



AALBORG UNIVERSITY
DENMARK

Aalborg Universitet

The many faces of condominiums and various management structures - the Danish case

Madsen, Morten Dalum; Paasch, Jesper Mayntz; Sørensen, Esben Munk

Published in:
Land Use Policy

DOI (link to publication from Publisher):
[10.1016/j.landusepol.2022.106273](https://doi.org/10.1016/j.landusepol.2022.106273)

Creative Commons License
CC BY 4.0

Publication date:
2022

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Madsen, M. D., Paasch, J. M., & Sørensen, E. M. (2022). The many faces of condominiums and various management structures - the Danish case. *Land Use Policy*, 120, [106273].
<https://doi.org/10.1016/j.landusepol.2022.106273>

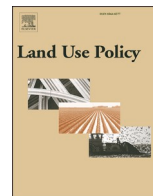
General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.



The many faces of condominiums and various management structures – The Danish case

Morten D. Madsen^{a,*}, Jesper M. Paasch^{b,2}, Esben M. Sørensen^{c,3}

^a Aalborg University, Department of Planning, Land Management and Geoinformatics Rendsburggade, 14, Aalborg, Denmark

^b Aalborg University, Department of Planning, Land Management and Geoinformatics, A.C. Meyers Vænge 15, A2450 Copenhagen SV, Denmark

^c Aalborg University, Department of Planning, Land Management and Geoinformatics, Rendsburggade 14, DK-9000 Aalborg, Denmark

ARTICLE INFO

Keywords:

Condominium
Owner apartment
Sectional title
Mixed ownership
3D property right
Mixed-use development
Two-tier governance
Second-generation condominium legislation

ABSTRACT

The concept of condominium in Denmark is traditionally associated with owner apartments used for residential purposes (individually owned by the resident). The condominium law translated from Danish: “Law of owner apartments” was primarily intended to support the housing market and was mainly introduced to allow renters to become owners of a rental apartment in a high-rise building, i.e., making it possible for them to enter the housing market without having to invest in an (often more expensive) traditional house on a real property. However, the law also applies on other nonresidential rooms in a building, thus the expression, many faces, is appropriate. The ownership right to a condominium unit includes a share in all components of the common property. This share also includes the responsibility to pay for common expenses regarding the common components. In traditional high-rise (single-use) buildings the common components of the condominium property include e.g., the outer walls, roof, cellar and a staircase or an elevator. Because of the nature of (single-use) buildings it is often fair to say that all condominium units have an equal benefit of the common components. Thus, it is regarded as being fair that all condominium units contribute to expenses to maintain and renew those common components. Therefore, the condominium law is partly designed to support this benefit-all principle, and the allocation of rights and responsibilities is done mainly by using a co-ownership share, where each condominium unit’s share is calculated using the relative value and size of each condominium unit. The benefit-all principle does not consider the actual benefit of each condominium unit. However, the rise of mixed-use developments in Danish urban planning has made it necessary to further develop and customize the allocation of ownership rights in such mixed-use condominium schemes in order to specify the allocation of ownership rights and responsibilities of common components, mainly because it is not fair to accept that all units have the same benefit of the common components. Based on four case studies all representing mixed-use condominium developments we analyse various management structures used in Danish practice. In our conclusion we propose that condominiums are used broader than originally intended for various non-residential purposes and in mixed-use developments. The effect of this, is more complicated condominium schemes that require a customized management structure and allocation of rights and restrictions of common components.

1. Introduction

This paper is concerned with the practical use of condominium property. We analyse the Danish concept, the practical use of which has evolved significantly since its introduction more than 5 decades ago (Danish Parliament, 1966). Today it is used on large mixed-use projects

that require a legal structure that is obtained by rearranging rights and responsibilities for the common property in addition to the standard legal structure, which is provided by the condominium law (Madsen et al., 2021). Mixed-use projects include different types of commercial condominiums and a mix of commercial and residential condominiums, and different types of housing (e.g. a mix of owner apartments and social

* Corresponding author.

E-mail addresses: mortendm@plan.aau.dk (M.D. Madsen), jmp@plan.aau.dk (J.M. Paasch), ems@land.aau.dk (E.M. Sørensen).

¹ <https://vbn.aau.dk/en/persons/147721>

² <https://vbn.aau.dk/en/persons/144980>

³ <https://vbn.aau.dk/en/persons/102948>

<https://doi.org/10.1016/j.landusepol.2022.106273>

Received 25 August 2021; Received in revised form 29 June 2022; Accepted 6 July 2022

Available online 4 August 2022

0264-8377/© 2022 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

housing).

Adopting a more global perspective, the benefits of mixed-use have been advocated by urban planners for the past two-and-a-half decades “as a key strategy for increasing economic vibrancy in the city, reducing automobile dependency and energy consumption and emissions, improving public health, and advancing sustainability” (Shen and Sun, 2020, p. 2). In addition, the UN sustainable development goal (SDG) no. 11 is focused on developing sustainable cities (United Nations (UN), 2021).

The concept of mixed land use can be divided in a *horizontal* and *vertical* dimension (see Shen and Sun, 2020 for further explanation of the concept of mixed-use). In relation to the vertical dimension of mixed-use, the condominium concept is an important tool as “ultimately, the success of a mixed-use scheme depends on the ability of the developer and the unit owner’s corporation (body corporate) to accommodate the often-competing interests of the unit owners in the different components of a mixed-use strata title scheme” (Van der Merwe, 2018, p. 37). Thus, the condominium property is an important part of successful sustainable urban development.

1.1. Aim

The aim of this paper is to present research on Danish practical experiences with utilizing the condominium concept to create “3D property rights” for an international audience. Danish experiences concerning the management and organization of condominium properties have only been communicated to the international research community to a minor extent, e.g., in Madsen et al. (2021). This is also the case with the topic itself (see, e.g., Paasch and Paulsson, 2021; Paulsson, 2007). By documenting the practical use of the condominium concept in mixed-use developments, we contribute to the ongoing debate on developing 3D cadastral systems.

We felt inspired to make this contribution in response to the paper “Co-ownership shares in condominiums - A comparative analysis for selected civil law jurisdictions” by Çağdaş et al. (2020) because our research shows that the allocation of co-ownership shares in Danish complex mixed-use developments consists of methods that were only briefly mentioned by the authors. Our research shows that, when allocating rights and responsibilities, the co-ownership share per se is not always as important as the choice of management structure or specified allocation of common components, as we analyse and document in this paper.

1.2. The many faces of condominiums in Denmark

The expression “many faces of condominiums”, which was used by Van der Merwe (2015), simply expresses the fact that despite the original intention behind condominiums being to convert residential rental apartments into owner apartments, the concept is also used for many other purposes. In Danish property law, the term “condominium” is unknown (See Section 4 for an introduction to the Danish condominium concept). In Denmark, the equivalent to the condominium concept is “owner-apartments” (in Danish: “ejer-lejligheder”). This term indicates that the apartment is owned by an individual and is used solely as a dwelling, normally with the owner living in the condominium or renting it out to others as a dwelling. However, this is not always the case in practice, as the term is also used to describe non-residential apartments and a mix consisting of apartments (for living), parking garages, hotels, retail, etc. Thus, in Denmark, condominium properties have “many faces”. The term “owner-apartment” is, therefore, not representative because it is traditionally associated with a dwelling.

The close connection to the residential purpose of introducing the condominium system in Denmark is perhaps the main reason for the choice of the term “owner-apartment” (Owner Apartment Committee, 1965). However, had the legislators been aware of the broad use of the concept that we see today, they would perhaps have chosen another more neutral term, such as the “Sectional Title Scheme” of South Africa

(Van der Merwe and Paddock, 2008). In order to avoid any confusion regarding terms, in the remainder of the paper, we only use the term *condominium* to denote the Danish “owner apartment” concept.

We assert that there exists murkiness with the condominium legislation and the applied practice; the diversity and sophistication of complex condominium projects is developed by real property practitioners (such as chartered land surveyors and real property lawyers). However, the solutions they use to create a legal structure in complex condominium developments are not supported by provisions in the condominium law and, thus, practitioners need to make it work with the available legal tools. Alongside condominium legislation, the condominium literature has not kept pace with the demands of more complex condominium real property formation. Thus, we believe there is a black box of knowledge, which is only known by real property practitioners. This paper investigates one aspect of this black box of knowledge which concerns the legal structure of ownership and management solutions, e.g., arrangement of rights, restrictions and responsibilities (RRR) of the common property.

1.2.1. Mixed-use and allocation of rights and responsibilities of common parts

In single-use residential buildings, the common parts often benefit all condominium units. In such developments, the share of ownership rights of the common parts (e.g., the outer walls, roof, cellar, staircase/elevator and pipes) and responsibility to pay for their maintenance and renewal are allocated on the basis of a co-ownership share (fraction share). In Denmark, and in many other jurisdictions, this co-ownership share is usually calculated on the basis of the relative value and size of each condominium unit. However, as Çağdaş et al. (2020) explain, there are also other methods of calculating co-ownership shares. According to the condominium law, the general rule is that all owners of condominium units have a share in all parts of the common property unless otherwise stated in the owner association’s by-law or in an easement (as explained in Section 2.2). The Danish condominium law does not directly address the situation that occurs in mixed-used buildings, whereby the benefit of common parts is often unequal and more spread out between various condominium units. Sometimes, owners of units have no benefit at all from some of the common parts.

In many mixed-use developments, the common parts are designed to benefit a single unit (or a group), such as a roof terrace, a parking plot or a building right. In this case, it is feasible to distinguish between *general common* property (benefitting everyone) and *limited common* property (benefitting some). To ensure the fair distribution of ownership rights and responsibilities regarding such common parts, it is necessary to allocate ownership rights and responsibilities by either releasing some units from the responsibility to pay for common expenses and/or to restrict some units from using a specific common part of the common property. The extent of the allocation of rights and restrictions regarding common parts differs in each development and depends on the complexity, e.g., the size of the development and the range of different facilities utilised by a number of condominiums instead of all condominiums. In some developments, including the use of various management structures is more practical (as we explain in Section 2.2).

The procedure of allocating ownership rights and restrictions is mainly (as our research indicates) found within the domain of practical knowledge and developed by those practitioners (lawyers, developers and chartered surveyors) that draw the condominium management structure in practice based on their experience. The only description of the allocation of rights and restrictions and the decision regarding various management structures we identified was found in a commentary of the condominium law: “Owner-apartments” by Blok (1982, 1995). However, these two documents were published years before large mixed-used developments became widespread in Denmark, so it does not consider the more complex mixed-use cases which we present in our case study. However, we stress that most (if not all) of the practice in Denmark with respect to mixed-use developments is based on these two

publications. Practitioners and registration authorities consider these publications to be the most important and comprehensive sources on the Danish condominium concept. In his analyses of the condominium concept, Blok (1982, 1995) draws on international experience to interpret the Danish condominium law in order to comment on situations and suggest solutions based on real life experiences. He introduces terms such as “secondary owner associations” and “secondary co-ownership shares” as a means of allocating rights and restrictions, which we have not seen anywhere in Danish legislation or in the report by the committee that developed the original law (Owner Apartment Committee, 1965) or the report by the committee that recently proposed a new and modernized version of the condominium law (Owner Apartment Committee, 2018) (In Section 2.2, we introduce the concept of “secondary owner association” as related to the term “two-tier governance”). Blok (1982, 1995) acknowledges that the possibility of creating two-tier governance by creating a secondary owners’ association is not directly supported by the law, but notes that “Section no. 2 of the condominium act means that all common property must be administered by one owner’s association consisting of all unit owners, however it is not valid to practice a ban for such management structure, which has not been considered when the law was drafted” (Blok, 1982, p. 496). Thus, the possibility of forming various management structures has been neglected in legislation, while in practice, the courts have accepted it, perhaps based on what Blok (1982, p. 496) describes as a consequence of the time the law was drafted. The main focus was on high-rise (single-use) residential buildings with no (or limited) need for anything other than a single management structure which only includes a master association and no two-tier governance.

2. Methodology

In Section 2.1, we analyse the main principles of the condominium concept and its historical development. The analysis is based on a literature review that includes Danish, European and American condominium experience. Based on our preliminary research findings on the Danish condominium concept and the literature review, we established an analytical framework (see Section 2.2), which we use to analyse four Danish condominium developments.

The use of the condominium concept in mixed-use developments often requires an extended use of the concept. Our preliminary findings on the (extended) utilisation of the Danish condominium concept in mixed-use developments originates from the Danish city of Aalborg, where a decade ago, Sørensen (2011) found that an interesting extension to the condominium concept was used partly in non-residential developments, which were part of the transformation of the Port of Aalborg from industrial buildings to new developments including a mix of restaurants, theatres, cinemas, universities, sports centres, shopping centres, hotels, etc. We selected our mixed-use condominium cases within this area of Aalborg because we concluded that there were enough representative cases that were geographically positioned in close proximity to explain various methods of allocating rights and restrictions and various management structures. In order for a case to be representative, it must include a mix of owners with different interests in the building. A mix-use case does not necessarily have to include a mix of residential and non-residential use as it can also be a mix of various residential types (social housing/rental homes/private owned homes) and various non-residential types. The important feature is that the case must include an extended need for allocating rights and responsibilities.

The case study data collection methods include interviews with chartered surveyors who were involved in the creation of the condominium schemes and a desk study of the legal documents, such as by-laws, easements and the condominium maps and registration documents.

2.1. Development of condominium legislation

It has been argued that the “seed” of modern European condominium legislation is found in article 664 of the so-called Napoleonic Code from 1804 in France (CN, 1804). This provision allocated the responsibility to maintain the common property to all owners of individual stories in a single building. The common property included the exterior walls and roofs and the expenses were distributed based on the relative value of each owner’s individual story. The floor of the story was the responsibility of the owner, whereas responsibility for the staircase was allocated so that each owner had to take care of the staircase that led to their story. The “seed” was planted in 1804 with article 664, but modern condominium legislation first “flowered” in France in 1938 (Moriarty, 1973). Modern condominium law was introduced in many jurisdictions around Europe in the 20th Century with the purpose of converting residential rental apartments in high-rise buildings into individually owned apartments (Van der Merwe, 2015), thus increasing the likelihood of privately owned apartments.

Some scholars have argued that distinct generations of condominium legislation can be found in different jurisdictions and within a historical perspective of each jurisdiction. For example, Rohan (1978) explains how first-generation American condominium law was inspired and based on European condominium law, which was primarily designed to apply to high rise (single use) residential apartment buildings, which meant that it was not well-suited to the American property market for “lateral development, large-scale projects, and staged or sectional constructions” (Rohan, 1978, p. 588). Therefore, a modernized/ second-generation condominium law was enacted, which was more suitable for the American market.

Van der Merwe (2015) explains that in Europe, most first-generation condominium legislation has been supplemented or replaced by more detailed second-generation legislation or even third-generation. “Third generation condominium legislation split the registration and management aspects of the old statutes into two statutes and provides a two-tier governance structure for mixed and larger condominiums” (Van der Merwe, 2015, p. 22).

We were unable to identify any studies that provide a comparative analysis of the various generations of condominium legislation or a detailed analysis of the difference between second-generation American condominium legislation and third-generation, as identified by Van der Merwe (2015). Defining the characteristics of each generation is outside the scope of this paper, but such an endeavour could be interesting for future research. However, if one characteristic of third-generation condominium legislation is to allow a two-tier governance structure, it is interesting to observe this being used in Denmark, but without the legal provision for such practice in the condominium law. Thus, Danish condominium legislation remains a first-generation, while practitioners have found creative solutions to establish a two-tier management structure.

2.2. Analytical framework

Mixed-use developments are often composed of multiple ownerships separated by use type. Therefore, mixed-use developments, in many cases, are converted to condominium properties because condominiums facilitate individual ownership of part of a building. One major characteristic of a mixed-use condominium development is that all condominium units rarely have equal benefit from the parts of the common property (as opposed to single-use developments for which the *benefit-all principle* means that all units have equal use of all common parts of the common property). Thus, to avoid conflicting interests between owners, the fair allocation of rights and responsibilities of the common parts must be organised to ensure a management structure that functions long-term to prevent potential conflicting interests. This is achieved in practice by designing reciprocal legally transparent binding agreements in the by-law, easements and by forming various management structures

as we explain below.

We extend the work of [Van der Merwe \(2018\)](#) to form a framework, which we apply to analyse and identify various management structures in our four case studies, which are presented in [Section 5](#).

[Van der Merwe \(2018, p. 43\)](#) identifies the following three management structures:

- “a) a single management structure;
- b) a two-tier management structure consisting of a master owners’ association and subsidiary associations;
- c) a linked scheme connecting a number of independent condominium schemes.”

2.2.1. Single management structure

The general rule in first-generation legislation is that the ownership right to a condominium unit is twofold because it includes (1) the individual ownership rights to the condominium unit, and (2) a fraction share of the common property. The management of the common property is the responsibility of the owners’ association. All owners are obliged to be members and to pay a share of the common expenses connected with maintaining and operating the common property. The amount they pay is based on a co-ownership share. This is also the shared value of the common property and voting power at the general assembly. The common parts of the property are considered to benefit all condominium units and, thus, no limited common property exists - only general common property. In mixed-use condominium developments, this benefit-all principle is inadequate because each condominium unit rarely has the same benefit of the common parts of the property and, thus, allocation of rights and responsibilities are required, which create limited common property ([Madsen et al., 2021](#)).

Therefore, in a single management structure that is established in a mixed-used condominium development, the rights and responsibilities to various parts of the common property are allocated to specific condominium units. This allocation is regulated in the by-law. When drawing the legal design/structure of an organization in a single management structure, the notary must consider each part of the common property in relation to each condominium unit and the benefit/use connected to the common parts for each condominium unit. Based on this, the rights and responsibilities must be allocated. In our case study, we distinguish between the parts of the common property and divide them into *general common property* and *limited common property*. General common property is included in the ownership right of all condominium units, whereas the limited common property is allocated to one or a limited number of condominiums.

2.2.2. Two-tier management structure

The simplest situation to explain the need for a two-tier management structure is when a property includes two buildings. In a single management structure, there will only be one governing body (owners’ association) to maintain and manage both buildings. However, considering the nature of such a relationship, it is only fair that the condominium owners of one building manage their own affairs without interference from the owners in the other building. Consider the fact that the common parts of each building are only allocated to the unit owners of that building. The management of those parts and the relationship between the owners is handled by their own governing body (a subsidiary association), which is secondary to the master association. The two-tier management structure will then consist of a master association, which manages the general common property, and two subsidiary associations, which manage each building and the limited common property. However, reciprocal agreements will need to be made in order to ensure the uniform appearance of the buildings, etc. In more complex mixed-use buildings, two-tier management structures are used to isolate the management of different use types in one building, e.g., commercial units vs. residential units.

In two-tier management structures, the co-ownership shares are calculated in accordance to the relative size and value of each

condominium unit. And also, the co-ownership shares counts as the relative shared value that each condominium possess of the common parts, the shared responsibility of contributing to expenses regarding the common parts, and the share of voting powers at the general assembly. However, when the management is split into a two-tier structure the function of the co-ownership shares is also split. The co-ownership share respects the allocation of rights and responsibilities of certain common parts as they become limited common parts whereby the value, responsibility and voting power is directed to one or a limited number of condominium units.

2.2.3. Linked management structure

This type of management structure is used in large lateral developments with separate buildings. Each building is placed on an individual traditional parcel (as opposed to all buildings in one large condominium scheme located on just one traditional parcel), and it therefore constitutes an individual condominium scheme, which either has a single management structure or a two-tier management structure. All individual condominium schemes are connected by reciprocal agreement through a neighbourhood association, which has the responsibility to manage the parts of mutual interest (shared facilities) of all individual condominium schemes. For example, this could be a communal playground, which is used by residents of all the condominium schemes. By using a linked management structure, each building is placed in an individual condominium scheme and becomes an autonomous governing body that is independent of the other condominium schemes. Instead of having one large condominium scheme that includes multiple buildings, the land is subdivided so each building is placed on an individual parcel. Therefore, the structure represents the ultimate allocation of rights and responsibilities to avoid the situation whereby the owner of a condominium unit that is located in one building is legally obliged to pay a share of the expenses connected to one of the other buildings.

3. Existing research

We have identified two, more or less parallel, research communities within condominium research. The first focuses on aspects of “3D cadastre”, which primarily concerns topics such as the technical implementation and registration of 3D real property from an object-oriented, GIS and database point-of-view, but less on organizational and management issues. This research area is often focused on the land surveying community, such as FIG, the International Organization of Surveyors, and often uses 3D cadastre as keyword to describe the topic. Relevant publications within this community are the literature reviews by [Paasch and Paulsson \(2021\)](#), [Döner \(2021\)](#), [Tekavec et al. \(2018\)](#), [Paulsson and Paasch \(2013, 2011\)](#). The second research community studies the creation and management of ownership and associated rights in 3D real property, e.g., [Van der Merve \(2018, 2016, 2015\)](#). The organization of 3D real properties has been part of 3D cadastral research for more than one-and-a-half decades. For example, [Paulsson \(2007\)](#) analysed key factors of 3D Property Rights. However, according to [Paasch and Paulsson \(2021\)](#) and [Paulsson and Paasch \(2013\)](#), there is a lack of research on the organisational aspects such as the management of commonly owned or used areas in condominium developments. One example is [Çağdas et al. \(2020\)](#), who describe the use and calculation of co-ownership shares in condominiums. Other publications that address organisational subjects include [Madsen et al. \(2021\)](#), [Sun and Paulsson \(2020\)](#), [Indrajit et al. \(2018\)](#) and [Krigsholm et al. \(2018\)](#). Furthermore, [van der Merwe \(2015\)](#) describes several aspects of condominiums, while [van der Merwe \(2018\)](#) mentions the extensive organisation in mixed-use developments and how this is practised and legally revaluated in an international perspective.

To our knowledge, very limited research has been conducted on mixed-use condominiums in Denmark in terms of the organizational and legislative aspects. Only the following three examples has been found:

Madsen et al. (2021) and Sørensen (2011, 2018).

4. The Danish condominium concept

Before presenting the case studies, in the following we discuss a few of our considerations regarding the Danish condominium law and provide a description of the process of forming condominiums and introduce the real property practitioners involved. First, we briefly present some key facts about the Danish condominium concept to provide the reader with a basic understanding.

4.1. Selected key aspects about the Danish condominium law

The following is not an exhaustive description of the condominium concept, but rather a general description of key aspects.

4.1.1. The legal framework

The legal framework of the Danish condominium concept consists of (1) the “condominium act” (Danish Parliament, 2020a), (2) the “standard by-law” (Danish Parliament, 2020c), and (3) the “registration executive order” (Danish Parliament, 2020b).

Section no. 2 of the condominium act states that a condominium unit must be a delimited room in a building, and that each condominium unit owner is obliged to be a member of a community association. Section no. 2 also states that a condominium unit is real property. Section no. 3 states that the ownership of the condominium unit also includes joint ownership of the land and other common parts. The share can be fixed by a fraction. However, if no share is mentioned in the registration documentation, all condominium units have an equal share. The share also includes rights and obligations as members of the mandatory community/owners’ association. The common property includes all parts of the real property (including building parts) except the condominium units. Only the condominium units are registered in the cadastre. Thus, rooms in the building that are common property are not registered as real property. Sections 5–11 contain provisions regarding the management of the owners’ association. Section 5 provides the legal basis granted to the Minister of Housing to define provisions regarding the management of the owners’ association in the standard by-law. The provisions in the standard by-law apply unless they are changed by the developer or by the owners based on a valid decision at the general assembly. The developer or original owner has the freedom to design the legal structure of the scheme. The legislation recognises that the developer or owner can establish a customized legal structure, although the standard by-law is put into operation if no customized legal structure is established.

Section no. 16 contains provisions that regulate which buildings are allowed to be converted into condominium properties. The most debated of these provisions is probably the “66-provision”, which stipulates that only buildings whose construction began before July 1st 1966 are allowed to be converted into condominium properties (this was the date the condominium act was introduced into Danish property law). The purpose of the 66-provision is to protect rental apartment buildings from condominium ownership. Therefore, the 66-provision only applies to apartment buildings used for housing purposes or partly for housing and business. Thus, the 66-provision does not apply to buildings that are only used for business purposes.

Section no. 24 contains provisions regarding the registration of a condominium property. A condominium property is registered in the cadastre by the Danish Geodata Agency. The Minister of Climate, Energy and Supply has the right to determine provisions regarding registration documentation in the registration executive order.

With regards to the standard by-law, this defines the management structure of the condominium scheme. Section no. 2 in the standard by-law stipulates that the general assembly is the supreme authority of the owners’ association. Section no. 3 states that decisions regarding small issues are valid with a simple majority of votes according to the co-

ownership share at the general assembly. Section no. 4 states that decisions regarding more significant matters, such as altering the provisions in the by-law, require a quorum of 2/3 of the members and 2/3 votes measured by co-ownership shares. Section no. 5 includes a special rule to support an effective decision process. Therefore, if it is not possible to assemble the required quorum, then an extraordinary general assembly, during which the decision can be decided by 2/3 votes measure according to the co-owner share without the quorum requirement, must be held within 8 weeks of the ordinary general assembly. The requirements regarding the sale of the common property are stricter. Section no. 6 states that decisions regarding a part sale of the common property require a quorum of 9/10 of the members and 9/10 votes according to the co-owner ship shares.

Section no. 5 states that if a decision is made at the general assembly that has a negative effect on the value of a condominium unit, then the owner can exercise a veto against such a decision. In addition, section no. 8 includes a general clause that states that no decision is valid if it, for obvious reasons, benefits one condominium owner over the community. The same applies if a decision represents a major disadvantage for one condominium owner.

4.2. First or second generation condominium act?

In our opinion, the Danish condominium act can be categorized as a first-generation act because it was designed to mainly apply to apartment structures in single high-rise buildings with a single management structure, as we explain in Section 2.2. However, law practice has developed into what only a second-generation condominium act facilitates, namely creating various management structures that can be fitted into each individual condominium scheme (Madsen et al., 2021). Firstly, we base this on the fact that, despite a recent revision, the act only supports a single management structure, as we explain in Section 2.2.1. Secondly, we document that two-tier management structures, despite this, are used in practice.

In the United States, the so-called first-generation condominium act, which was mainly focused on converting residential apartments into owner apartments (Moriarty, 1973), as explained in Section 2.1, was inspired by European condominium legislation. This first-generation act was considered an obstacle to the development of commercial and industrial condominiums (Stokes, 1982). In contrast, we assume that the Danish condominium act was also tailored to the residential context, but it has not (to our knowledge) been addressed as an obstacle to the development of commercial and industrial condominiums or even mixed-use condominiums. Our research shows that this partly is due to the pragmatic application of the rules and the fact that the Danish condominium act is relatively simple, which means that it does not contain a multitude of provisions compared with legislation in other jurisdictions, e.g., the German condominium act “Wohnungseigentumsgesetz” (Owner Apartment Committee, 1965, p. 140–141). Therefore, this relative simplicity facilitates a more flexible and pragmatic administration, which can be adjusted to the changing demands of developers without the need for major amendments.

4.3. The process of converting to a condominium property

The property owner can request that their property be converted into a condominium. However, a chartered surveyor has to submit an application for the conversion to the registration authority. The chartered surveyor conducts an as-built measurement of the condominium units and prepares the necessary documentation. This includes a document containing information about each condominium unit, i.e., id-number, address, use, size and co-ownership share (fraction share), and a map of the location, number and size of each condominium unit and sub-unit(s) (see example in Fig. 1). The co-ownership share is in practice traditionally calculated based on the relative size and value of each condominium unit. However, the act does not include any rules

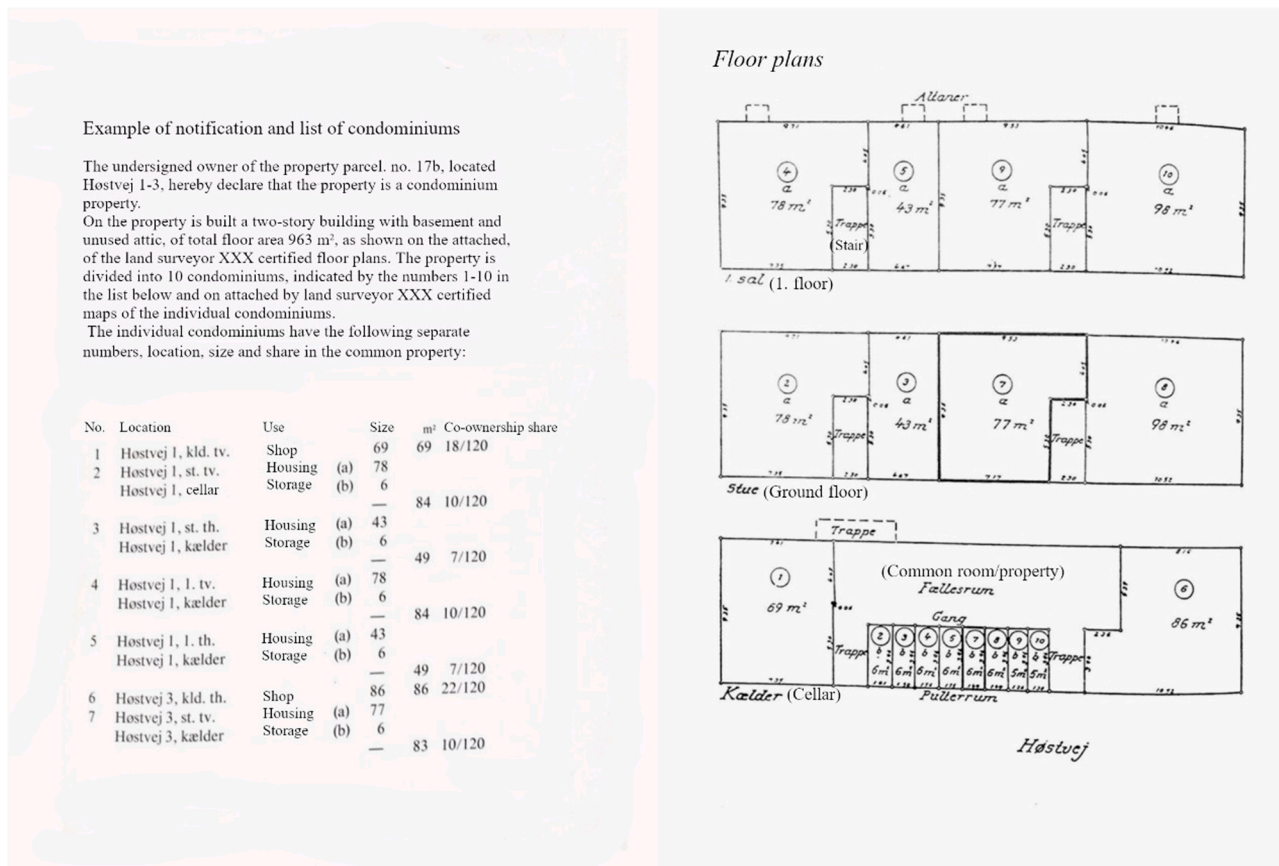


Fig. 1. Example of the legal documents drafted when applying for conversion to condominium property
Source: Blok (1982, p. 751,754).

regarding how the co-ownership share should be calculated. The developer is therefore free to decide the size of the co-ownership share for each condominium unit. If no co-ownership share is calculated or mentioned in the document, then all condominium units have an equal co-ownership share (Danish Parliament, 2020a, 2020b).

4.3.1. The by-law

An owners' association is automatically established when the first condominium unit is sold (Danish Parliament, 2020a, §3). The standard by-law (Danish Parliament, 2020c) draws the management structure if no arrangements are made to customize it to fit a specific development. Our research shows that the need for a customized management structure, including the allocation of rights and obligations of the common property, may arise in small developments because common parts are only used by one or a group of unit owners. Some researchers distinguish between "common parts" and "limited common parts". Common parts must be used by all unit owners. Limited common parts, on the other hand, are only used by one or more unit owners (Lundquist, 1984, p. 108). In large mixed-use developments, our research shows there is a greater need for a customized management structures and allocation of rights and responsibilities because more limited common parts exist because of the size of the development and the mix of different use of unit owners. In practice, a lawyer or a chartered surveyor usually develops/forms the customized by-law in collaboration with the owner/developer.

4.3.2. Exclusive user rights

The condominium law only applies on delimited rooms in the building with physically constructed walls. Therefore, only physically delimited rooms can be converted into a condominium unit. However, occasionally, space within the building which is not physically delimited

in the form of a room requires an ownership right. This is often the case for parking spaces because they are only delimited by markings on the floor. In such situations, establishing a user right to the common property (thus creating *limited common property*) is used as a substitute to include the parking space in the condominium unit. In addition, the same is the case outside the building where exclusive rights connected to the ownership right are established for, e.g., a roof terrace or a parking space. Exclusive user rights are established using easement. The easement is attached to the condominium unit and follows it in case of a transaction. It is non-cancellable and not limited in time.

5. Case studies

This study includes four cases, all of which represent mixed-use condominium developments with unique management structures. All of the cases are located within close proximity to the port of Aalborg, which is the fourth largest city in Denmark.

Each case represents a unique multifunctional constellation of mixed-use condominiums. The first case is "The Silo" (in Danish: "Siloen"), which is a mix of traditional residential owner apartments/condominium units and a condominium unit consisting of social housing. The second case is "Larsen Waterfront", which is a mix of social housing and non-residential owner apartments. The third case, "Friis", is a non-residential mix, which includes a shopping centre, offices, a fitness centre and a hotel. The fourth case, "The North Power Plant" (in Danish: "Nordkraft"), is a non-residential mix of cultural use, such as sports facilities, restaurants, a cinema, theatre, concert hall and offices. See Fig. 2.

Data from each case was collected from the documentation registered in the national real property register, including the condominium maps and a list of the condominiums, easements and by-laws. Interviews



Fig. 2. Aerial photo of the four cases in Aalborg located within close proximity of each other (SDFE, 2021).

were conducted with the chartered surveyors involved in the The Silo, Larsen Waterfront and Friis cases.

The structure of each case study section is as follows: First, we present the “many faces” of condominiums, which each case represents. Then we describe the management structure we identified in each case based on the analytical framework presented in Section 2.2. The aerial photos in Figs. 2–5 and 8 are open-source oblique photos covering all of Denmark (SDFE, 2021).

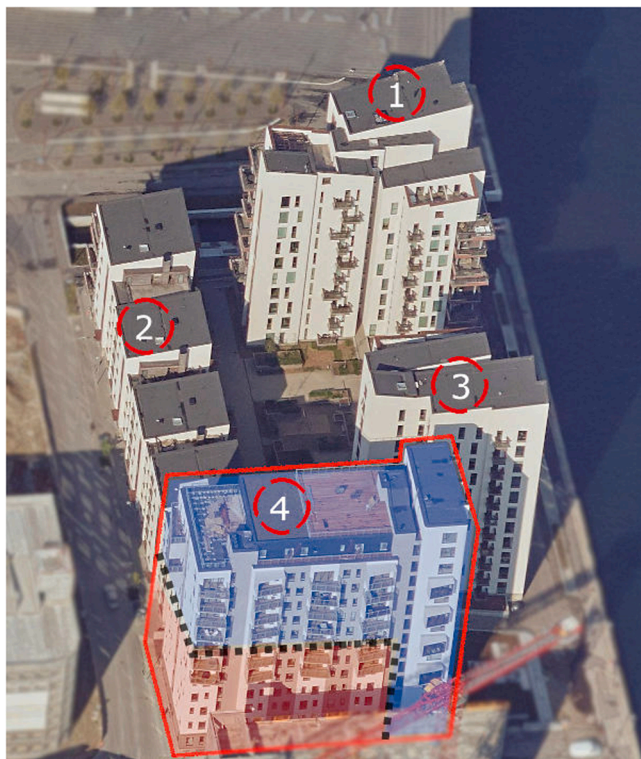


Fig. 3. Four buildings constitute one condominium development with various management structures: The Silo (building no. 4) includes a mix of social housing (red shading) and privately owned apartments (blue shading) (SDFE, 2021).

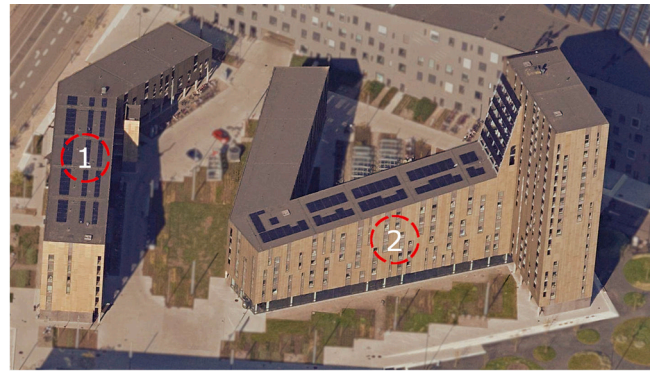


Fig. 4. Two buildings constitute one condominium development with a single management structure. The development includes a mix of social housing (including all floors above ground level), commercial condominiums and an underground public car park (SDFE, 2021).

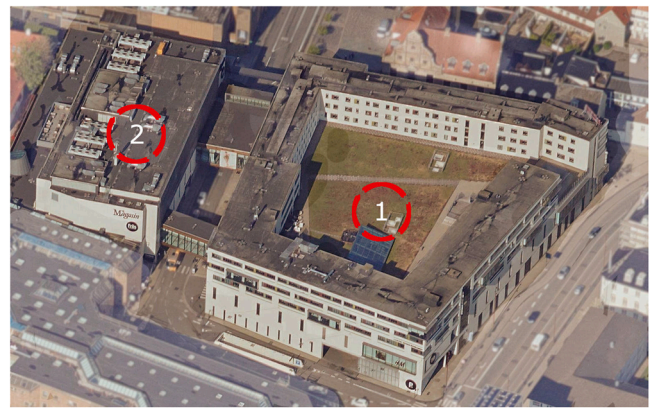


Fig. 5. A single management structure is in place for the non-residential mixed-use development, Friis. The development includes five different types of use in 5 condominium units (SDFE, 2021).

5.1. Case study 1 - The Silo

The Silo is a mix of residential use including traditional owner apartments and one social housing apartment. The silo (building no. 4 in Fig. 3) is part of a large condominium development that includes four buildings.

Table 1, below, presents an overview of the different condominium

Table 1

Overview of building no. 1 including use type, total size of each use type and type of owner.

Unit No.	Location of unit Building no. 4	Use type	Total size (m ²)	Owner type
1	(red shading)	Social housing, 81 apartments	3947	Social housing organization
2–35	(blue shading)	Traditional residential owner apartments	4360	Private ownership
36–37	(blue shading)/and below ground	Annex (mailroom, entrance hall, cycle parking in basement)	241	Secondary owner association. Members include units 2–35.
38	Partly below ground and on ground floor	Car park, including 10 parking spaces in the basement and a car elevator	373	Parking association. Members include unit no. 8, 27, 15, 34, 33, 21, 38, 7, 35

units in the building including their location, use type, total floor size of each use type and owner type.

This development is just one of many developments that are part of the transformation of a large section of the old port of Aalborg from industrial to a mix of cultural, commercial and residential use. The Silo is of historical and cultural value because it is built on the foundation of an old grain silo. The high value residential condominium units are placed on the top floors, while affordable housing apartments are located in the lower floors, except the tower facing the sea, which only includes expensive residential condominium units. The building was completed in 2018 and includes a mix of privately owned condominium units and social housing apartments. The front tower facing the water consists of 13 traditional owner apartments on 14 floors. The main building consists of 20 traditional owner apartments on the 5 top floors. We consider these owner apartments to be traditional owner apartments because the owner also lives in the owner apartment/condominium unit - or at least the intention is that the owner lives in the property, although the ownership right also includes the right to rent the apartment out. However, the by-law may include rules that limit this right or expressly forbids the owner to rent out the unit. The lower floors of the main building consist of 1 condominium unit, which includes 81 social/affordable housing apartments, half of which are dedicated to students. The lowest layer of red shading without balconies is social housing for students.

As an annex to the residential privately owned apartments, the basement includes 2 owner apartments - a condominium unit, which includes a mailroom, entrance hall and a room for bicycle parking. This condominium unit is owned by a secondary owners' association, the members of which are only from the privately owned apartments. In addition, as an annex to the residential privately owned apartments, the basement includes 1 owner apartment, which is used as an underground car park with a car elevator. The garage is owned and managed by a parking association, which only has 10 members, presumably the most expensive condominiums in the building with an exclusive right to use one of the 10 parking plots. The developer decided which of the privately owned condominium units can be members of the parking association.

5.1.1. Management structure

This case represents various management structures including *single management*, *two-tier management* and *link management*.

5.1.1.1. Linked management. Because the four buildings are interdependent and are, to some extent, designed to operate as one combined unit (common parts facilitating all four buildings), this development (all four buildings) could have been organized through a single management structure - or perhaps two-tier management. However, using a linked management structure in this situation has some major advantages. Firstly, the construction was completed in four different stages - one stage for each building. If the development had not been converted into four individual parcels each containing one building, the purchasers of the condominium units from the first stage would become co-owners of the common parts of the property. The co-owner share would then include the land and, thus, also the right to build stages 2–4. This is not an ideal situation for the developer because it can result in major unexpected costs if it means buying back the exclusive right to stages 2–4. For this reason, before selling the first unit within the building, constructed in stage one, the developer must isolate the building right and ownership right to the buildings constructed in stages 2–4. Therefore, the land and the building right is allocated as *limited common property* to the developer's ownership rights. However, this is a very complicated legal operation because the developer must accurately document the size, location and use in an easement. Any deviation from the plan described in the easement and the as-built situation will complicate the relationship. Not doing so can ultimately lead to financial losses for the

developer. The developer can be forced to purchase *general common property* from the owners and mortgagees from stage one in order to obtain the complete property right to the development in stage one. The owners and mortgagees are only legally obliged to accept the allocation of rights and obligations as agreed upon when the condominium unit was purchased. Stage development becomes more complicated when the number of stages increases.

Secondly, when using a linked management structure, each building becomes isolated in an individual condominium scheme. This results in an independent governance body. The parcel of buildings 1, 3 and 4 only includes the built-up area. Therefore, they have no common land outside the building. The parcel of building no. 2 includes an underground car park, which is located beneath the building and extends beyond the edge of the built-up area. The common garden/park, which is used by the residents of all four buildings is located on top of the parking garage. The common garden/park is linked by reciprocal agreement (easement) and a landowner's association was established to manage the parts of mutual interest of all four condominium schemes. These are the common parts of building no. 2 (condominium scheme no. 2) the garden and park including roads, the sewerage system, and lighting.

5.1.1.2. Single management structure. Buildings nos. 1–3 only include condominium units that are used as residential owner apartments. Thus, they are categorised as single-use condominium developments. In each building, all common parts benefit all condominium units. It is fair to say that all units benefit from the common parts, so the benefit-all principle is accepted (see [Section 2.2](#)). The responsibility to pay a share of the common expenses for maintaining and renewing the common parts is, therefore, allocated on the basis of a co-ownership share.

5.1.1.3. Two-tier management. The condominium scheme for building no. 4 is organized in a two-tier management structure. There is a clear boundary between the social housing condominium unit and the privately owned condominium units (owner apartments). The building is designed so each use type has its own entrance. The condominium unit that includes 81 social housing apartments has its own exclusive entrance. The privately owned units share an entrance. The two-tier management structure is used to separate the management of the privately owned units and the social housing unit. The two-tier management structure consists of a master association, which governs the general common property, and a subsidy association, which manages the privately owned units and limited common parts of the property.

One important principle that is clearly expressed in the master association's by-law is that all condominium units are considered to be financially independent. This means that the common parts that only benefit one or more condominium units are the sole responsibility of those that benefit from them. Thus, the common parts of the social housing condominium unit are the sole responsibility of the owner of this unit. This is arranged by forming exclusive rights and responsibilities in the by-law and by using easements. Therefore, all the common parts, i.e., access halls, elevators, etc., which benefit each type of ownership (social vs. private) are transformed into limited common property through reciprocal agreements (easement), which are allocated to each ownership type.

In addition to the limited common property that has been established through an exclusive right to use the halls and elevators, exclusive ownership rights have been established for the balconies and roof terrace. By their nature, these belong to the specific condominium with an access, but in legal terms, they are considered to be general common property (This is because only the rooms in a building can be converted into condominium property, as explained in [section 4.1](#)).

Building 4 also includes a special situation in which a parking association owns a condominium (the underground car park) including 10 parking spaces. The reasoning behind this is to establish the most secure ownership right to parking spaces for the ten most expensive privately

owned condominium units (owner apartments) in the building. The members have exclusive user rights to the parking spaces. The developer decided which units would be sold with an exclusive right to use a parking space. This could be compared with a limited common part, whereby the right of use and maintenance obligations are allocated to a subsidiary owners' association. However, because it is possible to convert the car park into a condominium unit, this must have been considered the most secure and flexible solution for isolating the rights and obligations from the common parts in the condominium scheme. The exterior walls of the elevator tower of the car park are common property. However, as it only benefits the owner (the parking association), it has been converted into limited common property, so that the obligation to repair and maintain the walls and roof has been allocated directly to the owner.

5.2. Case study 2 – Larsen Waterfront

The Larsen Waterfront, shown in Fig. 4, is a mix of social housing (student apartments) and business condominiums, which are located in two buildings, and a public underground car park.

Tables 2 and 3 includes information of Larsen Waterfront building no. 1 and 2 regarding use type, total size of each use type and type of owner.

The Larsen Waterfront was built in 2014 and consists of two buildings and an underground car park. The development includes social housing and non-residential condominiums including a public car park, offices and a restaurant. The development consists of four condominiums. The underground car park consists of one condominium unit. The ground floor of building no. 1 consists of one non-residential condominium (a restaurant), while the ground floor of building no. 2 consists of one non-residential condominium unit (used for office purposes). All the floors above the ground floor in both buildings consist of only one condominium unit, which includes 254 social housing apartments (student apartments).

5.2.1. Management structure

This case represents a complex single management structure whereby rights and restrictions regarding the common parts have been allocated to one or a group of condominium units. The complexity of a single management structure increases as the level of allocated rights and responsibilities of the common property increases, thereby establishing more *limited common property*, which needs to be managed.

5.2.1.1. Single management structure. At first glance, it looks as if this development is best suited to a two-tier management structure because it consists of two buildings and an underground car park. However, the development is organized in a single management structure. Because of the diversity in use, there is need for major allocation of rights and responsibilities in relation to the common property.

The main principal stated in the by-law says that each condominium

Table 2

Location, use type, total floor size of each condominium unit and owner type.

Unit No.	Location of unit	Use type	Total size (m ²)	Owner type
1	Building no. 2 ground floor	Office	1480	Social housing organization
2	Buildings no. 1 and 2 All floors above ground	Social housing (254 student apartments)	13,458	Social housing organization
3	Building no. 1 ground floor	Business (restaurant)	1493	Real estate rental company
4	Below ground, partly below building no. 2	car park (public parking)	3888	Real estate rental company

Table 3

Location, use type, total floor size of each condominium unit, and owner type.

Unit No.	Location of unit	Use type	Total size (m ²)	Owner type
1	Building nos. 1 and 2 on several different floors	Shopping centre	24,603	Real estate rental pension investment company
2	Building no. 1 on several of the top floors (lower half of the photo in Fig. 5).	Office	5413	Real estate rental company
3	Building no. 2 on several floors (upper half of the photo in Fig. 5).	Hotel	4769	Hotel
4	Building no. 2 on 3rd floor	Fitness centre	1820	Real estate rental pension investment company
5	Building no. 1 on 4 floors below ground.	car park (public parking)	27,405	Real estate rental pension investment company

unit is responsible for all expenses connected to the individual condominium unit. This also includes parts of the construction that would otherwise be considered as common parts. Below is a quotation from the by-law regarding the main principal:

“Regardless of the property’s conversion into condominiums, each member has the full external maintenance and renewal obligation of everything that only serves or is used by that member’s condominium, including for example internal and external access roads, elevators, technical installations, roof / roof constructions, climate screens, membranes / foundations, windows, doors, balconies and facades” [section 17.1 of the by-law].

The expression “*regardless of the conversion into condominiums...*” must be understood as: “we know the standard is that external maintenance is a common obligation, but in this case, we want to arrange it otherwise”. This illustrates how the benefit-all principal of the condominium law is re-arranged. Thus, the common parts have been allocated to one or a group of condominium units. The allocation of rights and responsibilities with respect to the common parts only appears in written form.

The location of each common part is not supported by a map in this case. Therefore, it is difficult to obtain a clear and complete understanding of the legal structure, and the actual right and/or responsibility of each condominium. There is a long list of allocated rights and responsibilities in the by-law. In the following, we only present a selection of allocations to provide a basis for understanding the level of detail and the use of limited common parts in a single management structure.

5.2.1.2. Limited common parts/property. Within the building, there are no commonly owned rooms, such as access halls or elevators. This is because these facilities all are located within the boundaries of the condominium. Thus, there is no need for such common facilities. Separate consumption meters are installed for each condominium unit, so there are no common expenses regarding water, heat, and electricity consumption. Expenses regarding outside lighting are the responsibility of condominiums no. 1 and 2, which also have exclusive ownership rights to the unbuilt part of the parcel. Thus, the non-built land is limited common property. The reality is that condominium unit nos. 1 and 2 own the land. Despite the fact that the land is officially registered as common property, this means that condominium nos. 1 and 2 are granted an exclusive right to build on and/or sell the right to build to a third party. However, condominium 4 (the underground car park) has

an exclusive right to use part of the land to establish an elevator and a staircase in connection with the car park.

The responsibility to maintain the roof and walls of each building rests with the condominium units located in each building. In the case of building no. 1, the expenses regarding the roof are divided between condominium nos. 2 and 3. However, responsibility for maintaining the vertical climate screen (the exterior of the outer wall) lies only with the condominium unit which it covers. An important detail concerning management is that the uniform appearance (meaning, e.g., the architectural look and color of the facade) of the building must remain intact and the association board must approve any maintenance. Thus, maintenance and renewal are coordinated by the owners' association. This is stipulated in the by-law in the form of a reciprocal agreement.

5.3. Case study 3 – Friis

Friis, shown in Fig. 5, is a non-residential mix of condominiums including a shopping centre, hotel, fitness centre and office space.

After its construction, this development was converted into a condominium property in 2009–2010. It includes five condominium units. Unit no. 1 includes a 24,604 m² shopping centre. Unit no. 2 includes 5413 m² of office space. Unit no. 3 includes a 4769 m² Hotel. Unit no. 4 includes a 1820 m² fitness centre and unit no. 5 includes a 27,405 m² underground car park.

5.3.1. Management structure – single management structure

This case has a single management structure. Common expenses are shared by the condominium units according to the co-ownership share unless a certain expense is specified in the by-law and allocated to one or a limited number of condominium units'.

5.3.1.1. Limited common parts/property. The owner of each

condominium unit is exclusively responsible for maintaining certain parts of common parts of the building. Such parts include the roof and outer walls (the facade) and common rooms in the buildings. The allocation of this obligation is based on the actual benefit/use that each condominium unit derives from a common part, instead of relying on the standard benefit-all principle. In this case, it is possible to view the allocation on a map of the development (the map is an appendix of the by-law). See Figs. 6 and 7.

Common expenses such as maintenance of the roof, outside of exterior walls (the building's facade) and common rooms such as staircases and elevators are divided between units 1–3. Lines that indicate who has responsibility for maintaining specific parts of the outer walls of the building and inner parts, such as stairs, escalators and technical rooms, are drawn on a map. Unit nos. 4 and 5 do not pay anything towards these limited common expenses except for the first 3 m of the facade from ground and up, which is regarded as common property and, thus, all units must pay a share of the expenses determined by a co-ownership share (see the dashed line in Fig. 7). This also includes maintaining and cleaning the outer areas such as the sidewalk, sweeping, clearing snow and salting.

The uniform appearance of the building (meaning, e.g., the architectural look and color of the facade) must remain intact so the association board must approve any maintenance. Thus, maintenance and renewal are coordinated by the owners' association. This is stipulated in the by-law in the form of a reciprocal agreement.

As explained, not all common parts are allocated to one condominium unit. Common parts that benefit more than one condominium unit are the responsibility of the owners' association. This includes technical installations, such as elevators and escalators, pipes, ventilation ducts, etc.

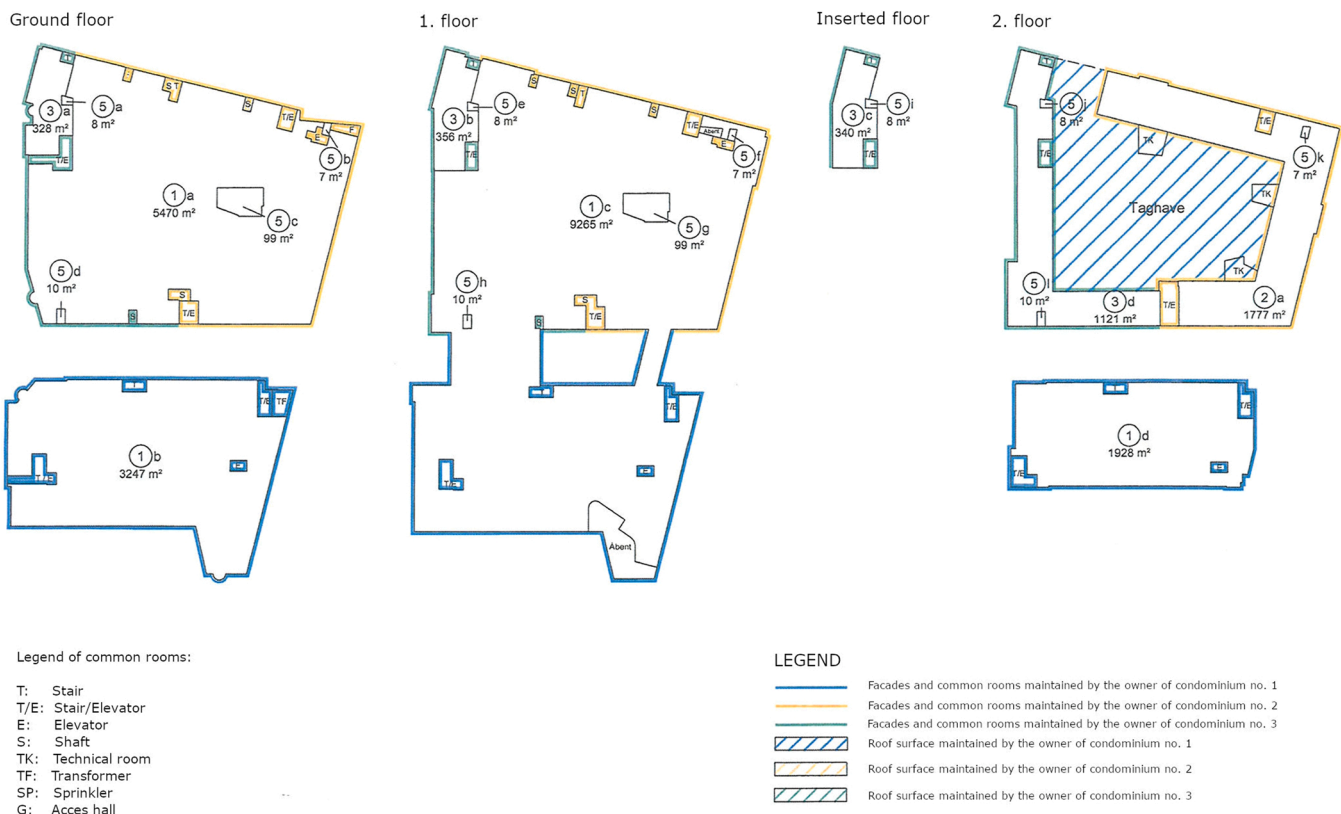


Fig. 6. horizontal map of the common parts of each floor of the building (walls and common rooms such as staircase and elevator). Responsibility to maintain is allocated to condominium units 1 (blue color), 2 (yellow) and 3 (green)
Source: Appendix 1 of the by-law.

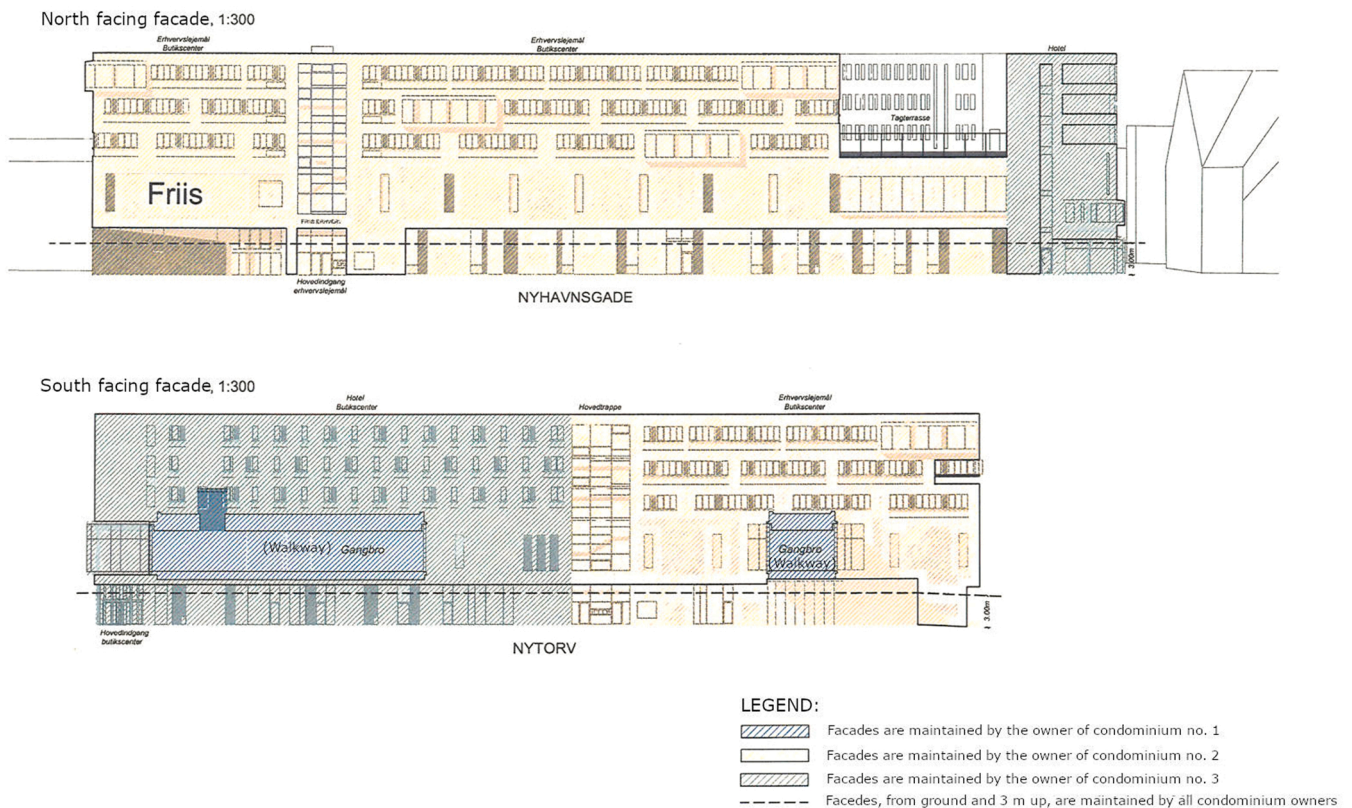


Fig. 7. vertical map of the building’s walls. A supplement to the horizontal map in order to generate a precise three-dimensional allocation of responsibility to maintain the building’s facade
Source: Appendix 2 of the by-law.

5.4. Case study 4 - North Power Plant

This power plant, see Fig. 8, has been transformed into a mix of cultural and recreational condominiums. The development includes 21

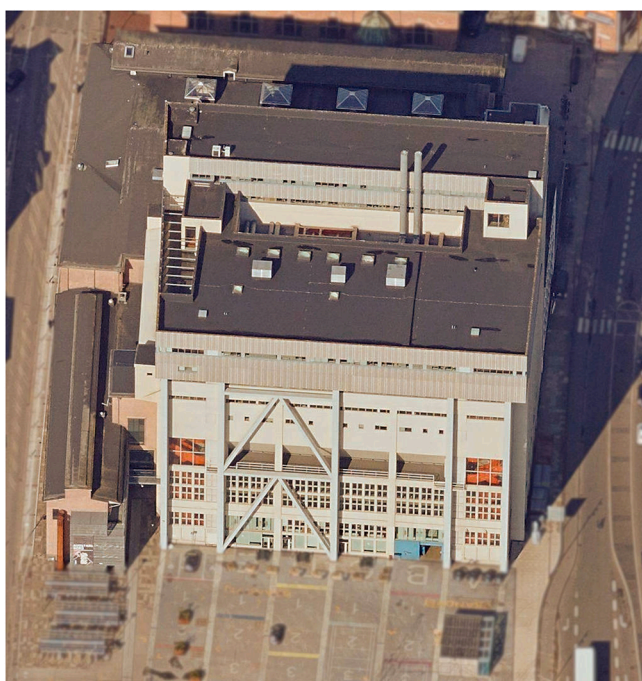


Fig. 8. A single management structure has been established in the old power plant including 21 non-residential condominiums. (SDFE, 2021).

condominiums. The owners include private investors, Aalborg Municipality, real estate rental companies and sports organizations. More specific condominium units are used as a concert hall, a theatre, a cinema, sports facilities, restaurants and university premises (see Table 4 for further information).

The development consists of 21 condominiums but only 7 are accounted for in the list. The purpose is only to give an idea of the mix of owners and use type and not to provide a full list.

The North Power Plant development was transformed into a multi-functional cultural centre as part of the ports transformation from industry to a center for cultural, commercial, and residential use.

In this case, it is interesting that a granted right (a right of way) is placed on part of the common property inside the building. This granted right permits the public to access and use certain parts of the building. In addition, the public have the right to use the outdoor facilities (also described in section 5.4.1 below).

5.4.1. Management structure

This condominium development has a single management structure. Despite various benefits that each condominium unit derives from the common parts, which in the three former cases led to the allocation of rights and responsibilities, no allocation to specific condominium units is in place. Thus, all condominium units pay a share of the common expenses, even if they derive no benefit from a specific common part (it follows the benefit-all principle). However, the right to use certain common parts is allocated to Aalborg Municipality (the owner of condominium units 1 and 7) along with certain veto power rights regarding the common property. The by-law is structured in such a way that the municipality must approve all decisions made at the general assembly regarding changes to the common property. The municipality must also approve all major changes related to the condominium scheme including the sale of part of the common property or any adjustments to

Table 4

Use type, total floor size of each condominium unit, and owner type. The development consists of 20 condominiums but only 7 are accounted for in the list. The purpose is only to give an idea of the mix of owners and use.

Unit No.	Location of unit	Use type	Total size (m ²)	Owner type
1,7	20 sub-units on 11 floors.	Sub-units are leased for business purposes. Size varies between 8 and 1213 m ² . The specific type of business varies.	6512 + 438	Municipality (Aalborg)
2, 4	13 sub-units on 4 floors.	Sub-units are leased for business purposes. Size varies between 91 and 1205 m ² . Use type is primarily music hall or accessory to music event organisation.	3632 + 549	Real estate rental commercial foundation (Fund Skråen in Nordkraft)
3	13 sub-units on 4 floors.	Sub-units are leased for sports purposes. Size varies between 7 and 1830 m ² . Used primarily for gymnastics and sports.	4986	Real estate rental commercial foundation (Danish Gymnastics and Sports Associations)
5	2 sub-units on 2 floors.	Business	380	Real estate investment rental company
6	1 unit on ground level	Business	128	Private ownership

the by-law. However, such decisions require a 2/3 majority at the general assembly. The municipality cannot make any decisions regarding major changes on the behalf of the owners. It only has a veto right to reject any decisions that hamper the intended use of the development as a cultural centre. For example, the municipality can veto against the other owners from changing the by-laws with 2/3 majority for allowing non-residential condominium units to be converted into residential condominium units.

In addition, to the rules in the by-law, there is a granted right, which stipulates that the common floor space in the building must be accessible to the public at all times. Moreover, the granted right stipulates that the municipality has the right to use the common floor space for events and to allow others to use it for events without having to seek permission from the owners' association. In addition, if any of the unit owners wish to use the common floor area for events, this must be approved by the municipality. The same principles apply to the outdoor area of the common property.

This case is special because the municipality has a major interest in keeping the building as a cultural centre. The owners' association must not be allowed to obstruct this in any way. The management structure is designed to support this and the by-law states that the owners' association must support this principle.

6. Discussion

The Danish condominium concept (apartment ownership) is not only used for housing condominiums. In Denmark, condominiums include many different types of use ranging from hotels to car parks, schools, institutions and investment properties for rent. Thus, in terms of use, the Danish condominium concept has many faces. In 1965, when the condominium law was drafted, it was expected that the condominium concept would be used to facilitate non-residential condominium units. However, the word "owner apartment" is closely related to housing. This indicates that the condominium law is primarily intended to facilitate

the creation of condominium units used for housing purposes. Perhaps this is also the reason that the condominium law was drafted primarily to be used in relation to simple high-rise buildings with housing apartments. Today, the condominium concept is used to convert all types of building structures, such as those including non-residential/business or a mix of residential and non-residential use.

We have identified confusion in the Danish typology. Perhaps it would have been a good idea to adopt the term "sectional title act" instead of "owner apartment act" – this would be a more accurate denotation because of the many faces a condominium represents today. With regards to terminology, it does not make sense that a shopping centre is denoted as an owner-apartment because it is not for residential use. However, one could argue that typology confusion is a minor challenge especially when considering how well the system is functioning despite this typology confusion. So, when we argue that the choice of wording indicates that the act is not designed to handle mixed-use building structures, we must respect that, despite this, it actually does handle such situations. Therefore, the question is not whether it is designed to handle mixed-use structures, but rather how well it handles such complex building structures and at what transaction costs.

The strength of the Danish condominium institution is related to the flexibility that allows allocation of various rights and responsibilities to the common property. The weakness is that without provisions and regulatory control the quality of the management structure varies depending on the experience level of the property advisor (a lawyer or land surveyor) and the developers' willingness to pay for the cost of establishing a high quality management structure. Moreover, it can be difficult to obtain a complete view of the management structure when information is found in different documents and registers, especially for a nonprofessional.

In other countries, such as the USA, amendments have been necessary in order to adjust legislation according to the higher complexity of large mixed-use developments. The Danish legislation represents a system of flexibility where it is up to the developer and the property advisor to create an effective management structure with fair allocation of rights and responsibilities to common parts. A recent revision of the Danish condominium law did not result in amendments adjusting the legislation according to the higher complexity of large mixed-use developments.

In response to Çağdaş et al. (2020), when allocating rights and responsibilities in mixed-use buildings, the size of the co-ownership share per se is not sufficient. Therefore, it is often reasonable to consider designating the common property as limited common property. Thereby, rights and responsibilities for a specific common part are allocated to one or a group of units but not all. Designating common property as limited common property will remove rights and responsibilities from some units to a specific common part and place them exclusively on the rightful users. This also includes considering various management structures such as a two-tier management structure or a linked management structure.

7. Conclusion

In the absence of provisions establishing a fair allocation of rights and responsibilities in mixed use developments in the Condominium Act, pragmatic solutions have been developed in practice.

Because the Danish condominium law does not support certain management structures in mixed-use developments, we propose that it can be regarded as a *first-generation* condominium act. However, in practice, it functions as a second-generation condominium act. In other words, the Danish condominium act has developed into a second-generation act based on a pragmatic approach adopted by lawyers, chartered surveyors and the Danish courts.

The co-ownership share only denotes a fraction of the possibilities for allocating rights and responsibilities in a condominium property. Various management structures must also be considered in each specific case in order to ensure the fair division of rights and common expenses

with regard to the common parts. This cannot be achieved in all developments simply by using the co-ownership share, which is the standard approach in first-generation condominium legislation.

Our research indicates that there is an imbalance between condominium legislation and the marketplace demands (a discrepancy between the condominium act and practice). By comparing law and practice, we have observed that since the condominium act was introduced in 1966 and mixed-use developments have become more widespread, real estate practitioners (Land surveyors and lawyers) have responded with diverse and sophisticated methods for designing legal structures in complex condominium developments that the law never intended to comprise. Real property practitioners have found creative solutions and standards for implementing various management structures for managing the relationship between the condominium owners and methods for allocating rights and restrictions to the common property. The condominium act was not drafted to cover mixed-use developments of the complexity that exists today. However, this has not been an obstacle to finding pragmatic solutions.

Our case study shows that the approach to allocate rights and responsibilities to common parts rests on pragmatic solutions that rearrange the standard legal structure facilitated by the Danish condominium act. Pragmatic solutions has been allowed to develop in practice as the condominium concept has evolved to take on many faces of non-residential use beyond what was considered by the legislators at the time the act was drafted. Mixed-use and complicated single-use structures require a customized management structure as the standard solution provided by act is not sufficient.

8. Future research

In general, both developers and real property practitioners seem to be satisfied working with the Danish condominium concept. However, detecting obstacles has not been the focus of this study, so this could be the subject of future research.

This study is mainly concerned with how things are done in practice and not how they should be done. Therefore, how to secure the most harmonious and desirable management structure in mixed-use developments could also be the subject of future research.

How to define if a condominium act is a 1st, 2nd, or 3rd generation act is not focussed upon in this paper and we have not identified any clear and comprehensive definition. Defining the characteristics of each generation is outside the scope of this paper, but such an endeavour could be the subject of future research.

As our research shows, the Danish condominium act has no provisions regarding official regulation of co-ownership shares. Therefore, the developer can decide the co-ownership share of each condominium unit, and set the legal structure. The quality of the developers' freedom to choose the co-owners share and legal structure has to our knowledge not been evaluated and could be subject for future research.

Without provisions in the condominium law addressing mixed-use developments it is not visible to the broader audience that two-tier governance is at all possible. We have no clear documentation to support this view but we believe that at least one consequence is that the quality of the management structure depends explicitly on who is assigned as advisor by the developer. A more experienced advisor can design a proper management structure of high quality while the less experienced adviser may not be able to. However, it will require more case studies to examine and conclude if this is the case, but from the case studies we conducted we have observed that at least in one case (North Power Plant) limited common property was not designated even though the case showed that specific common parts was used only by a limited number of condominium units.

9. Summary

The Danish condominium concept is traditionally associated with

apartment ownership for residential purposes (individually owned by the resident). The condominium law (translates into: "Law of owner apartments" from Danish) was primarily intended to support the housing market by introducing apartment ownership as an alternative to investing in a (often more expensive) traditional house on a real property. However, the law also applies to non-residential rooms in buildings used for a variety of purposes. Thus, these authors believe that the expression "many faces of condominiums" is appropriate to use regarding the Danish condominium concept. The ownership right to a condominium unit includes a share of all parts of the *common property*. This includes a responsibility to pay for the maintenance of these common parts. In traditional high-rise single-use buildings, the common parts of the condominium property include, inter alia, the outer walls, roof, cellar and the staircase or the elevator. The nature of a single-use building legitimizes all owners of condominium units to derive equal benefit from the common parts. Thus, it is reasonable that all owners of condominium units should pay for a proportion of the shared expenses. The condominium law is designed to support what can be expressed as a "benefit-all principle". The allocation of rights and responsibilities is determined mainly by using a co-ownership share, whereby the share of each condominium unit is calculated according to its relative value and size. The *benefit-all principle* does not consider the actual benefit/use each condominium unit derives from the common property. However, the rise of mixed-use developments in Danish cities and, in general, more complex building structures has made it necessary to further develop and customize the allocation of ownership rights. In mixed-use condominium schemes, the allocation of ownership rights and responsibilities for common parts must be specified because condominium units derive different benefits and have varying interests with respect to the common parts.

Based on four case studies, all of which represent mixed-use condominium developments, we analyse various management structures used in Danish practice. Our research indicates that the condominium property concept is used to a greater extent than originally intended in Denmark in terms of various non-residential and mixed-use developments. The effect of this is the emergence of more complicated legal structures in condominium schemes, which require a customized management structure and the allocation of rights and responsibilities to common parts.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

Acknowledgements

This work was supported by Innovation Fund Denmark, grant ID: 9065-00281B and LE34, land surveying company.

References

- Blok, P., 1982, "Ejerlejligheder" [Owner Apartments] [in Danish] (2. revised and extended edition). Juristforbundet. Copenhagen.
- Blok, P., 1995, "Ejerlejligheder" [Owner Apartments] [in Danish] (3. Revised and extended edition). Jurist-og Økonomforbundet, Copenhagen.
- Çağdaş, V., Paasch, J.M., Paulsson, J., Ploeger, H., Kara, A., 2020. Co-ownership shares in condominium - A comparative analysis for selected civil law jurisdictions. *Land Use Policy* 95.
- CN, 1804, Code Napoleon. French Civil Code. March 21, 1804. With later amendments. Danish Parliament, 1966, Lov om ejerlejligheder [Law on owner apartments] [in Danish]. June 8th 1966. No. 199. The Danish Parliament. (<https://www.folketingstidende.dk/samling/19651/lovforslag/L58/index.htm>).

- Danish Parliament, 2020a, Lov om ejerlejligheder [Law on owner apartments] [in Danish] June 18th 2020. No. 908. The Danish Parliament.
- Danish Parliament, 2020b, Bekendtgørelse om registrering af ejerlejligheder og notering af bygning på fremmed grund i matriklen [Executive order on registration of owner apartments and listing of building on foreign land in the land register] [In Danish] December 09th 2020. No. 1893. The Danish Parliament.
- Danish Parliament, 2020c, Bekendtgørelse om normalvedtægt for ejerforeninger [Executive order on standard by-law of for owner associations] [In Danish] November 29th 2020. No. 1738. The Danish Parliament.
- Döner, F., 2021. Analysis of literature on 3D cadastre. *Int. J. Eng. Geosci.* 2021 (6), 90–97.
- Indrajit, A., Ploeger, H., van Loenen, B., van Oosterom, P. (2018). Designing Open Spatial Information Infrastructure To Support 3D Urban Planning In Jakarta Smart City. Proceedings 6th International Workshop on 3D Cadastres, 2018, Delft.
- Krigsholm, P., Riekkinen, K., Stähle, P., 2018. The changing uses of cadastral information: a user-driven case study. *Land Vol 7* (Issue 3), 2018.
- Lundquist, J.B., 1984. Mixed use condominiums under the Minnesota uniform condominium act. *Wm. Mitchell L. Rev.* 10, 97.
- Madsen, M.D., Paasch, J.M., Sørensen, E.M. (2021). Danish Urban and 3D Property Design. Proceedings FIG Working Week 2021. Amsterdam, the Netherlands. International Federation of Surveyors (FIG), Copenhagen, Denmark.
- Moriarty, M.J., 1973. "A comparison of United States and foreign condominiums". *John'S. L. Rev.* vol. 48, 1011–1027.
- Owner Apartment Committee, 1965, "Betænkning angående ejerlejligheder m.v." (Report on owner apartments) [in Danish]: submitted for publication by the committee set up by the Ministry of Housing's letter of 18 April 1963, Statens Trykningskontor, Copenhagen. (<https://www.xn-betnkninger-c9a.dk/wp-content/uploads/2021/02/395.pdf>).
- Owner Apartment Committee, 2018, "Rapport fra udvalg om ejerlejlighedsloven" (Report on owner apartments) [in Danish]: submitted for publication by the committee set up by the Danish Parliament in June 2016 to modernize the owner apartment law. (<https://erhvervsstyrelsen.dk/sites/default/files/2019-04/Rapport-Udvalg-om-ejerlejlighedsloven-Erhvervsstyrelsen2018.pdf>).
- Paasch, J.M., Paulsson, J., 2021, 3D property research from a legal perspective revisited. *LAND Special issue 3D cadaster.* MDPI.
- Paulsson, J., 2007, 3D Property Rights – An Analysis of Key Factors Based on International Experience. Doctoral thesis. KTH Royal Institute of Technology, Stockholm.
- Paulsson, J. and Paasch, J.M., 2011, 3D Property Research – a survey of the occurrence of legal topics in publications. Proceedings of the 2nd International Workshop on 3D Cadastres, Delft, the Netherlands, 16–18 November, 2011 (pp. 1–14). International Federation of Surveyors (FIG), Copenhagen, Denmark.
- Paulsson, J., Paasch, J.M., 2013. 3D property research from a legal perspective. *Comput., Environ. Urban Syst., Spec. Issue 3D Cadastres II Volume 40*, 7–13. July 2013.
- Rohan, P.J., 1978. "The "Model Condominium Code"—A Blueprint for Modernizing Condominium Legislation". *Columbia Law Rev.* vol. 78 (3), 587–608.
- SDFE, 2021, Styrelsen for Dataforsyning og Effektivisering [The Danish Agency for Data Supply and Efficiency] [In Danish] (<https://sdfe.dk/data-skaber-vaerdi/nyheder/nyhedsarkiv/2018/sep/nu-kan-du-se-danmark-paa-skraa>).
- Shen, Q. and Sun, F., 2020, "What Makes Mixed-Use Development Economically Desirable?" *Lincoln Institute of Land Policy.*
- Stokes, J.R., 1982. "Commercial condominiums: statutory roadblocks to development". *Univ. Fla. law Rev.* vol. 34 (3), 432–462.
- Sun, J., Paulsson, J., 2020, A BIM-based Approach for Swedish 3D Cadastral Management. Proceedings FIG Working Week 2020. International Federation of Surveyors, FIG:
- Sørensen, E.M., 2011, "3 Dimensional Property Rights in Denmark 3D Property Design and Registration is Working – Visualization not". Proceedings International Workshop on 3D Cadastres 16–18 November 2011, Delft, the Netherlands. FIG joint commission 3 and 7 Working Group on 3D Cadastres. (http://www.gdmc.nl/3dcadastres/literature/3Dcad_2011_41.pdf).
- Sørensen, E.M., 2018, "En blomst i boliglovgivningens labyrinthe [A Flower in the Maze Garden of Building Legislations.] [in Danish] *Landinspektøren*, 5(60), 26–30. http://ddl.berighthere.dk/sites/default/files/ddl/files/Landinspek_5_2018_net_1.pdf.
- Tekavec, J., Ferlan, M., Lisec, A., 2018. A Review of Research on 3D Real Property Cadastre. *Geod. Vestn.* 2018 (62), 249–278.
- United Nations (UN), 2021, "Sustainable Development Goals" (SDG) (<https://sdgs.un.org/goals>).
- Van der Merwe, C.G., Paddock, G., 2008. "Two-tier governance for mixed-use and large-scale sectional title schemes". *South Afr. Law J.* vol. 125 (3), 573–591.
- Van der Merwe, C. G., 2015. *European Condominium Law.* Cambridge University Press.
- Van der Merwe, C., 2016. European condominium law: nine key choices. *Private Communities and Urban Governance.* Springer International Publishing,, pp. 127–149. https://doi.org/10.1007/978-3-319-33210-9_6.
- Van C.G., der Merwe, 2018. "Comparative survey of the legal challenges faced by mixed-use sectional title (condominium) developments". *Tydskr. Vir. die Suid-Afrik. Reg.* vol. 2018 (1), 36–51.