
CO₂ Emissions Trading in Buildings and the Landlord-Tenant Dilemma: How to solve it

A proposal to adjust the EU Energy Efficiency Directive

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PUBLICATION DETAILS

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This publication is available
for download under this QR code.

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Layout: RadiCon | Berlin, Kerstin Conradi
Cover: Borut Trdina/iStock
Proofreading: WordSolid

207/04-I-2021/EN

Version 1.0, March 2021

Please cite as:

*Agora Energiewende and Universität Kassel (2021):
CO₂ Emissions Trading in Buildings and
the Landlord-Tenant Dilemma: How to solve it.
A proposal to adjust the EU Energy Efficiency Directive*

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Dear reader,

As part of the Fit-for-55-package, EU policymakers are discussing the option to introduce an EU-wide emissions trading also in the building sector. There is a vivid debate on this concept, one problem being that under current EU regulations any CO₂ pricing mechanism on heating fuels will only exacerbate the landlord-tenant dilemma. This is because, with few exceptions, heating costs are fully paid by the tenants, so rising CO₂ prices just increase their bills while giving little incentives for landlords to invest in energy efficiency measures.

The example of Sweden shows a way out of the dilemma. All-inclusive and temperature-based

rents would ensure that landlords benefit from energy savings and emissions reductions.

However, Sweden is profiting from an exception clause in the Energy Efficiency Directive (EED). Similar systems in other Member States would currently not be allowed. We thus propose changes to the EED so that carbon pricing affects those best positioned to respond to price signals: the landlords.

I hope you find the following report both informative and stimulating. Yours sincerely,

Patrick Graichen
Executive Director Agora Energiewende

Key Findings at a glance:

1	Including the buildings sector into any kind of CO₂ pricing scheme without addressing the landlord-tenant dilemma could heavily burden tenants and fail to incentivize climate action in buildings. In nearly all EU Member States additional costs for carbon emissions would only increase tenants' bills without encouraging landlords to refurbish their buildings.
2	Sweden shows the way out: Here, most rental contracts are all-inclusive rents. Coupled with a CO₂ tax of 114 EUR/t, Sweden has effectively reduced household CO₂ emissions by 95% since 2000. Since landlords pay heating bills, they have a clear incentive to reduce energy consumption and avoid carbon taxes by renovating their houses and switching to clean heating systems.
3	Temperature-based rents can provide targeted incentives for both landlords and tenants. When heating bills are based on a guaranteed temperature, landlords have the incentive to renovate their buildings, while tenants who keep their apartments cooler (verified by temperature monitoring) pay less.
4	The EED should be revised to allow for all-inclusive and temperature-based rents. This would provide all Member States (not only Sweden, currently profiting from an exception clause) with an easy-to-implement policy instrument that protects tenants from high carbon prices and provides targeted incentives for landlords.

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1 The implications for including rental housing market emissions in EU emissions trading

The EU has set the goal of achieving climate neutrality by 2050. The building sector is a particular focal point in climate protection efforts, and the European Commission has declared its intent to place a “renovation wave” at the core of the European Green Deal. The wave will consist of a set of instruments laying the groundwork for a climate-neutral building stock in Europe by 2050. It will be achieved through increased and more targeted funding and the removal of existing legal barriers, among other measures (European Commission, 2020).

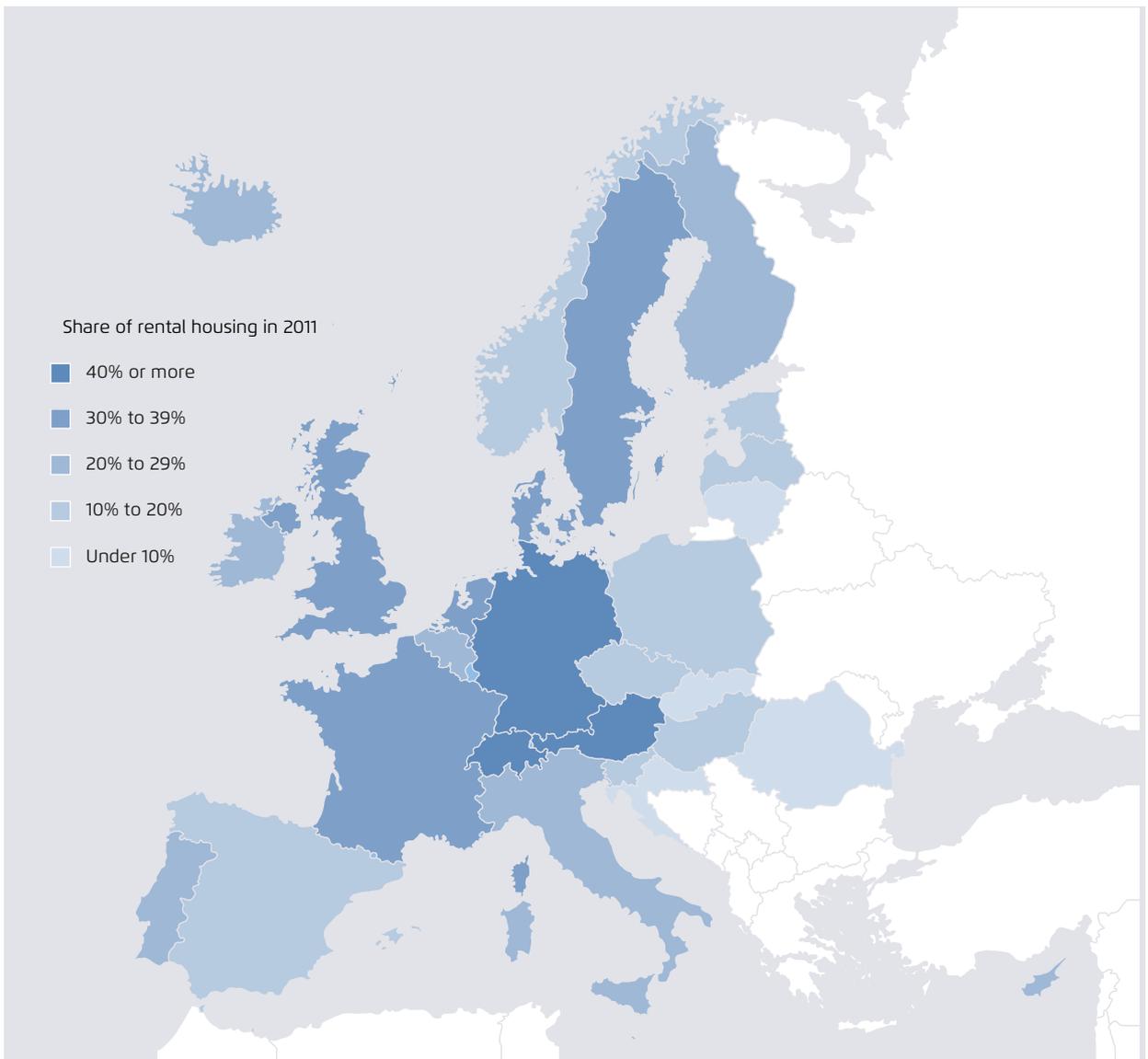
The main option under discussion to ensure the achievement of climate neutrality is the extension of the EU Emissions Trading Scheme (ETS) to the buildings sector. This is controversial, however, because it could push the ETS price to previously unseen levels in view of that sector’s high abatement costs. Some fear that this would increase energy costs in many Member States, massively burdening households and the energy-intensive industry. But a stringent implementation would also guarantee that the EU meet its climate targets, with the high ETS price leading to the necessary cut in total emissions. Further, an ETS-driven decarbonization would be highly efficient: as the carbon price increases, abatement measures become more profitable. The creation of separate ETS programs for buildings and/or transport is also under discussion. This would diminish cross-sectoral effects, but

would likely result in higher prices for certificates in those sectors due to the high cost of abatement. Carbon-price based abatement requires that the party paying the cost is also the one in a position to reduce emissions. In the rental housing sector, however, the situation is different: the landlord is the one who has to decide for an energy efficiency retrofit, while in most markets, the tenant is the one who bears the additional carbon costs in the form of heating bills.

A simple extension of the ETS to the buildings sector that does not deal with this landlord-tenant-dilemma would place an undue burden on tenants. Aligning the incentives in the rental housing market with efficient climate protection is most important in Germany, Austria, the Netherlands, France, Sweden, and Denmark, where more than 30 per cent of households are renters (Figure 1). Among them, only Sweden has resolved this dilemma to a large degree by allowing landlords to profit directly from reduced carbon emissions and energy consumption.

In this paper, we will discuss how regulation in the rental housing market could be adjusted so that landlords are more responsive to carbon prices. We will present and discuss examples from Sweden using all-inclusive and temperature-dependent rent systems. The measures that Sweden has taken show that a carbon-price based approach can be very successful provided the right market conditions are in place. We will also discuss possible modifications to the EED as well as their implications.

Figure 1: Share of rental housing in the Member States



Source: Eurostat

2 The Swedish all-inclusive rent system

Sweden has been very successful in reducing CO₂ emissions in the buildings sector. Since 2000, household emissions have decreased by 95 per cent over this period, and by 70 per cent in the tertiary sector (Figure 2). Sweden is an example that ambitious climate protection in the buildings sector can be achieved in a socially acceptable way if the incentives are targeted.

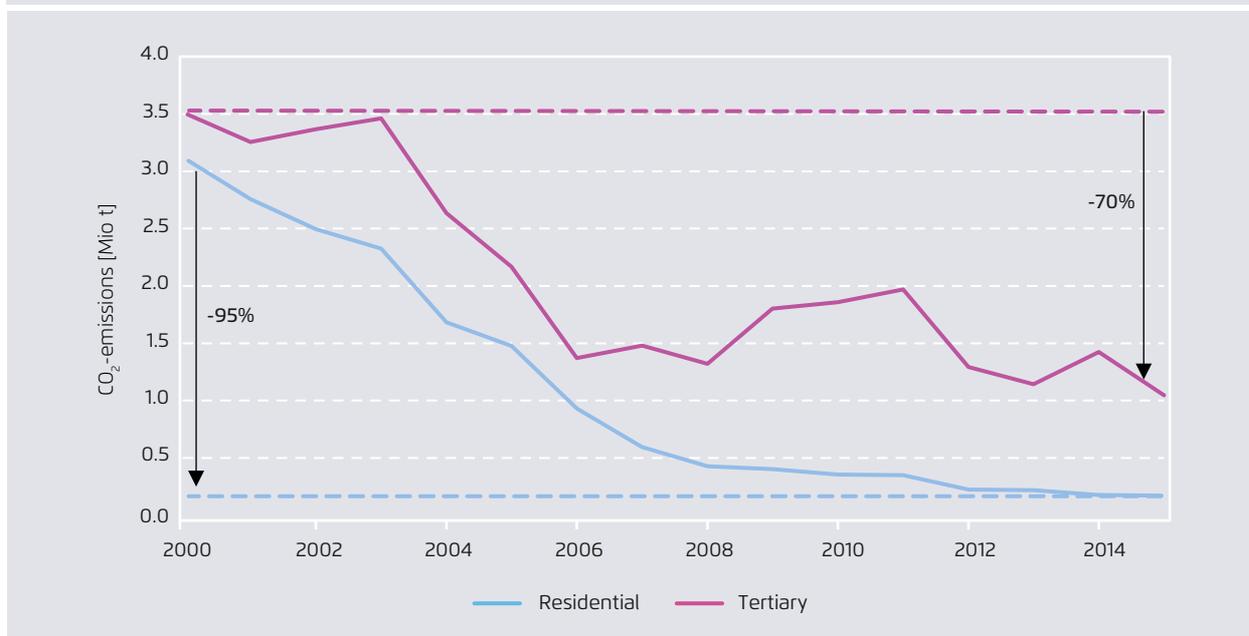
Sweden has reduced its buildings-sector emissions with two key instruments:

- all-inclusive rents and
- a CO₂ tax, currently at 114 EUR/tCO₂ (Swedish Government, 2020).

In Sweden's all-inclusive rent system, the landlord generally pays the costs for heating and hot water

(Swedish Government, 2017). This solves a major part of the landlord-tenant dilemma: when landlords renovate a residential building, they benefit from reduced heating costs.¹ At the same time, the costs of energy retrofits are not passed on to tenants (SIR, 2016). This incentivizes landlords to implement all energy-savings measures that are cost effective. Sweden boosts the economic efficiency of its carbon-reducing measures with an aggressive CO₂ tax, whose level is significantly higher than that found in other Member States. The fact that landlords can reduce not only their fuel costs but also tax payments results in a targeted incentive structure. They can generally save on heating costs through improved insulation, and they can avoid taxes if they opt for climate-neutral technologies. Because the carbon tax continues to rise, landlords may choose to adopt measures whose costs are not yet fully covered by the fuel and tax savings.

Figure 2: CO₂ emissions in Swedish buildings, 2000–2015



Source: Own depiction based on (JRC, 2018).

¹ In other words, landlords behave as if they lived in the apartment themselves.

Sweden's system can create rebound effects, however. Because tenants pay only a flat rate for heating each month, they have no incentive to be thrifty. But while some people might behave wastefully (turning on the heat while the windows are open), it is likely that most tenants would only heat to a comfortable level.

Two factors need to be weighed against each other here: the potential for climate protection through the green retrofits and the use of clean heating systems on the part of landlords, and the potential cost savings from more economic heating habits on the part of tenants. Considering the large CO₂ savings Sweden has achieved in the buildings sector (Figure 2), it seems that the first factor is far more impactful than the second.

However, a brief legal assessment commissioned by Agora Energiewende shows that an introduction of

all-inclusive rents in the other Member States would not be compatible with current EU law. A legal opinion by Becker Büttner Held concludes that the introduction of all-inclusive rents would not meet the regulations for individual metering in the Energy Efficiency Directive (EED) (Becker Büttner Held, 2020).

The EED states that Member States are required to implement individual metering as far as "technically possible, financially reasonable and proportionate in relation to the potential energy savings" (EED, 2018). As the Swedish rental housing market has always been based on all-inclusive rents, it has so far avoided a switch to individual metering by arguing that this switch would not be cost effective (Linder and Eliasson, 2016). An introduction of Swedish market rules in Member States which already meet the requirements for individual metering would require adjustments to the EED (Agora Energiewende and Universität Kassel, 2020).

3 Temperature-based rents

Ideally, rental law would incentivize landlords to retrofit their buildings and tenants to heat economically. Such a concept has been discussed by the European Commission's Joint Research Centre: landlords and tenants could contractually agree on a guaranteed room temperature during the winter months.² Tenants who heat above this temperature pay the additional heating costs. Tenants who use less will have the difference reimbursed (JRC, 2017a). (By contrast, hot-water consumption could be billed individually, as required by the EED.)

In that system, landlords have different options for heating buildings. They can save on heating costs via improved insulation or a different heating technology. Since the rent for a warm apartment remains the same while the heating costs decrease, the landlord's margin increases without the tenant having to pay a higher rent. At the same time, the tenants would remain incentivized to heat more economically because any savings below the guaranteed temperature would be deducted from their rent.

We would like to discuss two ways of implementing such a system:

Option 1: Indirect temperature-based rents within the current EED

According to Becker Büttner Held (2020), temperature-based rents align well with the general spirit of the EED, as the directive explicitly calls for measures to resolve the landlord-tenant dilemma. However, in order to ensure technical alignment with the EED, actual consumption must be recorded and factored into the heating bill (Becker Büttner Held, 2020). This can be achieved by using actual energy use to determine indoor temperatures. (The EED allows some leeway in how heating costs are calculated

(Becker Büttner Held, 2020)). For this to work, landlords would have to determine the fuel consumption for the desired indoor temperature under certain weather conditions. They could do this through, say, a calibrated measurement during a heating period. Landlords who implement energy-savings measures would have to adjust the reference energy demands, but would not change the all-inclusive rent. Consider a landlord that receives a monthly rent of 350 euros for an apartment while paying 50 euros for heating. Say the landlord decides to improve the insulation of the apartment that cuts the energy demand in half. In this case, the rent remains at 350 euros, while the monthly savings of 25 euros can be used to recoup the costs of the retrofit.

Option 2: Implement an option for direct temperature-based rents within the EED

The calibrated measurement described above is complex and requires several winter months after an energy efficiency retrofit to determine energy demands. An alternative would be to adjust the EED so that indoor temperature can be used as a basis for settling heating costs. This would simplify the procedure considerably, as a simple thermostat that records the temperature would suffice. Such a model already exists in the city of Lund in Sweden, where public housing companies define the rent for an apartment based on an indoor temperature of 21°C. For every degree that tenants fall below this reference temperature during the heating period, they receive SEK 5 per square meter (Boverket, 2015).

What are the potential shortcomings of temperature-based rents?

Some argue that non-heating-system-related heat sources that impact the temperature inside a dwelling pose a drawback to temperature-based rents

² In dwellings that are equipped with air conditioning, the temperature could also serve as an upper bound for the summer period.

(Boverkett, 2015). For instance, apartments at the tops of buildings and with south-facing windows typically receive more heat from the sun than ground-floor flats facing north. In a temperature-based system, landlords reap the benefits of locational advantages and bear the additional costs of locational disadvantages. But, conversely, the system reduces risk for tenants, whose heating bills depend only on indoor temperatures, not on the severity of a given winter.

Another problem is that tenants might open windows to artificially lower the temperature inside the apartment. In the case of indirect temperature-based rents, this would only be relevant if the tenant did so within the time-period that the reference energy demand was determined. In both cases of temperature-based rents, simple magnetic sensors, which turn off the heating system when the windows are opened, would be a low-cost solution to prevent abuse.

Boverkett (2015) reports that public housing companies have established practices to account for external heat sources by disregarding extreme temperatures and punishing tenants who air their apartments to an “unusual extent in order to lower room temperatures”.

In this context, it is important to remember that the current practices for allocating heating costs across the EU are far from perfect. Most Member States have rules in place demanding that a certain portion

of the heating costs (usually between 25 and 55 per cent) in multi-family houses be allocated based on floor area. Some Member States apply corrective factors to account for the unfavorable locations of dwellings. In Denmark, these can be determined based on radiator sizes, consumption in previous years and values from comparable buildings, while in Hungary, they are based purely on the location of the dwelling. In other countries, however, the application of such correctives is forbidden.

Lastly, several Member States set upper and lower bounds on how much the heating bill of one dwelling might deviate from the average consumption in the building. Czechia goes as far as to mandate that every tenant gets billed at least 80% of the average heating bill (JRC, 2017b). Such regulations could create perverse incentives that discourage tenants from heating economically.

The above examples show that EU approaches are fairly crude and vary greatly between Member States. And at least some do not adequately reflect individual heating behavior. At any rate, the shortcomings of a temperature-based approach do not appear any more severe by comparison. Furthermore, a temperature-based rent, which relies on thermostats, would eliminate the need for a regulation that targets free-riding on the neighbors heating bill, because the indoor thermostat cannot distinguish whether the heat was transferred from a neighboring apartment.

4 The case for opening the EED up to all-inclusive rents and temperature-based heat billing

As we outlined in the previous section, the current EED makes it difficult to resolve the landlord-tenant dilemma in most European rental housing markets: the guidelines on individual metering can only be reconciled with temperature-based heat billing through fairly complex methods, and they completely preclude the use of all-inclusive rents.

The issue is even more pressing in view of the fact that an expansion of the EU ETS to the buildings sector would amplify the existing dilemma. A separate ETS for buildings, with or without the transport sector, could also create new or boost existing social distortions, especially in areas where the housing market is already under pressure, such as in many metropolitan areas.

We therefore argue that the EED be revised to allow all-inclusive rents. With all-inclusive rents, each Member State has a fairly easy-to-implement option for reducing the tenant stress that an ETS expansion could create while incentivizing landlords to reduce the heating bills and carbon footprints of their buildings.

We propose that the EED include the option for temperature-based heating bills because this approach would set nearly optimal incentives for climate protection in the rental housing market: tenants would still be rewarded if they reduce the temperature in their apartment, and landlords would profit from reducing the energy demand of their buildings as well as the carbon footprint of their heating systems.

Switching to temperature-based rents would be nothing less than a paradigm shift in the rental-housing market. Like a passenger buying a train ticket to get from A to B, tenants would pay for the service of having their apartment heated to a

certain temperature. Passengers do not pay extra for the additional fuel costs when a train must take a detour. Neither do they reimburse the railway company if the train is delayed and service personnel needs to get compensated for overtime. They can, however, increase their comfort by booking a first-class ticket. This would correspond to a tenant deciding for a higher comfort level and increasing a room's temperature.

Assuming that carbon prices are sufficiently high, both incentive structures might lead landlords to introduce carbon-neutral technologies, such as heat pumps and district heating. Such technologies would erase carbon emissions directly associated with their buildings and eliminate the attendant carbon costs. Some might argue that this raises emissions in other areas, such as the power or the district-heating sector. This is, however, a prerequisite for a successful decarbonization of the building stock, as to date there is no silver bullet technology: Solar thermal is not suitable to supply a building with heat all year long, and sustainable biomass is a limited resource that will be needed to decarbonize the industry and parts of the transport sector, such as air travel. The only potentially climate-neutral technologies that can be easily scaled and are readily available today are district heating and heat pumps (CE Delft, 2020; Prognos et al., 2020). However, the electricity and the district-heating sectors are largely subject to the EU-ETS and will therefore be fully decarbonized by 2050. Incentivizing landlords to switch to these technologies will enable a complete decarbonization at a later stage. If the energy demand of the building stock remains high, additional policies can and should be implemented to target the issue. This is important to ensure that demand growth in these sectors does not overstress the energy system.

Lastly, it should be noted that all-inclusive rents and heat billing based on temperature can set incentives for implementing cost-effective energy- and emissions-savings measures in any market structure present in the EU's rental housing markets. In

markets where rent increases depend only on the market structure, landlords can implement these measures and save on heating costs, even if the market does not allow for further rent increases, or they do not want to touch existing contracts. This also applies to markets like Italy's (BBSR, 2016) where it is difficult to increase the rent during the duration of an existing contract. Finally, countries that already have specific rules to distribute the costs between landlord and tenant such as Denmark, Poland and Germany could consider abandoning these mechanisms, which are frequently controversial.³

³ In Denmark, rent increases from energy retrofits are coupled with increases in the value of a dwelling, which has led to several legal disputes (BBSR, 2016). In Germany, the public debate has focused on whether housing companies exploit energy retrofits to expel

unwanted low-income tenants. The debate has resulted in a cap on rents in Berlin (Vasudevan, 2020) and a public initiative to disown one of Berlin's largest housing companies (Oltermann, 2019).

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