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Intensifying Building Use: Barriers and Enablers to Space Sharing in the Cities of Amsterdam and Malmö

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Keywords: Building industry; circular economy; intensifying loops; urban governance; sharing economy.

Abstract: Circular economy in the building industry has gained much attention in recent years, yet thus far, little research has been conducted on the topic of intensified building use, despite its great potential in terms of emission reduction. One way to intensify building use can be by sharing spaces among different users at different times. This study explores how the cities of Amsterdam and Malmö enable space sharing and identifies relevant barriers. It finds that the two municipalities currently enable space sharing either as a space owner, or as a third party by subsidising, mediating, or leveraging land allocation processes. Further, it shows that the municipalities' involvement occurs at two stages: the space provision, i.e., ensuring the availability of a space to be shared, or the operation of the sharing, i.e., supporting the administrative and organisational processes required for the space sharing. Two levels of barriers are identified: direct barriers to space sharing itself, referred to as "first level barriers", and barriers that specifically affect the municipalities when trying to enable space sharing, referred to as "second level barriers". First level barriers are: compatibility issues between users, concerns regarding damage and liability, discomfort of users, and financial cost. Second level barriers are: lack of knowledge, perceived lack of available instruments, avoiding preferential treatment, and administrative structures with regards to building ownership. The study concludes that there is potential to further encourage space sharing by investing more in the operation of shared spaces, by investigating sharing among different users and using different enabling tools, and by leveraging the municipalities' own usage of buildings better.

Introduction

The large environmental impact of the building industry relating to greenhouse gas (GHG) emissions, material consumption, and waste streams, as well as the need to reduce this impact are well established (United Nations Environmental Programme, 2021). In this context, the currently predominant linear model of "take, make, dispose" (Ellen MacArthur Foundation, 2015) has been scrutinised, and shifting to a circular economy (CE) is considered crucial to reduce environmental impacts in the building industry (Benachio et al., 2020). Correspondingly, understanding and implementing CE in the building industry has been of growing interest for academia, policy, and industry in recent years (see e.g., Benachio et al., 2020; Ghisellini et al., 2018; Munaro et al., 2020; Norouzi et al., 2021). However, most of the research and work on circular building has focused on CE strategies of *closing loops*, such as recycling and reuse, *narrowing loops* through more efficient resource use, and

slowing loops by extending the lifetime of buildings through renovation, refurbishment, or retrofitting. Considerably less research has been conducted on *intensifying loops*, despite the fact that a more intense use phase has been shown to have one of the greatest potentials for GHG reduction among different CE strategies in the building industry (Cabrera Serrenho et al., 2019; Hertwich et al., 2020; Zhong et al., 2021).

Intensified use allows for the same user demand being fulfilled with fewer products (Geissdoerfer et al., 2018). In the context of the building industry, this would ultimately translate to the same space functions being fulfilled with overall less floor area per person. Intensified use appears to be promising, as it is a consumption-based approach (Zhong et al., 2021), and thus a powerful lever to reduce material demand. Further, in contrast to some other CE strategies, it does not lead to a trade-off between emission reductions in the use phase and in the production phase of the

building, as reducing floor area might rather reduce operational emissions (Harris et al., 2021; Zhong et al., 2021).

One way of intensifying building use is through the sharing of spaces. Literature on sharing spaces has thus far mostly focused on vacation rental platforms, such as Airbnb, and co-working spaces (Harris et al., 2021). Only a few have approached the topic with a wider scope (Brinkø et al., 2015; Lundgren et al., 2022), and little is known about the public governance aspects and how such sharing could be encouraged. However, this is needed to inform local and national policy to enable and drive sustainable space sharing. Municipalities in particular are important actors here, as they have both a strong interest in balancing a growing population with climate goals and limited spatial and financial resources, as well as a major influence in steering and governing sharing activities (Palgan et al., 2021).

To contribute to knowledge in this area, this paper explores the ways in which the municipalities of Malmö and Amsterdam are engaging with the topic of sharing spaces. To this end, it studies the types of involvement of the municipalities in this context and briefly identifies relevant barriers. It focuses on physical indoor spaces (i.e., excluding virtual

and outdoor spaces) that are used by different users at different times (i.e., serial use).

Methods

Since space sharing, especially from an urban perspective, has not been the focus of much research, this study follows a qualitative exploratory case study approach to describe and develop a better understanding of the topic. The cities of Amsterdam and Malmö have been chosen due to their strong engagement with topics such as sharing economy (SE) and CE in the building industry, and ambitious national and local targets. Data was collected by the means of qualitative semi-structured interviews (n=12) and desktop research to complement information on the space sharing practices. Interviews were conducted with members of the two municipalities (Amsterdam: n=6, Malmö: n=4), and experts (n=2) from practice and academia. The respondents were from different departments of the municipalities (see Table 1) and the interviews focused on their knowledge of involvement in space sharing practices, as well as the barriers respondents perceived.

The data for this paper were collected as part of a master's thesis at the IIIEE, Lund University with co-supervision from the Swedish Environmental Research Institute IVL (Leyvraz, 2023). More extensive findings, as well as a

Ref.	Group	Department/Organisation	Role/Title
A1	City of Amsterdam	Project management office, Amsterdam Southeast	Project manager urban development
A2	City of Amsterdam	Built environment Amsterdam Southeast	Programme manager sustainability and innovation
A3	City of Amsterdam	Arts & Culture	Process manager
A4	City of Amsterdam	Municipal Real Estate	Project manager
A5	City of Amsterdam	Arts and Culture, Amsterdam Southeast	Department manager
A6	City of Amsterdam	Project management office, Ground and Development	Project manager urban planning
M1	City of Malmö	Environmental Department	Researcher & Sustainability Strategist
M2	City of Malmö	Planning Department, part of City Planning Office	Landscape Architect
M3	City of Malmö	City Real Estate Office, part of Service Administration	Sustainability Strategist
M4	City of Malmö	City Planning Office	Spatial Planner
E1	Expert	Vakansa, n/a	Founder
E2	Expert	Lund University, LTH	Researcher

Table 1. List of Respondents by Group, Department/Organisation, Role/Title.

discussion of contextual factors and relevant theory, can be found in the thesis.

Findings and Discussion

Municipalities' Enabling of Space Sharing

The respondents described different examples of shared spaces in which their municipalities were involved. Most of the examples were spaces provided for non-profit organisations, actors from the creative industries and the local community, such as neighbourhood centres, arts and culture centres, and incubation spaces for young entrepreneurs or artists. There were a few exceptions of shared spaces for commercial users that the municipalities were involved in less indirectly, as described in more detail below.

Various types of involvement with these shared spaces were identified, which depended largely on whether the municipalities were involved directly as the owner of the space, or more indirectly as a third party. As a third party, the municipalities were found to engage with space sharing in the following ways: by subsidising, by mediating between different actors, or by leveraging land allocation processes. Subsidies are employed both to support the rent of a shared space or to task an organisation to operate a shared space. For instance, the Amsterdam municipality provides subsidies for the rent of buildings to host shared neighbourhood centres (A1-A5). One respondent also spoke about providing subsidies to developers for the construction of

buildings that would be shared among local businesses (A6). Further, the Amsterdam municipality also provides subsidies to organisations that are operating shared spaces, acting as a coordinator between space owners and various space users (A1-A5).

Mediating between different actors was another way in which the municipalities enabled shared spaces. For instance, the Amsterdam municipality has acted as a mediator between real estate owners and organisations that are interested in co-using a vacated building (A5). By backing the co-users, the municipality provides a guarantee to the real estate owner, and thereby supports the provision of space for sharing. Similarly, a respondent from Amsterdam spoke about the possibility for the municipality to act as a mediator between different potential space users, and help with setting up contracts (A3). In this way, the municipality can address reservations that users have with regards to safety and liability issues when sharing a space with other users. Finally, there were some examples in which the municipalities also leverage land allocation and planning processes to encourage developers to create shared spaces. An example from Malmö was the inclusion of social and environmental sustainability aspects in a land allocation tender, which led to the selection of a development project with different aspects of space sharing (M1, M4, E2). While the influence of the land allocation tender is limited, and an important role was played by the developer taking up and

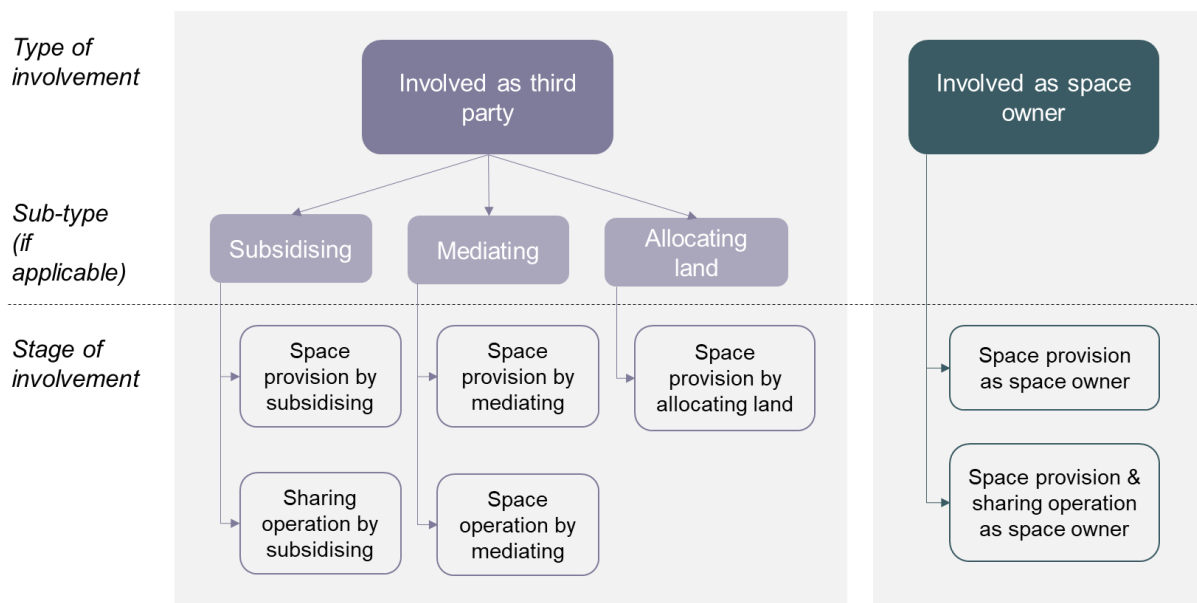


Figure 1. Types and Stages of Involvement of the Municipalities in Space Sharing.

working with these sustainability aspects, there seems to be potential to select more sustainability-oriented developers and encourage space efficiency (M4, E2). Similar examples from Amsterdam show that land allocation tenders can be combined with mediation or subsidies to ensure that shared spaces are created with the needs of future co-users in mind (A5-6). Notable here is the planned construction of shared buildings for local businesses briefly mentioned above. The municipality's aim with this is to create affordable spaces for businesses that are valuable for the local economy, but due to increased rents after renovations cannot afford their previous premises anymore (A5). Hence, the municipality put out a tender for shared spaces for businesses with reduced rent, which will then be subsidised by the municipality (A5). Using a tender and a private developer executing the project, the municipality is able to circumvent issues of preferential treatment.

As a space owner, the municipalities' engagement with the shared space is more direct, in that it is a space from the municipality that is being shared. Nonetheless, there were different settings as to how such spaces were operated. There were a few examples from Amsterdam where the municipality had relatively little involvement aside from being the space owner, and the operation and administration is managed by the users or another organisation. This is the case for many incubator spaces, which are run by independent organisations in buildings provided by the municipality, also including vacated buildings no longer used for their intended purpose (A1). However, some shared spaces provided in this manner might also be run by the municipality directly, as is the case for some of the neighbourhood centres (A1). Yet another setting was spaces that the municipalities were using themselves and sharing with others, the main example here being schools and gym halls mentioned by respondents from both Amsterdam and Malmö (A1, A4, M1-2, M4). In Malmö, certain schools are working as neighbourhood centres after school hours, with different community organisations offering activities there (M1).

Aside from the distinction between the different tools available to the municipalities either as space owner or third party, it can also be observed that the municipalities' involvement occurs at two stages: the space provision or the operation of the sharing. That is, the

municipalities' involvements were either ensuring the availability of a space to be shared, for instance by subsidising rent, by mediating between space owners and potential users or use land allocation tenders to push for the construction of shared space, or by providing its own space to be shared. Or, they were supporting the operation of the shared space, that is, all the required coordination and administration, for instance by subsidising an organisation to do this work, by mediating between different users, or by operating the space itself. As a space owner, evidently, the municipality is always engaged in space provision, whereas as a third party, it might also be engaged in space operation only (see Figure 1). In general, there was a stronger focus on space provision than on sharing operation.

Barriers and Discussion

The barriers that respondents perceived as preventing or rendering it difficult for the municipality to engage in space sharing could be classified in two categories: direct barriers to space sharing itself, referred to as "first level barriers" here, and barriers that specifically affect the municipalities when trying to enable space sharing, referred to as "second level barriers" (see Figure 2 for an overview of enablers and barriers). The first level barriers brought up by the respondents are related to compatibility issues and conflicts between users, concerns regarding damage and liability, a certain discomfort amongst users to have to share the space, and finally, financial cost occurring when attempting to mitigate these. It is interesting to note that these barriers correspond largely to barriers that have been identified in a broader context of the SE as well (Spindeldreher et al., 2019), and might be considered relatively common barriers to sharing.

Second level barriers are barriers that respondents perceived specifically from the perspective of the municipality engaging with space sharing and how it could enable space sharing. First, respondents perceived that it was outside of the municipality's power or responsibility to promote space sharing, mainly since they felt they lacked the appropriate instruments (A1-2, A6, M1, M4). Second, the kinds of space sharing initiatives that the municipality is able to engage with was perceived as limited due to the risk of practicing preferential treatment when supporting initiatives that involve companies (A1-2, A6,

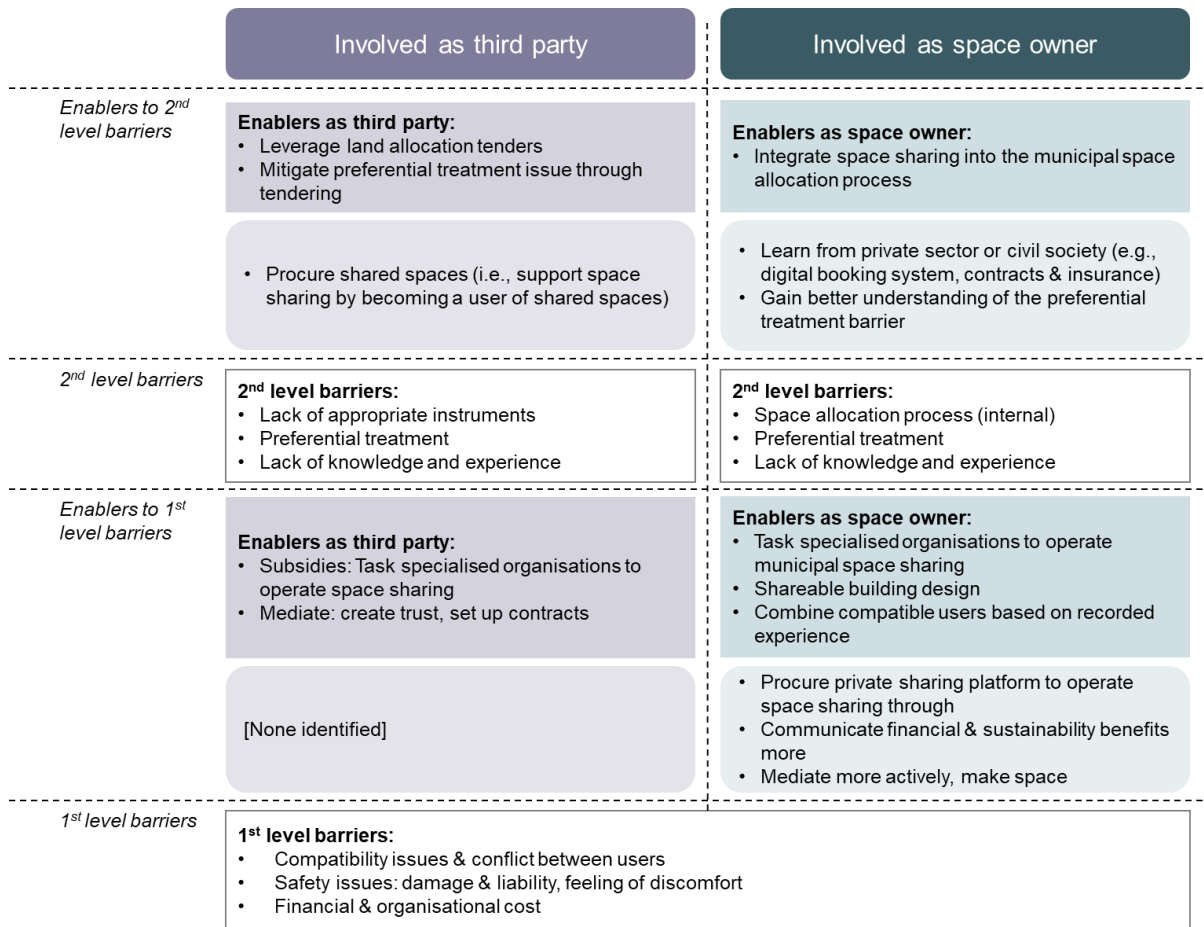


Figure 2. Overview of Enablers and Barriers (Potential Enablers are in Lighter Colour).

M1). Third, for the municipalities as space owners, their administrative structure with regards to space allocation processes and building ownership was said to be an obstacle in some instances, as the decision to share the building would not be up to a centralised department (A3, M3). Finally, respondents overall expressed a lack of knowledge and uncertainty regarding space sharing and its potential, unsure about its feasibility and long-term viability (A4, A6, M1-3). These second level barriers appear to be strongly interrelated, and also enhanced by the perception of the first level barriers. They might also be understood from a perspective of risk aversion on the side of the municipalities, considering how space sharing requires novel ways of thinking and behaving. Risk aversion is a common barrier in the context of implementing CE, and is strongly associated with lack of information and uncertainty (Wijayasundara et al., 2022).

An underlying theme in the municipality respondents' interviews, which was made explicit by the expert interviewees, was how the

perception of space as a resource may hinder space sharing. First, space is considered a static and inflexible resource; a paradigm that is difficult to reconcile with the concept of space sharing. Second, there appears to be a lack of awareness of the environmental impact of space inefficiency, or, that is, of the potential of space efficiency when it comes to decreasing the environmental impact of the building sector. Therefore, increasing space efficiency might not be a priority.

Conclusions

The findings show that both the municipalities of Amsterdam and Malmö engage with and to some extent encourage space sharing in various ways, both as a space owner and as third party. Nonetheless, there seems to be great potential to further expand this in the following ways. First, a greater focus on active operation of shared spaces could help overcome first level barriers. Currently, the purpose of many of the shared spaces that the municipalities are involved with is to provide

affordable space to different groups. Due to this, there has been a strong focus mostly on supporting space provision. In this context, transferring knowledge from other types of sharing activities, as well as private sector and civil society space sharing models might be valuable, as the first level barriers identified here are similar to barriers found in other contexts of sharing.

Second, knowledge could be expanded on different types of sharing and different tools to encourage sharing. It could be beneficial to investigate more cross-sectoral space sharing solutions, as a more diverse pool of space users could be helpful in finding compatible space needs. Further, developing knowledge on other governance tools than subsidies, such as mediating or matchmaking, could be valuable in facilitating space sharing. Similarly, there is great potential to better include space sharing or space efficiency in land allocation tenders.

Third, as large real estate owners and users, the municipalities could not only improve the use of their own building stock through sharing, but also lead the way by engaging in space sharing as a user (without owning). Here, a more centralised space allocation process within the municipalities might allow for more sharing, as there is a better overview and coordinated management of the spaces, as well more potential for creating institutional knowledge.

Finally, space efficiency overall needs to be better addressed in urban, national, and international policies, as only clear policy ambitions and measurable targets will create enough incentives for holistic change. Scientific findings stress the importance of consumption-based approaches, such as space efficiency and sufficiency, which highlights that current efforts merely focusing on strategies such as recycling and reuse are not enough to achieve the necessary impact reduction.

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