

Splitting energy costs between landlords and tenants: What can Sweden and Germany learn from each other?

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Abstract

The legislative framework for splitting heating costs between landlords and tenants can influence the efficient use of energy in buildings. While landlords are typically responsible for investments in thermal retrofit measures, tenants can reduce energy consumption through energy-saving behaviour. In view of the shared responsibility, the question which contractual arrangements for splitting energy costs between landlords and tenants support energy efficiency is controversial. Our paper addresses this question by analysing the legislative framework in two countries with opposing approaches: In Sweden all-inclusive rents are common practice, where the landlord is entirely responsible for paying the heating costs. By contrast, in Germany, heating costs are fully borne by the tenants and individual metering and billing has a long tradition. Recently, several approaches for partially introducing all-inclusive rents in Germany following the Swedish example are in the discussion. At the same time, Sweden is currently strengthening the role of individual metering and billing in view of the requirements of the energy efficiency directive and the professional property owners' resistance towards individual metering and billing remains very strong. Our analysis provides a comparison of the approaches that are currently discussed in the two countries and derives recommendations on how to combine the best of two worlds to provide a favourable framework for supporting energy efficiency.

Introduction

The decarbonisation of the building sector is of key importance for meeting the EU energy and climate targets. With buildings being responsible for 40 % of the EU's energy consumption and 36 % of greenhouse gas emissions¹, investments in energy efficiency and renewable energies in buildings are key drivers for reducing greenhouse gas emissions.

The split of incentives between landlords and tenants in rented buildings is recognized as an important barrier for investment in energy efficiency and renewable energy in buildings (Gillingham, 2012; Melvin, 2018; Petrov and Ryan, 2021). Across the EU, around 30 % of the population lives in rented houses, where the shares range from around 50 % in Germany to less than 5 % in Romania². The split incentives problem is highlighted in the EU Energy Efficiency Directive (EED), asking Member States to take adequate measures to address the problem³.

In rented buildings, the approach for splitting energy costs between landlords and tenants can influence energy consumption in two ways: On the one hand, if energy costs are (partly) borne by landlords, the economic profitability of investments in thermal retrofit measures increase. On the other hand, energy costs allocated to tenants provide an incentive for energy-saving heating behaviour. The latter is reflected in the provi-

1. The figures include energy use stem from construction, usage, renovation and demolition. Source: https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_en

2. EU SILC database.

3. See Art. 19 of the EU Energy Efficiency Directive.

sions of Article 9–11 in the EED, mandating Member States to introduce consumption-based metering and billing in buildings with multiple building units.

In view of the need for action to decarbonise the buildings sector, several EU Member States have implemented measures to mitigate the landlord-tenant problem (for an overview see e.g. JRC, 2017). These include regulatory measures such as minimum energy performance standards, information measures as well as improvements of the legal framework and for the allocation of investment costs and energy cost savings of an energy efficiency upgrade between the landlord and the tenant.

Within the different approaches for splitting heating costs between landlords and tenants, Sweden and Germany are taking opposing approaches: In Sweden, heating costs are typically included in all-inclusive rents and are thus entirely borne by the landlord. In Germany, heating costs are usually fully paid by the tenants and consumption-based metering and billing has a long tradition.

Interestingly, both countries are currently reconsidering their approaches for allocating heating costs between landlords and tenants. In Sweden, consumption-based metering and billing is receiving increasing interest to achieve a fair distribution of costs in condominiums, and in the context of the implementation of the EED, and the renovation wave for the professional property owners. In Germany, the new government proposes the introduction of all-inclusive rents as an option to mitigate the landlord-tenant problem.

Our paper compares the approaches that are currently in place in Germany and Sweden and derives recommendations for the allocation of heating costs in the context of the landlord-tenant problem. The paper first reviews the current approaches and ongoing discussions in Sweden and Germany, followed by an analysis of the lessons that the two countries can learn from each other.

Swedish approach

HISTORY AND BACKGROUND

The current Swedish multi-family building stock consists of approximately 900,000 buildings with 2.5 million apartments. 60 per cent of the buildings (1.5 million apartments) are owned by professional property owners, where 0.9 million apartments are owned by municipality owned property companies and 0.6 million apartments are owned by privately owned property companies. The other almost 1 million (40 per cent) apartments are located in small to medium sized housing cooperatives (condominiums), where the tenants at the same time are the landlord.

Sweden has a long-standing tradition of “all-inclusive” rents and rent levels based on a value-of-use system. This system dates back to an active debate on poor housing conditions in the 1930’s and has continued with socioeconomic reforms for the housing sector and society as a whole during the following decades.

For the most vulnerable citizens the cost of housing is handled through social policies, and housing allowance is granted to tenants with low or no income. With all-inclusive rents the housing allowance includes heating and domestic hot water, resulting in Sweden currently having one of the lowest rates

of fuel poverty in the EU. The term fuel poverty has during the recent seven decades not been relevant in a Swedish context, hence there is no differentiation between “poverty” and “fuel poverty” in Sweden. Consequently, there are no specific measures towards reducing fuel poverty in Sweden.

For more than seven decades central heating has been the dominating solution in Sweden’s multi-family buildings. District heating was introduced in many of the Swedish municipalities in the 1950’s and 1960’s. It is nowadays the primary energy source for heating, and domestic hot water production is integrated in the local district heating substations. Today more than 90 % of the energy end use for heating and domestic hot water in Sweden’s multi-family buildings is supplied by district heating.

Installations have for decades been optimized for central heating and “all-inclusive” rents, with pipes running through the building in the shortest and most cost-efficient way. To use the same heating system for both heating and domestic hot water has been very cost-efficient for the property owners over time, reducing the costs of purchase, installation, and maintenance of the building’s energy supply system. However, this approach poses a technical problem when trying to retrofit buildings with energy monitoring equipment for individual apartments. The pipes are often installed ascending from the district heating substation, and many apartments are serviced by more than one pipe. In most cases neither heating nor domestic hot water pipes converge to a central point in the apartment where it would be easy and cost-efficient to install meters.

RENT LEVELS AND NEGOTIATIONS

A fundamental principle of the Swedish rent negotiations is that equivalent apartments should have an equal rent, and the rent for an individual apartment is determined within the framework of the so-called value-in-use system. The rent is based on several value factors such as the standard of the property and the apartment, and equipment in the apartment and the property’s common areas such as laundry rooms, stairwells, and gardens or courtyards. Geographical and social factors such as access to public transport, distance to the city centre, and the image and reputation of the urban area is also considered. The rent level is generally settled in negotiations on a national level between the Property Owners Association and the Tenants’ Association.

The value-in-use system only handles the relationship between rents in equivalent apartments. However, the system does not handle how the rents are to be developed over time once the rent level is settled. Therefore, adjustments of the general rent level are negotiated annually between the Property Owners’ Association and the Tenants’ Association. The annual adjustment of the rent level, contrary to the value-in-use negotiation, is not regulated by law but is it a matter of the parties themselves negotiating without governmental interference. This gives the Tenants’ Association a strong position since the rent cannot be increased unless an agreement between the two parties is reached.

The value-in-use rent system does not allow the landlord to increase the rent to accrue funds for planned renovations. Furthermore, the tenants’ value of the apartment cannot be increased until the renovations are finished. However, since the rent level is dependent on the value of the apartment and not the operating costs of the building, a property owner that

reduces the energy costs through thermal retrofitting can expect to make a bigger profit over time. Conversely, a property owner not carrying out necessary thermal retrofitting measures and rapidly increasing energy costs may reduce the property's long-term profitability since there is no short-term possibility to transfer the energy costs to the tenants.

IMPLEMENTATION OF THE EED DIRECTIVE IN SWEDEN

Incentivising energy savings in tenants' day-to-day energy-related behaviour, such as lower indoor temperatures and reduced manual ventilation through weathering, is an important part of the EU strategy for reduced energy end-use in buildings. Consequently, directive 2012/27/EU on Energy Efficiency requires energy for heating to be measured and billed individually for all households, and the EU directive has requested changes in the Swedish regulation on billing and metering of energy for heating for several years.

However, the EU directive allows states exceptions due to lack of technical feasibility, profitability, or energy-efficiency potential. These exceptions have been used by property owners and national authorities to motivate why it would be unreasonable to implement mandatory requirements for individual metering and billing for heating and domestic hot water in the Swedish multi-family building stock. An agreement was finally settled between Sweden and the EU commission in 2019, making individual metering and billing mandatory in the multi-family buildings with the worst energy performance. The regulation entered into force on July 1st, 2021.

In 2019–2020 the Swedish National Board of Housing, Building and Planning (Boverket) carried out an impact assessment investigating the different options to fulfil the Energy Efficiency Directive. The assessment showed that measures need to be taken in approximately 23,000 buildings (corresponding to 14 percent of the total multi-family building stock) with a split ownership between 41,000 property companies, organizations and housing cooperations. In many cases the buildings these worst-performing buildings are only a proportion of the property companies' building stocks, but there are also many small property owners and housing companies where the whole building stock falls under this category. The property owners have to make individual assessments on which of their buildings are impacted by the new regulation, and for the worst-performing buildings either implement individual metering and billing or carry out energy-efficiency measures to improve the building's energy performance (Boverket, 2020).

DISTRIBUTION OF COSTS BETWEEN TENANT AND LANDLORD

The incentives for individual metering and billing (IMB), and the attitudes towards it, are very different between the professional property owners and the condominiums. The Swedish professional property owners in general dislike IMB and see it as disincentivising for them, while the condominiums in general see IMB as an interesting way to create a fairer cost sharing between the members of their housing cooperative. However, mainly due to the fact that the professional property owners have a much stronger voice in the public debate than the small housing cooperatives, the general discussion in Sweden on IMB is mainly focussing on the professional property owners' views.

An implication of the value-in-use system rent levels' principle is that the professional property owners cannot easily

transfer the investment costs of installing an IMB system to their tenants by increasing the rent since IMB does not increase the value-of-use of the apartments. To comply with the value of use system the IMB system has to be cost efficient in its own right by leading to reduced energy end-use and lower operating costs for the landlord.

Several Swedish studies carried out on the energy savings from IMB systems for heating show that the end result of IMB is an increased energy use. Indoor temperatures in Swedish multi-family buildings are generally capped at 20–21 °C, which means that the tenants have limited possibilities to adjust the temperature in their apartments and that the apartments often are heated to the cap temperature. When installing an IMB system in Sweden it is common practice to either raise or remove the cap, and this leads to some tenants increasing their indoor temperature instead. Statistics from seven public housing companies that have installed IMB for heating, covering 7,865 apartments, show that the majority of residents in these buildings choose an indoor temperature around 21–22 °C, resulting in a rise in average indoor temperature with 0.7 °C and a corresponding increase in energy use. Installing IMB for heating in Swedish multi-family buildings could therefore be directly counterproductive to the EED's goal of reducing energy end-use. This study also highlights the impossibility to make a profitable investment in IMB for heating when this results in increased operating costs since the tenants only pay for the increased energy use and not the investment. (Sveriges Allmännytt, 2016) Unfortunately, no study of similar size has been carried out for condominiums, but evaluations on individual house level show that IMB can reduce the energy end-use significantly.

CO₂ COST AND END-USE

Sweden has a CO₂ tax level that is significantly higher than that found in other EU Member States. (Agora Energiewende, 2021). However, the CO₂ cost and end-use is not always visible to the tenant since it is paid by the landlord. How and if to present information on the energy-related CO₂ emissions to the tenant is up to the landlord. There are no legal requirement entitling the tenants to receive this information with their monthly rent bill or annually. Most municipality owned housing companies communicate their work in reducing greenhouse gas emissions and sustainability efforts on their websites, but it is left to the tenants to look for the information. Hence, more can be done in communicating sustainability factors to impact the tenants' behaviour and to put a prize on CO₂ emissions.

CURRENT DISCUSSIONS

In a survey among 24 of the largest property owners in Sweden, the main reason for Swedish property owners to invest in IMB systems for domestic hot water would be *fairness*, i.e., the person causing the energy end-use should also be the one paying for it. The second most common answer was *to save energy and costs*. (Ekelin et.al., 2020)

Apart from the technical and economical disadvantages of retrofitting buildings with energy measuring equipment, both the fairness and the energy performance benefits of IMB in the current system with heating costs included in the rent ("warm rent") have been questioned. National authorities, property owners and the Tenants' Association agree that the current

“warm rent” system gives the most incentives for energy efficiency since a property owner making energy retrofitting measures and reduce operating costs can keep or increase the rent levels.

Consequently, the current Swedish implementation of the EED requirement on IMB is designed to provide property owners with as much leeway as possible in deciding what is the most appropriate course of action for their individual buildings. Despite this, the property owners’ views on the final regulation that was implemented on July 1st, 2021 are very coherent, and continue to vary between negative and very negative. Instead of a mandatory installation of IMB in all buildings, the Swedish regulations focus only on the 14 % buildings with the poorest energy performance, with a requirement of either installing IMB equipment for heating and domestic hot water or implementing alternative energy-efficiency measures to improve the energy performance of the building.

Discussions regarding IMB for heating

A large majority of the stakeholders, from public and private professional property owners to the national Tenant’s Associations and national authorities, have expressed negative views about IMB for heating, even though the final proposal only applies to the 14 percent of the buildings that have the poorest energy performance, and the legislation contains several exceptions such as cultural heritage value, planned other energy-efficiency measures, lack of proportionality, or lack of technical feasibility. The Property Owners Association strongly rejects the new regulation, stating that it is directly counterproductive in terms of climate and can be contradicting Sweden’s climate goals and the EU’s energy efficiency goals. They question IMB for heat being cost-efficient, meaning that this will only create a large administrative cost for primarily owners of apartment buildings but also public sector supervision of compliance (Regeringen, 2019). The Tenants’ Association considers IMB for heating a measure that does not improve a property’s physical energy performance but is solely aimed at changing the residents’ behaviour. This in itself is important, but there is no guarantee that such a measure will reduce the energy demand. On the contrary, there are studies showing the opposite (Regeringen, 2019).

The Swedish Environmental Protection Agency expresses a risk that property owners will have stronger incentives not to carry out the mandatory energy performance declaration in order to avoid the supervisory authority discovering that individual metering needs to be installed. Hence, the supervision of the energy performance certification may need to be strengthened (Regeringen, 2019).

Professional property owners, Tenant’s Association and researchers have also highlighted that although there are other factors still limiting energy poverty, the new IMB regulation may inflict fuel poverty to parts of the more vulnerable households in Sweden. The regulation demands individual metering and billing of energy for heating in buildings where energy performance is particularly low, i.e., where an overrepresentation of low-income households is found. This means that the “warm rent” that historically has protected against fuel poverty in Sweden will be removed in the part of the multifamily building stock where vulnerability to fuel poverty is the highest (Von Platten, 2021).

The public Swedish discussions on IMB for heating have been focused on the energy-savings potential for the building itself, or the lack thereof. In this context transferring heating costs from property owners to tenants is counterproductive since it removes the incentive for the property owner to implement thermal retrofit measures. However, for condominiums, as previously mentioned, the tenants are also the property owners and both installation costs and energy savings have a direct impact on the tenants’ private economy. This is probably the reason that Cooperative Housing Associations have been more welcoming towards the idea of IMB for heating. Most of the installed IMB systems for heating in Sweden can be found in condominiums today.

The National Board of Housing, Building and Planning and The Public Health Agency of Sweden (Folkhälsomyndigheten) has also highlighted the added health benefits IMB for heating can bring for the tenants. Some tenants are more vulnerable to a cold climate, and their health would benefit from having a slightly higher indoor air temperature (Folkhälsomyndigheten, 2022). The current Swedish standard where indoor temperature is capped at 20–21 °C does not easily allow this, but it would be possible to remove the cap when installing IMB systems. To allow individual tenants to have a higher indoor air temperature would require upgrading or remodelling of the radiator valves in the apartment, and when the tenant moves the valves need to be reset.

Discussions regarding IMB for domestic hot water

The views on IMB of domestic hot water is somewhat more positive among professional property owners in Sweden, with exception to the reliability of profitability calculations. Neither the Property Owners’ Association nor the National Board of Housing, Building and Planning are convinced that a lasting energy end-use reduction will be achieved through the introduction of retroactive requirements for IMB for domestic hot water. According to interviews with professional property owners, their experience shows that after an initial reduction in hot water consumption, the consumption often returns to the level before the introduction of IMB (Ekelin, S., Börjesson, S., & Persson, A. 2020). The Tenants’ Association considers IMB for domestic hot water to be an interesting energy efficiency measure, but they don’t see it as self-evident that it is cost-efficient (Regeringen, 2019). Like the case of IMB for heating, tenants in condominiums are more positive towards IMB for domestic hot water. The main argument for them is fairness.

A large share of the property owners think that the authorities should provide them support on how to calculate profitability and energy savings. Unfortunately, the long-standing Swedish tradition of integrating heating and domestic hot water production in the same district heating substation has resulted in limited knowledge of distribution of the energy use between heating and tap water. Hence, profitability calculations for IMB systems based on templates rather than actual end use, severely reducing the calculations’ reliability. The use of domestic hot water is predominantly driven by users, making it even more important to use actual measurements rather than templates (Regeringen 2019).

Generally, IMB for domestic hot water is considered profitable in new buildings and is often cost-efficient when major

renovations that include the building's tap water system are carried out (Boverket, 2018). Since the property owners' general view on IMB is negative, lack of reliable data on the expected energy saving tends to hold back investments in IMB for domestic hot water. Also, difficult negotiation processes between the professional property owners and the Tenants' Association have impacted installation rates of measuring equipment negatively.

Experience of IMB

Some property owners that have tested IMB systems for heating have chosen to remove them, referring to the systems being unfair, administratively burdensome to handle and leading to an increased cost of operation (Ekelin, S., Börjesson, S., & Persson, A. 2020). However, there are some good examples where IMB systems are considered both fair and giving the right incentives to the tenants. These systems measure indoor temperature instead of energy end use, which is a factor that seems to be easier for the tenants to understand, hence makes it more likely to affect the tenants' behaviour (Boverket, 2015). The system can also offer added features to the tenants by e.g., adding the possibility to install burglar or fire alarms and monitoring the system via a mobile app.

For domestic hot water, access to statistics showing energy end use before and after the implementation of IMB is limited. Another challenge for evaluating the effect of IMB is that it is often installed in connection with major renovations and introduction of new technology such as low-flow faucets, improved hot water circulation etc. also contribute to water and energy savings. It is also common that a new tenant moves into the newly renovated apartment where IMB has been installed, hence a comparison before and after the installation cannot be made.

One example of where negotiations has hindered the implementation of IMB is a municipality owned housing company that had to negotiate with the local Tenant's Association for nine years before settling how to distribute the heating and domestic hot water costs in an acceptable and fair way. All this time the metering equipment was installed but could not be used.

The dominating market for IMB installations in Sweden currently is condominiums. The two largest Swedish Cooperative Housing Associations, covering 60 percent of all Swedish condominiums, both offer support on individual measuring and billing of electricity, heat and water. They offer services collecting data from the measuring systems, converting this into costs and producing invoices for individual apartments on a monthly basis, reducing the administrative burden for the Housing Associations.

German approach

BACKGROUND

The German buildings stock is characterised by a large share of households living in rented homes. With a share of about 50 percent, Germany has the highest share of persons living in rented homes in the EU. Among these households, more than 90 percent live in multi-family buildings with two or more units. Central heating is the most common form of heat sup-

ply in German homes, with around 70 percent of homes being heated by central heating at the individual building level.

In Germany, heating costs are usually borne by tenants and consumption-based metering and billing has been mandatory since the introduction of the Heating Cost Ordinance (*Heizkostenverordnung*⁴) in 1981. Consumption-based metering and billing is required in centrally supplied buildings with two or more units⁵, including residential and non-residential buildings. Highly efficient buildings with a yearly heating demand of less than 15 kWh/m² are exempted from the obligation of consumption-based metering and billing.

The allocation of heating costs between the units of multi-unit buildings mandatorily includes two elements: A share of 30–50 % of heating costs is allocated independent of the actual consumption on the basis of the floor area. The remaining 50–70 % are allocated based on the measured consumption in the building units. The building owner chooses the percentage of consumption-based billing within the mandatory range.

To meet the obligation of consumption-based billing, building-owners need to equip the rented premises with appropriate metering devices to ensure that the consumption of space heating and hot water by tenants is individually measured for each building unit. For hot water, consumption needs to be measured through heat meters, whereas for space heating building owners can alternatively equip the building with heat cost allocators. The latter are attached directly to the radiators and do not directly measure the heat flow volume but use data on the measured temperature as well as the characteristics of the radiator to split the heating costs between building units. Typically, the sub-metering is provided by external service providers, the cost of which is charged to the tenant.

RENT INCREASES AFTER THERMAL RETROFIT MEASURES

As heating costs are fully borne by the tenant, building owners do not directly profit from energy cost savings when conducting thermal retrofit measures. In Germany, owners of rented buildings may increase the rent of these buildings after performing thermal retrofit measures. In residential tenancy law, the modernization charge (*Modernisierungsumlage*) is regulated in Germany since 2001 in § 559 of the German Civil Code (BGB). After carrying out thermal retrofit measures, the landlord can permanently increase the net rent by 8 % of the costs incurred for the apartment in order to refinance his investments.

INCOME SUPPORT FOR LOW-INCOME HOUSEHOLDS

According to § 22 of the German Social Code (*Sozialgesetzbuch, SGB*)⁶, low-income households are eligible for income support covering, among others. In 2017, around 3 million households received support for the "costs of housing" (*Kosten der Unterkunft, KdU*), covering among others the costs for heating and hot water supply.

4. <https://www.gesetze-im-internet.de/heizkostenv/BJNR002610981.html>

5. Buildings with two dwellings, in which one is occupied by the owner, are not covered by the ordinance.

6. see https://www.gesetze-im-internet.de/sgb_2/_22.html

CURRENT DISCUSSIONS

The allocation of heating costs between landlords and tenants is currently being discussed in Germany in the context of two policy developments: The distribution of the CO₂-pricing introduced in January 2021 in the buildings sector as well as the introduction of a system of (partial) all-inclusive rents. Both discussions are summarised in the following subsections.

Allocation of costs for CO₂-pricing between landlords and tenants

Germany introduced a carbon pricing scheme covering the heating and transport sectors in January 2021 with the adoption of the Fuel Emissions Trading Act (BEHG) passed in 2019. The system includes an introductory phase with a fixed -price system, where emission allowances are sold to the obliged parties starting with a price of EUR25/t CO₂e in 2021 and increasing to EUR55/t CO₂e by 2025. For 2026, a price corridor of EUR55/t CO₂e to EUR65/t CO₂e is foreseen.

In rented buildings, the costs for carbon pricing are currently entirely borne by the tenant, however the German government foresees to introduce a legislative approach for splitting the costs between landlords and tenants by July 2022 (SPD, GRUENE and FDP, 2021). The following approaches for allocating costs of carbon in rented buildings have been proposed and are being discussed:

- **Equal split:** The equal-split approach, i.e. the equal distribution of heating costs between landlords and tenants, was proposed in a joint paper by three Ministries lead by the Social Democratic Party SPD as part of a discussion paper in 2020. The approach was close to being adopted as part of the “climate pact” (Klimapakt) adopted in May 2021⁷, however, no agreement could be reached in the final negotiations. The Federation of German Consumer Organisations (Verbraucherzentrale Bundesverband – vzbv) supports this approach in a position paper published in 2020 (vzbv, 2020). A study by Oeko-Institut and Klinski (2020) considers an equal split of the costs of carbon in rented buildings and shows that the approach could rather straightforwardly be implemented in the Heating Cost Ordinance.
- **Allocation based on buildings characteristics:** The coalition agreement of the new German government published in November 2021 foresees the introduction of the split of CO₂-costs between landlords and tenants by July 2022. The parties plan to introduce a differentiated approach, where the share of CO₂-cost borne by the landlord are higher for low-efficiency buildings (SPD, GRUENE and FDP, 2021). The equal-split approach is highlighted as a fall-back option if the introduction of a differentiated approach is not feasible. A similar approach was proposed by the Federal Association of German Housing and Real Estate Companies (GdW) in 2021: For buildings with higher energy consumption, the share paid by landlords reaches up to 100 %. For very high-efficient buildings with low energy consumptions, the carbon price is fully borne by the tenant (GdW, 2021).
- **Full allocation to landlords:** A full allocation of the costs of carbon to landlords has been promoted by the tenant association (Mieterbund). Furthermore, the Social Democratic Party (SPD) states in its manifesto for the 2021 Parliamentary Elections that a legislative framework for allocating the costs for CO₂-pricing to landlords will be implemented (SPD, 2021).

Introduction of all-inclusive rents

In their coalition agreement adopted in 2021, the parties forming the German government agree to examine the introduction of an all-inclusive rent system to be merged with the current approach of rent increases after thermal retrofit measures (SPD, GRUENE and FDP, 2021). The agreement was preceded by several reports and statements assessing different approaches for all-inclusive rent systems. In 2020, the Free Democratic Party (FDP) submitted a proposal to the Parliament suggesting the introduction of a partial warm-rent approach (Deutscher Bundestag, 2020). The proposal was rejected in a voting in 2021 by all parties except for the FDP (Deutscher Bundestag, 2021). The proposal refers to a study discussing options for introducing all-inclusive rent systems in Germany (IWU, 2001). A position paper by the German tenant association (Deutscher Mieterbund) communicates support for the implementation of an all-inclusive rents system (Deutscher Mieterbund, 2020).

A study carried out by Agora Energiewende examines possible options for overcoming the landlord-tenant problem by introducing a warm-rent system with temperature feedback (Agora Energiewende, 2021). The study proposes to combine all-inclusive rents with a reference temperature approach, where room temperature is continuously measured. The report suggests that tenants bear any additional costs that arise from indoor temperatures above the fixed reference temperature, and benefit from the savings if temperature is lower. However, the report does not provide any insights on how the relationship between temperature and energy cost savings could be established⁸.

The feasibility and practicability of transforming the German framework for rented buildings towards (partial) all-inclusive rents is studied in Klinski and Oeko-Institut (2021). The study compares different approaches for introducing all-inclusive rents in Germany and, among others, discusses key challenges:

- **Provisions for rent increases:** A key challenge for all partial warm rent models is to clearly determine how the applicable rent increases at the point of introducing the new system are calculated. The legal framework, and consequently also the lease agreements, must specify exactly how high the share of heating costs is or how it is to be determined in order to arrive at an unambiguous allocation of the total costs. This is challenging because both energy prices and heating demand fluctuate (the former due to market conditions and the CO₂ price, the latter mainly due to weather conditions, but also due to consumption behaviour). The necessity of amending the existing rental agreement in itself potentially entails the risk that landlords will attempt to use the transition to all-

7. <https://www.handelsblatt.com/politik/deutschland/klimaschutz-vermieter-sollen-kuenftig-50-prozent-der-co2-preis-kosten-tragen/2183896.html?ticket=ST-305188-AbL7eRhD3h7JlOtS6pmC-ap6>

8. For example, a reduction of the temperature below the reference temperature can be reached by opening windows, thus leading to increased energy consumption.

inclusive rents for further rent increases. This could call into question the acceptance of the model on the part of the renters and its suitability to support a just transition. To address this, it would seem conceivable to additionally stipulate that no rent increases may be made for other reasons during the period of the changeover (e.g. from the time the law is passed until one year after the transition period).

- *Availability and quality of Energy Performance Certificates (EPCs):* One option to specify the rent increases when introducing a warm rent system is to use Energy Performance Certificates to rate the energy consumption of the building. However, EPCs are currently not available for all rented buildings. Furthermore, the quality of EPCs is considered insufficient for introducing a legally binding framework for adjusting rental agreements on their basis (Klinski and Oeko-Institut, 2016).
- *Economic feasibility of thermal retrofit:* By comparing the costs and benefits of an all-inclusive rent system as compared to the current approach for allocating costs for thermal retrofit measures to tenants through the modernisation charge, the study finds that the economic feasibility of thermal retrofit measures is reduced considerably for landlords. A full replacement of the current system with a partial all-inclusive rent system would therefore likely lead to a decrease of thermal retrofit measures.
- *Impact on the income support in the costs of housing:* The income support according to § 22 of the German Social Code uses an established methodology to calculate the admissible energy costs that can be covered by the program. A transition to an all-inclusive rent system would lead to a considerable administrative burden as the specifications would need to be adapted and monitored.

Comparison of approaches

The analysis of the status quo and current discussions in Sweden and Germany (see previous sections) provide insights into the challenges and opportunities of transitioning from one established system for allocating heating costs between landlords and tenants to another – in opposing directions. This section discusses key lessons that can be learned for the planned transitions:

The focus in Sweden and Germany has been different, leading to different results:

- Sweden is focusing on the energy end-use of the building itself. By letting the landlord bear the energy costs, the incentive for thermal retrofitting is stronger.
- Germany is focusing on the tenants' role in the energy end-use of the building. By letting the tenants bear the energy costs, the incentive for energy-efficient behaviour is stronger.

Complementary policies addressing energy consumption and thermal retrofit:

- Germany has an established framework for consumption-based metering and billing, thus fostering energy-efficient behaviour at the consumption side. For the investment side, the approach for allowing rent increases after thermal retro-

fit measures as well as the existing funding schemes provide strong financial incentives for thermal retrofit measures.

- In Sweden, the consumption side is addressed by the legislative framework only in worst-performing buildings, for which individual metering and billing is mandatory (with generous opportunities for exceptions). However, the cap for indoor temperature being commonly in place provides a strong driver for limiting energy consumption. The investment side is addressed as energy cost-savings are fully borne by the tenants.

Fairness plays a key role in the discussions in both countries. In Sweden, the fairness of distributing heating costs based on measured consumption is questioned, because heating costs would differ e.g. depending of the location of the apartment within a building. In Germany, the fairness of the current distribution of heating costs between building units is hardly questioned. However, when specifying the rent increases at the point of transition fairness is seen as an important issue. Furthermore, fairness is discussed in the context of the distribution of costs for thermal retrofit measures.

Both Sweden and Germany have developed their current legislative framework over long timeframes. In both countries, a bias for maintaining the status quo may persist and may pose an important challenge for the transition.

Conclusions

The question of which type of allocation of heating costs between landlord and tenants is adequate to foster building retrofit and support a socially acceptable distribution of costs is discussed controversially. On the one hand, allocating the costs to tenants through consumption-based metering fosters energy-saving behaviour. On the other hand, an allocation of heating costs to landlords provides an economic incentive for landlords to invest in thermal retrofit measures.

The potential of all-inclusive rent systems to increase the renovation rate in rented buildings and to foster a socially just distribution of costs depends on the complementary policy mix. For example, the introduction of minimum energy performance standards as outlined in the Commission Proposal for the Energy Performance of Buildings Directive provides a strong driver for increasing the retrofit rate. Furthermore, funding programmes may provide a key driver for thermal retrofit measures and may limit the negative financial impacts for tenants if designed accordingly. The legislative framework for setting rental agreements is a further factor that crucially influences the potential of all-inclusive rent systems.

The Swedish current rent legislation and value-in-use rent system limits the possibilities for landlords to recover their investments in thermal retrofit measures. With the introduction of IMB, tenants benefit from energy cost savings, and can at the same time get access to information on the CO₂-emissions from their heat consumption. A complementary framework for ensuring the economic feasibility of thermal retrofit measures is therefore required.

Transparency on energy consumption and CO₂-costs can be a driver for energy efficiency in buildings both for tenants and for landlords. The shared responsibility is reflected in the German proposal for splitting the costs of CO₂-pricing between

landlords and tenants. For the discussion in Sweden, it is recommended to increase transparency and information on CO₂-pricing for tenants.

For Sweden, the public debate is dominated by the organizations that have a strong voice. One example of this is that the two largest organizations for cooperative housing have openly expressed very negative opinions on IMB for heating even though many of their members (individual cooperative housing associations, 40 per cent of the multi-family building stock) are generally positive. For the German discussion, it is recommended to involve the relevant parties at an early stage of the discussion.

The accuracy of the approaches to allocate heating costs to different units within a building is considered a key challenge in Sweden. In Germany, where consumption-based metering and billing is typically provided by service companies, the allocation is hardly questioned despite the uncertainties. The transparency the information provided to end-consumers is expected to further increase with an increasing use of digital equipment following the transposition of the new requirements introduced to the Energy Efficiency Directive in 2018. With the allocation being partly based on the floor area of the building units and partly on measured consumption, both the fixed costs and the usage-dependent costs are taken into account.

In order for all-inclusive rents to be energy-efficient, the approach has to be combined with a capped indoor temperature. Otherwise, contrary to the aim of the measure the system can lead to an increase in energy use. In Sweden, IMB for heating is often combined with raising or removing the cap, which is one of the main reasons that the profitability and energy-efficiency is questioned.

Our analysis concludes that partial all-inclusive rent systems may act as one element of the policy mix for decarbonising the buildings sector, however their suitability to foster a fast and just transition crucially depends on the complementary instruments as well as the instruments they replace.

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