Implementing housing policies for a sufficient lifestyle

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ABSTRACT
The German buildings sector is currently facing a double challenge: meeting emission reduction targets and providing affordable housing in rapidly growing cities. Living space per person has a major impact on household energy consumption and it has increased significantly in recent decades. New construction increases the demand for often energy-intensive building materials, and energy demand during the use phase of buildings is positively related to the size of the space. Optimising the allocation of living space therefore offers great potential for addressing both challenges. Sufficiency policies such as flat exchanges, a financial bonus for moving and the provision of moving advice aim to reduce the total floor area in the housing sector by using existing space more efficiently. However, the effectiveness of such measures is not yet fully understood. As the sufficiency approach relies heavily on individual choices, residents’ involvement, perception and acceptance are crucial for the success of such measures. An investigation in selected German housing companies shows that the potential of these measures is not fully exploited under the current political and social framework in Germany. Social acceptance, new norms and business models for landlords are needed for the effective use of these measures.

POLICY RELEVANCE
How effective is the implementation of sufficiency measures for space utilisation in the German rental housing sector? The success factors and limiting barriers of the measures along with the acceptability and effectiveness of these measures are investigated by interviewing housing companies (some of them social housing providers) that have the potential to implement such policies in their housing stock. Improvements are needed in the social and technical infrastructure to increase the effectiveness of the measures. Raising awareness, rethinking communications and designing effective financial incentives are recommended to make the measures attractive to the public. Involving all stakeholders, keeping the issue on the political agenda and engaging in dialogue with policymakers are considered effective steps in the process of achieving space sufficiency in the housing sector.

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1. INTRODUCTION

Human wellbeing is already threatened by climate change, and will be increasingly so in the future (Gough 2020). Achieving the goal of keeping global warming well below 2°C, as part of the legally binding United Nations' Paris Agreement, requires rapid and deep cuts in greenhouse gas emissions. The latest report of the Intergovernmental Panel on Climate Change (IPCC) states that much additional effort will be needed to achieve the climate goals (IPCC 2022). The main drivers of climate change are increasing total and per capita consumption of energy, land and other resources, which pose concrete challenges to global and local environmental sustainability. This trend is the result of global urban development, characterised in its structure, institutions, and household behaviour and trends such as sprawl, spread, expansion of large technical systems and growing populations (Jin 2017). Previous studies have linked energy consumption to human wellbeing (Burke 2020). For instance, a recent meta-analysis investigated the threshold of rising energy consumption beyond which it no longer correlates with increasing human wellbeing. Overall, the results suggest that European energy consumption has reached such a threshold where increased consumption no longer implies increased wellbeing (Gynther 2021).

The German buildings sector fails to meet its environmental targets (Umweltbundesamt 2020). It is responsible for high resource consumption, typically accounting for 30% of the country’s final energy demand (Dena 2019) and 14% of total energy-related emissions (Sach et al. 2021). To achieve climate neutrality in the buildings sector by 2045, a goal set by the German government (Federal Climate Change Act 2021), CO2-equivalent emissions must be reduced by 8.57 million tonnes annually from 2022 (Breidenbach et al. 2021). Energy use in the buildings sector includes the energy required to construct and operate buildings, which depends on factors such as the need for new buildings, room temperatures or the size of the heated space.

Ellsworth-Krebs (2020) argues that the size of houses is the most important determinant of household energy consumption, and hence the global increase in per capita floor space is a problematic trend. Bierwirth & Thomas (2019) estimate that the available savings from reducing the current per capita living space in Germany from 46.6 to 35.0 to 30.0 m² would result in a theoretical saving potential of 378,547–541,361 TJ, representing a reduction in space heating energy of 24.9–35.7%.

Over time, many techno-economic measures have been implemented to improve energy efficiency, such as the thermal building regulation, resulting in increased energy efficiency and reduced energy consumption of buildings. However, measures that address the human desire to consume more are scarce, and summarised under ‘sufficiency policies’. Sufficiency policies are:

a set of measures and daily practices that avoid demand for energy, materials, land and water while delivering human wellbeing for all within planetary boundaries.

(IPCC 2022: 63)

The concept of sufficiency is based on the idea that there is a point of enough consumption where human needs are met and that this point should not be exceeded (Princen 2005). Sufficiency in the buildings sector not only decreases emissions but also positively influences many dimensions of wellbeing and sustainable development such as health, social cohesion and economic sustainability (Wronski 2023; Hayden & Dasilva 2022).

In addition to the long-known environmental impacts, there are several social issues in the housing sector related to the availability of adequate living space and energy costs. First, there is a mismatch in the housing market, with people living in dwellings that they perceive as too large (Gavrili 2019), while young families urgently seek larger dwellings (Breidenbach et al. 2021). In 2018, only 47.4% of households in German metropolitan areas had access to suitable large and affordable housing, and 34.5% of this shortage could be solved by an optimal distribution of existing housing (Holm et al. 2021). Second, rising gas prices, which are a burden on households (BDEW 2022), make it even more urgent to reduce the use of gas, which accounts for 44.3% of space heating in Germany based on 2019 data (Statista 2021). While 8.1% of the German population was unable to heat their homes adequately due to energy poverty in 2023 (Eurostat
2023), this figure is expected to rise with energy prices, putting an increasing number of German households at risk of being affected by rising energy prices. This underlines the importance of reducing household energy consumption (Breidenbach et al. 2021).

While Germany has set a target of less than 30 ha of new soil sealing per day (Deutscher Bundestag 2021), 400,000 new homes are to be built each year to meet the need for affordable housing in many German cities. Currently, sealed area for housing and transport is the fastest growing land use in Germany, increasing by 18.1% (7964 additional km²) between 2000 and 2022 (Umweltbundesamt 2024b). This is associated with negative impacts such as loss of agricultural land, fragmentation of wildlife habitats, material and energy consumption for construction and maintenance of additional buildings and infrastructure, increased traffic with higher fuel consumption, and increased pollutants and noise (Umweltbundesamt 2024a). Intensifying the use of existing buildings and sealed land in built-up areas is one way to meet the demand for new housing in growing regions while reducing pressure on currently undeveloped areas. This can be achieved by making better use of existing densification potential in urban areas (Breidenbach et al. 2021).

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Increasing urbanisation is leading to regional imbalances in the availability of living space. Specifically, some regions have a structural housing shortage, while others have many vacant dwellings. In Germany, the average living space per person has increased from 14.0 m² in 1950 (Friedrich-Ebert-Stiftung 1997) and 34.8 m² in 1990 (iwd 2020) to 47.4 m² in 2021 (Umweltbundesamt 2023b). If this trend continues, living space per person will reach 52.0 m² by 2030 (iwd 2020). There are many reasons for this development, such as the increasing number of one- and two-person households, the lack of small dwellings (Friedrich-Ebert-Stiftung 1997) and the remanence effect. In 2022, around three-fourths of German households consisted of only one person (41%) or two persons (34%) (Umweltbundesamt 2023a). One- and two-person households have a higher per capita living space than larger households (Umweltbundesamt 2023b). The figures for 2018 are 68 m² for one-person households, 49 m² for two-person households and 33 m² for households with three or more persons. While there were around 17 million one-person households in Germany in 2022, only 2.5 million dwellings were smaller than 40 m² (Destatis 2024). In 2021, the average size of newly built dwellings was around 74 m² in multi-family houses and 145 m² in single-family houses (Destatis 2021). The remanence effect describes the tendency of shrinking families to remain in their large dwellings (Umweltbundesamt 2023b). This means that older people often live alone in (possibly non-accessible) oversized flats, which can lead to problems in the housing market, especially in dense residential areas (Fischer et al. 2016). A total of 20–50% of older people with a per capita living space of over 80 m² feel that their living space is too large (Kenkmann et al. 2019). However, the cost of moving (Kenkmann et al. 2019) and rising rents may make it financially attractive for them to stay in their large homes (Gavrilis 2019).

The great potential and importance of well-designed energy sufficiency policies for achieving climate and sustainability goals has been recognised by the IPCC (2022), Faber et al. (2012) and Samadi et al. (2017). However, they are rarely considered as an option for achieving climate goals of the European Union member states (Zell-Ziegler et al. 2021). Sufficiency is often perceived as complex (Zell-Ziegler & Förster 2018), especially compared with technical emission-reduction options such as efficiency and renewable energy policies. Furthermore, the impacts, feasibility and acceptability of sufficiency policies have not been fully explored. In particular, as they rely directly on individual choices, the social perspective plays an important role. Thus, policymakers and citizens still lack guidance to make informed choices for sufficiency policies, despite a growing scientific base (Akenji et al. 2019; Creutzig et al. 2022; Vita et al. 2019).

Against this background, this paper investigates the effectiveness of such policies in optimising the use of living space (Figure 1). It focuses on selected policies from the Sufficiency Policy Database (Best et al. 2022) that directly address residential space use, and examines their perceptions and acceptability, as well as their limiting barriers and success factors, through qualitative analysis of semi-structured interviews with selected German housing companies. The study explores the lessons that can be learnt for better policy design in the housing sector.
2. METHODS

2.1 CONTEXT

More than half of German households live in rented accommodation (Eurostat 2021) and more than a third of rental housing is owned and managed by professional owners, including private housing companies, public authorities, housing cooperatives and non-profit organisations (Savills 2019). With access to a large number of rental dwellings, housing companies have the technical capacity to implement innovative approaches and plans to help balance the availability of living spaces and reduce the housing shortage. Therefore, they are considered to be important stakeholders in promoting such sufficiency policies and were selected as interviewees for this study.

2.2 SELECTED HOUSING COMPANIES

In order to select the potential housing companies for the interviews, a list of all companies in the field of real estate leasing and rentals \((N = 10,971)\) was first extracted from a company database provided by Dun & Bradstreet Corporation. From these, only those companies in Germany with more than one employee and dealing with private dwellings whose contact details were available in the database were filtered out \((N = 718)\). In the next step, the location of the company and the number of rental apartments owned or managed by it were used as two criteria to narrow down the list further. This was done in two parallel steps. The number of apartments available in the companies’ stock was considered to be an important factor in the degree of flexibility of the companies to implement different measures. Therefore, the database was extended to include data on this indicator, extracted from the companies’ websites. These data were publicly available for 148 companies. For the second criterion (location), two indicators were considered, namely growth potential and housing shortage. In shrinking cities, the population moves out of the city and gradually more housing becomes available for rent, whereas in growing cities the demand for housing is constantly increasing. Therefore, growing cities are considered relevant for this study. On the other hand, cities with a housing shortage are considered to benefit most from the successful implementation of the measures studied in this paper.

According to a report by HBS (2019), of all German cities and municipalities, 80 are classified as large cities, the rest as medium-sized \((N = 633)\) and small towns \((N = 2018)\) or municipalities \((N = 1614)\). Of these, 2466 are (above average) growing, 1309 are (above average) shrinking and the remaining 659 do not show any significant direction. The BBSR (2020) examines the housing shortage in 77 large German cities as the ratio of the required flats in the city to the current building stock. This ranges from 6.0% in Wolfsburg to 31.4% in Heidelberg.
For reasons of data availability, only the large cities for which data on housing shortages were available were considered. A threshold for the housing shortage was defined and all cities with a housing shortage above this threshold were kept in the list. All cities in this list for which at least one company with available data on the number of rental dwellings was listed were considered as potential interview partners. Figure 2 summarises the selection process. The 25 companies selected are located in 11 cities and nine states (regional distribution) and have different characteristics (commercial, non-profit, from the church or municipality).

2.3 SELECTED MEASURES

Over 300 policies are listed in the Energy Sufficiency Policy Database, of which 53 are related to the buildings sector (as of March 2024). These include a variety of sufficiency strategies, among those reducing living space, which is the focus of this paper. This strategy triggers different actions, including building modifications, supporting ownership structures, new construction and oriented moving and living. The aim of this paper is to focus on the low-hanging fruit, i.e., measures that require only organisational effort which involve both the supply side (housing companies) and the demand side (private households). Therefore, the category of oriented moving and living is relevant, which in turn covers policy instruments related to sharing, alternative housing and moving. The first two are excluded from this study as they are either mostly relevant to homeowners or not feasible within the housing company building stock. Under moving, which is the focus of this study, the following policy instruments are listed: exchange of flats; moving bonus; and moving advice (Figure 3).
2.4 DATA COLLECTION AND ANALYSIS

Data for this study were collected through guideline-based semi-structured interviews conducted virtually using Microsoft Teams in March 2024. The interviews were conducted in German and translated for this paper. See Table S1 in the supplemental data online for a translated version of interview questions. The systematic analysis of the interviews was carried out in MAXQDA software and followed the six-step approach introduced by Rädiker & Kuckartz (2020). After systematically entering, preparing and organising the interview transcripts in the software, a first set of categories was developed based on the research questions and the interview guide (see Table S2 in the supplemental data online). These categories were used for the basic coding of the transcripts. In order to ensure high-quality coding, the first interview was coded by two team members and the results were compared and discussed. Where necessary, the coding was corrected. In the next round, the subcategories were developed, the text passages were coded accordingly and the main content of the coded segments was noted. Next, the appropriate analysis for the coded data was selected and carried out. Finally, the analysis result was documented.

2.5 INTERVIEW GUIDE

The interview guide contains questions in two main categories: the interviewed housing company and the studied measures. In the first category, the characteristics of the company (e.g. location, structure and form, number of flats) and the mechanism for allocating dwellings are examined. The second part, on the policies, includes the description of the policy, documentation on its implementation and impact, failure and success factors. The final questions deal with suggestions for improving these policies.

3. RESULTS

Of the 25 contacted housing companies, 13 responded to the request for an interview, three of which were unable to give an interview despite their interest in the topic. In one case, the main focus of the company had changed, making it unsuitable for the study. With the remaining nine companies, an interview was scheduled but one was cancelled, resulting in eight complete interviews. The eight interviews covered five cities and four states. Both cooperative and privatised housing companies as well as those owned by municipalities or churches were represented. The respondents have different financial, legal and ownership forms, and the size of their housing stock ranges from 2000 to 200,000 dwellings. Figure 4 provides more details on the characteristics of the respondents. The interviewees were the chief executive officers of the companies (the majority) or their deputies, chief operating officers, chairmen of the board or managing directors. Half of the companies interviewed allocate part of their stock to social and subsidised housing. All companies take into account household income and household size (i.e. number of people in the household) when allocating their dwellings. This information is only gathered at the time of allocation and is not updated. Other aspects such as age of children, non-discriminatory selection, social mix in the neighbourhood and special situation of a household (e.g. violence, disability) are among the soft factors considered when allocating flats.

![Figure 4: Characteristics of the interviewed companies: (left) owner; (middle) stock size; and (right) legal form.](image)
3.1 EXPERIENCE WITH THE STUDIED MEASURES

This section summarises the experience of the interviewed companies with the studied measures, whether or not they offer the measure, and how they communicate the measure.

3.1.1 Flat exchange

This measure is implemented by companies in two different ways: flat change, where a household moves from its current dwelling to another, and flat swap, where two households exchange dwellings, i.e. the first household moves into the dwelling of the second household, and vice versa. Both options are offered, but the flat changes are more common. Four of the interviewed companies offer a flat change, one offers only a change from a larger to a smaller dwelling, and for two a change is generally possible but is not explicitly offered. On the other hand, flat swap is only offered by two companies, in two it is part of a larger swap programme (with other companies or within the municipality) and in one it is possible but not explicitly offered. In the companies that offer a flat swap, either a new rental contract is signed with new conditions (i.e. market price, but considering the price caps, the smaller flats will usually have lower rents) or the basic rent per m² remains unchanged, which means that the tenants have a financial advantage by moving to a smaller flat.

In three companies the tenant receives a new contract with new conditions after a flat change. Although it is assumed that in case of a move to a smaller flat the new rent will not be higher than the old one, there is no guarantee that this will actually happen. Some companies have considered the financial incentive. One company offers the new flat at a lower m² price than the normal price when moving to a smaller flat. One of the companies keeps the m² rent the same and the other one pays attentions to the point that a change should not lead to a financial burden. Usually, the tenants are temporarily relocated when the building is being renovated. In this context, companies usually offer a permanent flat change, as this also reduces the financial and organisational costs compared with the time when the household has to return to the original flat. Another reason for offering this instrument is to free up space in the larger dwellings and to have the possibility to increase the occupancy rate.

3.1.2 Moving bonus

Three companies offer financial support as a general rule: in one company tenants receive a bonus when they move, even if they move out of the company; in another, the moving costs are covered; in the third, a subsidy is paid when tenants move from a larger to a smaller flat, and the amount of subsidy depends on the m² reduction of the new flat compared with the old one. In three other companies, financial support is offered only in exceptional cases, i.e. when the move is due to, or in connection with, renovation work, or when the company recognises that the household is in financial difficulty. Two companies offer organisational assistance with the move, which is particularly helpful for older tenants. The legal form of the company was mentioned by two companies as a reason for not offering a moving bonus.

3.1.3 Moving advice

In two companies, consultation is offered and regularly communicated, but not exclusively on relocation. Two companies offer moving advice only when a new building is planned or in the framework of a flat change. In both cases, the high administrative costs and low output of the consultations is the reason for not offering them regularly. Four interviewees mentioned that tenants are aware that the organisation is there when they need it.

<table>
<thead>
<tr>
<th>FLAT CHANGE</th>
<th>FLAT SWAP</th>
<th>MOVING BONUS</th>
<th>MOVING ADVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Four offer a flat change</td>
<td>• Two offer a flat swap</td>
<td>• Three offer financial support</td>
<td>• Two offer general consultation not only for moving</td>
</tr>
<tr>
<td>• One offers a change only from large to small</td>
<td>• Two offer it in cooperation with larger programmes</td>
<td>• Three offer financial support in exceptional cases</td>
<td>• One offers only when new construction is planned</td>
</tr>
<tr>
<td>• Two have no specific programme but a change is possible</td>
<td>• One has the possibility but does not offer it exclusively</td>
<td>• Two offer organisational support</td>
<td>• One offers only within the flat change</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Four tenants know they can contact them</td>
</tr>
</tbody>
</table>

Table 1: Overview of the studied measures in the interviewed companies
Table 1 summarises these offers in the interviewed companies. All these offers are communicated in different ways: sending an email, tenant meetings, verbal conversations, information events, word of mouth, personal visits to the site (in the case of new construction), website, tenant newspaper, social media, flyers and information stands in the housing areas. The documentation of the implementation and acceptance of the offers varies between the companies. While two companies comprehensively document and evaluate the measure, most have no specific documentation of cases. In a few companies the data are recorded but not evaluated. Only successful cases of flat swaps and flat changes are documented. Moving bonuses and moving advice are always coupled with flat exchanges.

In the remainder of this section, only flat swaps and flat changes are discussed, regardless of the incentives that led to them.

### 3.2 ACCEPTANCE AND EFFECTIVENESS

Three companies reported very little success with the flat swap measure, three others reported that the measure is not (or no longer) offered because they do not expect (or have not observed) much success and therefore the effort is not worthwhile. Even if successful, it creates more administrative work for the company, which is a reason why one of the companies does not advertise it, although it is generally possible to swap flats. On the contrary, another company offers the measure because it wants to avoid the higher future costs of an unstable neighbourhood.

Although flat changes are more common than flat swaps, companies report very low success rates for this measure, despite advertising the offer through various communication channels. Some companies even contacted all tenants who might be eligible for a flat change, but this not only failed to achieve much success, but in some cases led to negative feedback from tenants who felt they were being evicted.

Looking at some figures, one company estimates the success rate of flat swaps (i.e. the proportion of successful flat swaps from initial enquiries) at 4%. Approximately half of the swap requests are initiated for the purpose of enlarging the dwelling. In another company, around three-fourths of the flat changes in 2023 were due to lack of space in the old home, resulting in a 41% increase in living space. None of the changes involved moving to a smaller flat. As a positive example, one of the companies interviewed had an annual average of around 17 changes from large to smaller dwellings between 2011 and 2022, resulting in an average reduction of 22% in living space. In general, the companies reported a wide range of one to 80 cases of flat swaps and changes in their housing stock in recent years.

### 3.3 SUCCESS FACTORS AND LIMITING BARRIERS

Experience with swaps shows that location plays a role in the success rate. Changes within the neighbourhood and those that bring tenants closer to the city centre are more successful. Similarly, if the amount of space remains the same and only the location changes through a swap, there is a higher chance of success. When it comes to flat changes, tenants who really want to move will do so without any advertising. Nevertheless, communication plays a very important role because there is a very fine line between counselling and harassment, and by crossing that line, companies can invade tenants’ privacy. Too much advertising can have a negative effect, as tenants may think that the companies are making a huge profit from each flat change, when in fact each change costs the companies a lot due to renovation and maintenance measures. There is sometimes mistrust between tenants and the housing company, as the companies are biased as landlords and contractual partners and the advice comes from the party that could benefit from it. For this reason, it makes more sense that the municipalities or non-profit organisations take over the communication.

In general, accessibility for wheelchairs and walking aids, lifts (especially to the underground car park), affordable rents and lower operating and energy costs, and proximity to the previous flat and therefore to social contacts are the factors that increase the chances of a successful flat change.

Interviewees also gave several reasons for the very low rate of swaps. From a financial point of view, the rent is usually very low and therefore there is no financial pressure for households to
reduce the rent. On the other hand, after a flat swap, one has to sign a new contract usually with a rent which is much higher than the old one. Therefore, there is no financial incentive to move out of larger dwellings as households may end up paying the same or even more for less space. In addition, the financial transaction costs of moving (e.g. new furniture, new kitchen) are high. In addition to the financial aspects, there are also high social transition costs. After a move, the household and especially the children have a new environment.

Although the means are available, there is little willingness on the part of tenants in large flats to reduce their space, which leads to a mismatch between offers from people in small flats looking for a larger flat and people in large flats willing to move. Furthermore, both parties want to improve or at least maintain their current living situation and therefore have high and sometimes unrealistic expectations. This makes the likelihood of finding a match very low. The swap is often not successful because of details such as the orientation of the flats, the direction of the living room and the lack of an ideal parking space. As far as flat changes are concerned, there is a very low vacancy rate in the housing stock and tenants rarely move out, so it is not technically feasible for companies to offer a flat change to every tenant. There is a strong emotional attachment to the flat, especially after a long period of living there. Tenants have usually built their social structures in proximity to their current flat: friends, neighbours, even a family doctor. Moving to a new flat means a new start, a new neighbourhood and new neighbours, which is not easy, especially for older people. On the other hand, the old contract with a really low rent leads to a lock-in effect, as there is usually no financial advantage in moving. In addition, financial incentives are usually not important. In some cases, decisions are not made rationally (from an outsider’s point of view), e.g. in the extreme case that an elderly tenant in need of care living on the third floor of a building without a lift is unwilling to move to the ground floor of the same building. The tenants have high expectations of their future flat: well-located, barrier-free, cheap, and it is not possible to meet all these expectations.

### 3.4 SUGGESTED IMPROVEMENTS

After discussing the measures and their factors of success and failure, interviewees were asked for their views on various instruments that could encourage more people to move out of under-occupied dwellings. According to Eurostat (2011) under-occupied dwellings are those in which the number of rooms is excessive in relation to the number of people living in the household. The suggestions are grouped under the categories of information and communication, financial, and regulation, and are described below.

#### 3.4.1 Information and communication

The issue of high per capita living space and its environmental impacts should be kept alive in discussions, just like the discussion on the impact of meat consumption and flights. Public campaigns, financially supported by government, should aim to raise awareness and create a narrative on the issue that brings about positive dynamic in society. Communication should also be improved at various levels. First, there should be an exchange between housing companies to learn from each other, as some are more open about the topic than others. Second, it should be the responsibility of the municipalities and non-profit organisations to provide information and advice on (moving) options. Lastly, the issue should be communicated positively by all parties involved, i.e. tenants’ companies, public administration, non-profit organisations and politicians. It should be openly communicated that new housing cannot be built for every generation, but the existing buildings should be used efficiently.

#### 3.4.2 Financial

The public sector (state and national authorities) should encourage freeing up under-occupied dwellings by providing financial incentives to both tenants and housing companies. By subsidising the costs of moving, especially to smaller dwellings where there are no direct cost benefits, the financial burden will no longer be a barrier to action. The provision of bonuses and subsidies to housing companies also plays an important role in incentivising them to promote such measures, given the high renovation and maintenance costs that housing companies might incur after each flat change, as highlighted in the interviews. These costs depend, however, on the condition of the flat and the extent of renovation work already carried out. The very high costs addressed by the
interviewees are probably due to the current renovation requirements in the building sector and the fact that the flat changes often occur after a very long stay, meaning that the flat is typically not in a good condition.

Other sufficiency measures, such as the promotion of flat-sharing, should also be encouraged through high financial incentives. Providing an empty flat through this measure would be more cost-effective (considering high construction costs) and time-efficient (considering the lengthy process required for new construction) than acquiring a flat through new construction. Based on an example given in one of the interviews, offering two households a relatively high hypothetical moving bonus of €10,000 each to incentivise them to share a flat and thereby freeing up the other flat would still be at least 10 times cheaper and faster for the housing company than building a new flat.

3.4.3 Regulation

Some interviewees felt that ‘home’ was a sensitive issue and that individual choices about their homes should be respected. They did not believe that tenants could or should be forced to leave their homes by regulation, as being too restrictive would be not only undemocratic but also unlikely to be very successful. However, some possible regulations and models were suggested. The first suggestion is to set a per capita rule for social housing (following the Swiss example). In this model, the occupancy rate (i.e. the number of people living in the flat) is defined, and if the household size becomes smaller than required over time, the household has to vacate the flat, with the possibility of moving to one of the flats offered by the housing company. The second suggestion goes in the same direction as the first and is a prerequisite for it. Almost all interviewees mentioned the misallocation tax (in German, Fehlbelegungsabgabe) as an effective measure that existed in Germany for publicly subsidised housing and was gradually abolished over time. Under this model, tenants had to continuously report their income to prove that they still met the criteria for social housing, otherwise they had to pay a tax to the municipality. A similar measure where tenants either have to comply with the rules (e.g. occupancy rate) or to pay taxes was considered effective in motivating tenants of under-occupied flats to move to smaller dwellings. Another suggestion is to increase all rents up to a certain amount and set a transition period for the occupants of the under-occupied flats to move to a smaller flat. If they do not move out by the end of the transition period, their tenancy will be renewed at the higher rent. The fourth proposal is a model in which the rent is capped for a certain amount of floor space per person (e.g. 30 m²). The rent will be differentiated for new and old buildings. Any floor space above this threshold would have to be rented at the market price. For example, if a household wants extra space for a home office, the space will be rented at the market price for office space. Finally, one interviewee suggested the right to swap flats as an option, while believing that this measure would not increase the number of swaps already occurring.

In addition to the instruments mentioned above, the improvement of the social and technical infrastructure was considered essential. From a technical point of view, standardised processes and universal digital platforms are suggested as a solution to better organise flat swaps and flat changes. A universal platform could provide a comprehensive overview of all available offers. This will lead to better communication of prices and also reduce the perception of housing shortage, which leads to some unrealistic housing requests. In order to achieve a better distribution of available flats, the restrictive data protection rules, which oblige companies to regularly delete applications and result in applicants having to regularly renew their application, should be relaxed. On the social side, current social norms in the area of housing (e.g. a three-room apartment as standard even for one-person households), should be reconsidered and redefined. On the other hand, social acceptance of the new concepts and rules should be increased.

4. DISCUSSION AND CONCLUSIONS

In response to the much-discussed housing shortage in Germany and the need for new construction, Hunziker (2024) considers a redistribution of space as an alternative to provide the missing living space. He argues that this could be achieved if each individual gave up just 2% of their current 47.4 m² living space. Given that this current per capita space is about 36% more
than that of 1990, the present study investigates the success of selected sufficiency measures in reducing the average per capita floor area in German rental housing managed by housing companies. Eight housing companies in five cities and four states were interviewed through guideline-based semi-structured interviews to explore their experiences with the following measures: flat exchange (including flat swaps and flat changes), moving bonus and moving advice. What Hunziker suggests for such spatial redistribution is theoretically true, but as the author also acknowledges, it is challenging or even impossible under the current German political and social framework. While sufficiency relies greatly on individual choices, it should not be seen solely as an individual lifestyle change, as these individual choices are strongly shaped by available offers, existing infrastructure and the legal framework. To be successful, sufficiency must be regarded as a ‘collective challenge’ (SRU 2024) and the many small-scale initiatives observed at the municipal level need to be scaled up to the national level. Therefore, this section discusses the different instruments proposed by the housing companies in terms of their potential role in changing the social and political framework in Germany, which is essential for the full exploitation of sufficiency.

Moving advice is an important first instrument that can trigger further measures such as flat swaps and changes. However, the fact that it is the responsibility of the housing companies does not seem to be optimal. Given the sense of attachment, especially for older tenants (in terms of both age and time spent in a flat), housing is a sensitive issue that needs to be handled carefully. As housing companies are usually seen as contractors, communication on this issue is challenging for them and not very successful. Giving the municipalities, as neutral stakeholders, the responsibility can build trust and lead to more success. The city of Tubingen already offers such a programme, informing residents who have too much living space about options such as downsizing or alternative living forms (Tübingen Universitätsstadt 2019). An evaluation of the consultations conducted under this programme between late 2020 and December 2021, reported by Bierwirth et al. (2022), shows a high level of satisfaction with the offer and information provided. The consultations are reported to have given participants relatively positive encouragement for their plans. Participants were also largely confident that they would implement their plan. The restrictions imposed by COVID-19 affected the quantity and quality of the consultations carried out during this period, and the relocations and flat swaps were rarely reasons for taking up the consultation offer. Therefore, the results presented by Bierwirth et al. are not directly comparable with the success rates reported by housing companies. However, the lessons learned in Tubingen may still be helpful in designing the programme in other municipalities.

The moving bonus by itself does not seem to have an impact on the initiation of relocation, especially in cases where there is no direct financial benefit from moving to a smaller dwelling (when there is no price guarantee after a move). However, once the barrier of moving costs has been removed, it can be an effective instrument in combination with other financial incentives. Public authorities should therefore support this instrument by providing financial incentives to tenants and housing companies. The city of Frankfurt am Main offers such bonuses when tenants move from a social housing flat to one that is at least 15 m² smaller (Stadt Frankfurt am Main 2024). Similarly, in Dusseldorf, landlords can receive a bonus if the move is due to a flat swap (Tauschwohnung 2024). Such a subsidy could also be given to housing companies so that they receive a bonus for each successful flat change. Such investments contribute positively to the multiple objectives of the buildings sector: providing affordable housing, preventing soil sealing and reducing emissions.

Flat swaps and flat changes can be effective in freeing up under-occupied dwellings for use by larger households. However, in most cases they do not provide an incentive for residents to move. A combination of different financial incentives that reward downsizing (such as the package offered by ProPotsdam 2023, which includes a living space bonus, a bonus for a shared flat and a moving bonus) could make such instruments attractive. Furthermore, other instruments are needed as catalysts to make the most of these potentially effective instruments. The need for a universal platform has been raised as a technical prerequisite to facilitate flat swaps. An example of such a platform already exists on a small scale in Berlin with the participation of six housing companies. Another example is the French Echanger Habiter, a platform for social housing with the participation of around 40 housing companies. Since its launch in 2018, around 3000 flat swaps have taken place, with a success rate of 4%, not higher than the success rate already communicated in the interviews. This
confirms the need to improve the social infrastructure to complement this technical infrastructure, also suggested by the interviewees. Information campaigns should promote sufficiency as a social practice in all sectors. However, the sense of attachment, as one of the notions of wellbeing and mentioned in many interviews as a reason for the failure of the studied measures, has to be considered as a key factor when promoting sufficiency. This is crucial not only for increasing the success of these measures, but also to prevent the unwanted social and psychological implications of forcing such measures, intensively discussed by scholars in the context of forced relocations, unhoming and displacement (e.g. Westin 2021; Elliott-Cooper et al. 2020). The multiple benefits of sufficiency measures for the climate (e.g. lower energy and material consumption) and individual wellbeing (e.g. stronger community ties, increased sense of equity) should be communicated, so that people voluntarily follow the measures on the basis of the information they have.

This could be done, for example, by importing already practiced and accepted social norms from other European countries. The Swiss minimum occupancy rate (Stadt Zürich 2024), repeatedly mentioned in the interviews, is one such example. Tenants of social housings in Zurich have to meet the requirements of household size and income level in order to continue living in their flats. This is similar to the misallocation tax that used to exist in Germany, which was abolished for two reasons, first, it required significant administrative efforts and, second, it led to less social heterogeneity in neighbourhoods, as higher income tenants had to move out. Adapting and reactivating this old law will make it possible to identify under-occupied dwellings that could potentially be occupied by larger families. Merely enforcing a tax on high-income households will not improve the situation, as they will simply pay and continue to live in their under-occupied dwellings. Therefore, the focus of this measure should be on household size, so that the high-income households can still stay in the neighbourhood and contribute to its heterogeneity. The high administrative costs of regular data collection can be overcome by improvements in digitalisation. Finally, residents seem to react only to significant price increases. According to one interviewee, tenants saved a lot of energy following the 2022 energy crisis and the resulting sharp increase in energy prices. However, this behaviour changed when price caps were introduced. This low price elasticity, although typical for essential goods such as energy, indicates that users are not easily willing to leave their comfort zone and alter their habits towards low consumption behaviour (e.g. putting on extra clothes instead of turning on the heating). The rent cap has not proved to be an effective instrument. Defining an essential amount of space per person at the capped price (fulfilling the ‘needs’) and offering additional spaces at market price (fulfilling the ‘wants’) has two advantages: first, the financial pressure might incentivise freeing up the under-occupied flats; and second, it can contribute to the use of shared spaces such as shared office spaces, communal spaces for hobbies and guest accommodations. This would be similar to the already established concept of car sharing in Germany, which saves the occasional car drivers the annual high maintenance and insurance costs. In the case of such a model with a defined essential living space, besides the indicator of floor area per capita, new indicators of floor area per household size and floor area per household composition should be used when discussing the occupancy rate of the flats.

Proper documentation of successful cases can identify opportunities for improvement. Documenting and evaluating implementation cases is not a priority for many companies, mainly due to capacity and the lack of incentives and a defined target. Even where documentation is carried out, only successful swaps and changes are documented, making it impossible to understand the real reasons why tenants do not want to move. Therefore, incentivising companies to document the reasons for failure from the tenants’ point of view (or perhaps even requiring them to do so, while compensating the extra cost and effort) would provide a good overview of the failure factors and identify opportunities for improvement. This point was also discussed in one of the interviews and, as a result, the authors provided a set of questions to be included in an online flat swap portal, where tenants who have initiated a flat swap, will have to enter the reason when terminating the process of a failed swap.

Although this study focuses only on rental properties managed by housing companies, this presumably niche market still accommodates around 17% of German households. The suggested instruments and the lessons learned from this part of the housing sector can also be applied
to privately rented dwellings, which together account for more than half of German dwellings. Moreover, motivating households to reconsider their spatial needs could be effectively transferred to homeowners. Given this transferability, any success in this niche sector in empowering and motivating occupants of under-occupied dwellings to downsize will ultimately play a significant role in optimising space use, reducing per capita and total space demand, and decreasing the high residential energy consumption.

While space heating is considered the main driver of high residential energy consumption in Germany and most parts of Europe, the need for space cooling is steadily increasing due to climate change and global warming. Most measures that reduce the energy demand for space heating equally contribute to improving the energy demand for space cooling. In addition to the savings achieved by reducing the need for new construction, space optimisation offers significant savings potential by decreasing the energy required to operate buildings, benefiting both occupants and the environment. Despite the small sample size, considered a limitation of the study, the findings from the interviews with the housing companies provide a valuable contribution to effective policy design that enables such space optimisation while still meeting the occupants’ needs. These companies are in direct contact with the target groups, mostly highly committed to the issue and in dialogue with policymakers at various levels. As the phenomenon of significant increases in space consumption and high residential energy demand is not limited to Germany, the policy lessons may be widely applicable in other societies. Nevertheless, the study sample does not allow for an exploration of the influence of the characteristics of the housing companies (e.g., legal form, business model) on their interest in adapting sufficiency and the number or type of measures they offer.

Furthermore, while the study offers insights into the factors affecting the success and failure of the studied measures, the analysis of the interviews could only provide a partial picture of the various cultural, social and economic factors that influence individual decision-making, which contributes to the under-occupation of dwellings. Further research, including the views of tenants living in these dwellings, is needed to develop a more holistic understanding of the underlying factors. Additionally, a potential analysis of the studied and proposed measures in this paper could assist policymakers in the strategic allocation of resources, ensuring a balanced ratio between effort and outcome and effectively reaching each target group with the most appropriate measures.

Finally, at a time when the buildings sector, and housing companies in particular, are faced with the challenge of becoming carbon-neutral and also meeting the ever-increasing demand for housing, it is more important than ever to explore and invest in measures such as those discussed in this paper. Given the drastically increased construction costs and the high emissions associated with emission-intensive building materials, it may be ecologically and economically beneficial to redistribute and use more efficiently the existing space through such measures. This last point could and should be further explored.

NOTES
1 See https://energysufficiency.de/policy-database/.
2 See https://inberlinwohnen.de/.

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M.B.: conceptualisation, methodology, data collection, data analysis, writing—original draft; L.R.: data collection, data analysis; L.S.: resources, writing—original draft; C.R.: methodology, writing—review and editing; H.J.L.: methodology, writing—review and editing.

COMPETING INTERESTS
The authors have no competing interests to declare.

DATA AVAILABILITY
The participants in this study did not give written consent for their data to be published. Therefore, the data collected from the interviews that support the findings of this study are not publicly available in order to protect the privacy and confidentiality of the research participants.

ETHICAL CONSENT
Informed consent was obtained from all participants prior to the interviews, in which they agreed to participate in the study on a voluntary basis and to allow the interviews to be recorded and the information provided to be processed and used for the purposes of this research.

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