured theme interviews) because of the strict inclusion criteria to be able to partake in the study (Puustinen et al. 2017, pp. 306-307). Participation was voluntary and therefore the sample was not randomly distributed. It is possible then that the informants were a non-representative sample and that there was an over-reliance on accessible informants, creating a 'holistic bias' (Robson 1993, pp. 402-403). As stated in Paper 3, further studies with large and more systematic samples are needed in order to validate the results further and to better understand the nuances of collective decision-making. This also applies to the transferability of the findings.

The cases studied in Paper 1 are from growing suburban areas in Helsinki. The findings of the multiple case study allow for analytic generalization (Yin 1994, pp. 31-32), following a replication logic in the cross-case analysis. The findings are therefore useful in helping to understand the phenomenon in other contexts as well. Importantly, however, the transferability of the findings to other contexts and cases is affected by the distinctive features of the cases in Papers 1 and 3. All these cases involved both a need for monetary benefits due to upcoming major repairs and the potential to obtain monetary benefits. The transferability of the research findings is limited to contexts with similar preconditions.

Threats to external validity of the survey findings in Paper 2 include selection (findings being specific to the group studied), setting (findings being specific to, or dependent on, the particular study context), history (specific and unique historical experiences may have an effect on the findings) and construct effects (the particular constructs studied may be specific to group studied) (Robson 2002, pp. 106-107, see also LeCompte and Goetz 1982). Thus, the representativeness of the sample (selection), the distinctive features of suburban areas in Finland (setting, history) and infill development on a site of a housing company as a study construct need to be addressed.

An exploration of the socio-demographic characteristics of the survey respondents revealed that the sample seems to be biased with regard to the overrepresentation of respondents out of the labor force, females and those with higher academic degree (for details, see Puustinen et al. 2017, pp. 516-517). Thus, the findings of the survey might be specific to the group studied. It should be noted, however, that the statistics of the target population could not be acquired for comparison and it is likely that the sample represents the target population, owner-occupiers in the suburbs, better than the population of Helsinki capital region. Finnish suburban areas provided a special setting for the study. The suburbs were mass-produced at the outskirts of cities near natural amenities with a relatively low density rate during an era of rapid urbanization, mainly in the 1960-70's. Significant part of the stock is privately owned. The generalizability of the findings is limited to similar areas in Finland and abroad. In addition, external validity of the findings is limited to similar types of housing and tenures. Regarding to the construct effects, infill development is not a common phenomenon in the context of multi-owned housing developments, and there might be limited actual chances for it in many areas due to various reasons, such as the size the plot or zoning restrictions. All these affect the generalizability of the findings.

In sum, several aforementioned measures enhancing the internal validity and reliability of the research were considered in the research design and throughout the research process. The internal validity, reliability and generalizability of this thesis were notably enhanced by the use of mixed method approach. The use of different data sources and research methods allowed an exploration of inconsistencies in the findings and explanations for them. The findings from qualitative multiple case study and content analysis of the semi-structured theme interviews complemented the survey results and assisted to explain them. A possible bias in survey responses, differences in the owner-occupiers

decision-making within a housing company and the complexity of the decision-making of the owner-occupiers were revealed through triangulation. The overall generalizability of the research findings is affected especially by relatively small sample sizes in the qualitative components of the thesis, as well as the by the distinctive features of the cases in Papers 1 and 3. In addition, the biases in the representativeness of the survey sample in Paper 2 and special characteristics of Finnish suburbs need to be addressed when assessing the generalizability of the survey findings.

3.4 Future research

This thesis identified factors supporting the infill process on sites owned by housing companies and explored the implications of collective decision-making on the infill development possibilities.

The findings emphasized the importance of the distributive justice of a collective decision to infill. It remains an important area for future research to develop mechanisms for measuring and balancing the adverse effects of infill development for shareholders who are most affected within a housing company. Another important research avenue concerns the procedural justice of the infill process from the perspective of individual shareholders. Here, procedural justice refers to the perceived fairness of the decision-making process (Goedkoop and Devine-Wright 2016). Procedural and distributive justice are two sides of the same coin that affect the acceptability of the end-result of a process and that are important to the development of practices of the process in the context of land use conflicts.

This thesis focused on the views of owner-occupiers. In order to gain a more comprehensive understanding of infill on sites owned by housing companies it is also necessary to explore the views of investor-shareholders and their respective subgroups.

The focus here was limited to individual housing company plots on freehold. If infill development is to happen on a larger scale, it may well be necessary to adopt a more systematic approach that goes beyond this kind of sporadic development. There is a need for new institutional solutions and tools for densification on a larger scale than individual plots, for instance on a neighbourhood scale. The potential for densification is often better in larger areas comprising multiple plots owned by housing companies. However, cooperation in densification at the housing company level still lacks the necessary tools and institutionalized support. This is another area that requires systematic research. In addition, research is needed on infill possibilities in cases where the housing company's plot is leased, for instance from a municipality or an organization. The preconditions for collective decision-making are different in such cases.

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Continuing urbanization and calls for sustainable urban development have led to increasing urgency to housing intensification in growing metropolitan areas worldwide. This thesis explores factors that support and facilitate the infill development process on sites owned by housing companies, the Finnish version of apartment ownership. The main focus is on the collective decision-making, which is a special feature of a housing company setting. It is concluded that the role of the public sector and its policies, the need to use professional help and advice and the necessary preconditions for the collective decision-making are essential in supporting the process within housing companies. The preconditions for collective decision-making relate, firstly, to governance practices that have to do with the process and its procedures and, secondly, the uneven distribution of perceived disadvantages of infill development among the shareholders especially due to the location of the infill development on the plot and its consequences, such as loss of views from particular windows. The thesis provides many policy and practical implications based on these findings.



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