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Overcoming the split incentive barrier in the building sector

Workshop Summary

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Abstract

A JRC workshop on split incentives organised in the framework of article 19(1)(a) of the Energy Efficiency Directive (Directive) has been organised in order to examine current solutions addressing split incentives in the building sector in Europe and beyond. The workshop focused on the social housing, private residential and commercial sectors. Practices from Italy, the Netherlands, the UK, Denmark, Sweden and the US were presented and a panel discussion between representatives from groups of landlords, tenants, social housing and ESCOs was held.

This report provides a summary of the presented material.

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Workshop summary

Contents

Terminology

'**Cold rent'** refers to the base rent.

'Green lease' is a lease between a landlord and tenant of a commercial building which provides obligations on both parties to minimise adverse environmental impact in areas such as energy, water and waste.

'Gross lease' is a lease whereby all operating expenses are borne by the landlord. Any capital expense that reduces operating expenses is solely in the landlord's domain.

'Inclusive rent' *see* 'gross lease'

'Modified gross lease' is a lease in which the tenant pays base rent at the lease's inception but in subsequent years pays the base rent plus a proportional share of some of the other costs associated with the property. In building-related energy terms, tenants may be required to pay their proportional share of the heating expenses under a modified gross lease.

'Net lease' is a lease in which the tenant is responsible for some of the additional costs associated with the property. There are three types of net leases: single net, double net and triple net. Under a single net lease, the tenant pays rent plus property taxes. Under a double net lease, the tenant pays rent plus property taxes and insurance. Under a triple net lease, the tenant pays for rent plus property taxes, insurance and maintenance.

'Property Assessed Clean Energy (PACE)' is a means of financing energy efficiency upgrades in a building where the upgrade is financed by bonds issued by municipalities and paid back by an additional charge on the property tax bill.

'Reverse split incentive' refers to situations where tenants are not responsible for paying their utility bills and thereby have little or no incentive to conserve energy.

'Split or misaligned incentive' refers to transactions where the benefits do not accrue to the person who pays for the transaction. In the context of building-related energy, it refers to the situation where the building owner pays for energy retrofits efficiency upgrades but cannot recover savings from reduced energy use that accrue to the tenant.

'Temporal split incentive' refers to situations where the energy efficiency investment does not pay off before the agent transfers the property.

'Transaction costs' in the energy efficiency investments are costs related to gathering and assessing information of equipment or material, making agreements in order to carry out and enforce the contract, monitoring and verifying the actual level of energy efficiency improvement, etc.

'Warm rent' refers to the base rent plus utility costs for heating and sometimes hot water.

Main highlights

Several current practices tackling split incentive issues between landlords and tenants across Europe and beyond have been discussed as part of this workshop. While it is clear that a one-size-fits-all solution does not exist due to particularities across various segments of the building sector and different national conditions, a number of findings can be highlighted.

- A successful approach to overcoming misaligned incentives between tenants and owners should consider splitting costs and benefits in a balanced way. A share of energy cost savings should be allowed to be used for investment repayments. While this means that tenants could be subject to a repayment fee in their utility bills, landlords should also take part of the investment cost in view of the property's value increase as a result of the energy efficiency upgrade.

- In the Netherlands, in addition to the incorporation of energy performance in the social rent evaluation, a total housing cost guarantee ensures that social tenants are protected against increase in their total housing costs, comprising the base rent and utility costs, in case of an energy renovation. The Dutch social housing corporations act as a revolving fund and have access to government-guaranteed, long term, low-interest loans.

- A successful on-bill finance programme should create incentives for all stakeholders: tenants (savings), landlords (savings/investment), utilities (protection/decoupling) and by extension banks. As high transaction costs linked to the realisation of these investments deter landlords from upgrading their rented property, a small incentive to landlords should be considered in on-bill finance programmes specifically designed to target rented properties in the private and/or social housing sectors.

- Forbidding landlords to let properties of very low energy efficiency levels can send clear signals to the market. This approach is adopted in the UK, where a legislation adopted in 2011 will make it unlawful to lease properties of energy label F or below after 2018. Together with this, tenants will be allowed to demand energy efficiency upgrades on their properties from 2016 onwards and a tax break scheme will be put in place in order to provide financial support to residential landlords in the transitional period 2014-2017.

- For countries or building sector segments where rent controls are applied, integrating the energy performance in the rent ceiling evaluation can help reduce disincentives. In Germany, a rent index, taking into account the energy performance of a building, is currently being tested in 7 communities.

- Energy performance certificates have failed to create a strong impact on the market. Quality problems, lack of enforcement and poor implementation in practice are some of the issues that need to be addressed. A distinction between building- and user-related energy consumption, where the responsibility of the first lies with the landlord and the second with the tenant, is increasingly needed.

- Split incentives can be addressed through a packaged solution consisting of mandatory energy savings, revised rent act, green leases, improved energy labels and actions to further facilitate ESCO activities.

- A shift towards the consideration of inclusive rent can support cost-recovery models based on a rent increase or fee on utility bill. This, however, should be considered together with feedback mechanisms in order to avoid reverse-split incentives. Individual metering, in cases where this is cost-effective and technically possible, can be of great added value.

- Traditional forms of leases (gross or net) create asymmetries in the relationship between landlords and tenants and therefore do not set the ground for energy efficiency investments. In the commercial sector, green leases can bridge these differences by splitting costs and benefits between the parties in such a way that both parties can benefit from an energy retrofit. Despite their potential, green leases are not currently widely used in Europe. Sharing standard green lease guidelines can increase awareness among key interest groups. The public rental sector can also lead by example by adopting green leases for their rented premises.

- A key challenge is how to accurately predict the energy savings resulting from the energy efficiency upgrade. In New York City, tenants that enter into a green lease can use a 20% "performance buffer", which allows them to pay only 80% of the predicted cost savings and thereby protects them against any risk of underperformance.

Introduction

Improving energy efficiency is often seen as the most cost-effective means of achieving the EU greenhouse gas emission targets. In particular, the energy efficiency potential of the building sector has enjoyed increasing attention in recent years. Modernising the building sector, however, is associated with a number of barriers. Split incentives are common barriers between building owners and tenants that, in practice, hinder the uptake of energy efficiency investments.

Article 19(1)(a) of the Energy Efficiency Directive (Directive 2012/27/EU) recognises the importance of addressing the barrier of split incentives in the building sector. It states:

> *Member States shall evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, without prejudice to the basic principles of the property and tenancy law of the Member States, in particular as regards:*
> *(a) the split of incentives between the owner and the tenant of a building or among owners, with a view to ensuring that these parties are not deterred from making efficiency- improving investments that they would otherwise have made by the fact that they will not individually obtain the full benefits or by the absence of rules for dividing the costs and benefits between them, including national rules and measures regulating decision- making processes in multi-owner properties*

In this context, the European Commission's Joint Research Centre, on behalf of DG Energy, organised a workshop on split incentives with the aim to exchange information about the extent at which split incentives act as a barrier to energy efficiency investments in the building sector as well as investigate current solutions, their effectiveness and ways forward. The workshop focused on the social housing, private residential and commercial sectors. Practices from Italy, the Netherlands, the UK, Denmark, Sweden and the U.S. were presented and a panel discussion between representatives from groups of landlords, tenants, social housing and ESCOs was held.

This report provides a summary of the main findings of the workshop and presentation summaries which are structured in the following sections:

- Practices in the social housing sector
- Aligning incentives of landlords and tenants in private residential units
- Alternative approaches for incentivising tenants and owners in residential & commercial sectors

All presentation material can be downloaded ***here***.

Acknowledgements

We would like to thank all speakers for their insightful presentations and all participants for their lively engagement in the workshop. Many thanks to Rod Janssen, Energy in Demand, for superbly moderating the meeting as well as panellists for their fruitful discussion

Practices in the social housing sector

Netherlands

Speaker: Rene Van Genugten, Aedes

The Dutch social housing sector represents a substantial share of the country's rental market, consisting of at least 2.4 million dwellings. This is equivalent to 30% of all Dutch housing stock. SHAERE[1], a database with energy-related information on the social housing stock updated on a yearly basis, showed that the average energy index of the Dutch social dwellings was 1.73, which is equivalent to label D according to the Dutch energy labelling system. Most Dutch homes are heated by natural gas, while estimates show that social tenants pay €4 billion for heating and electricity costs every year.

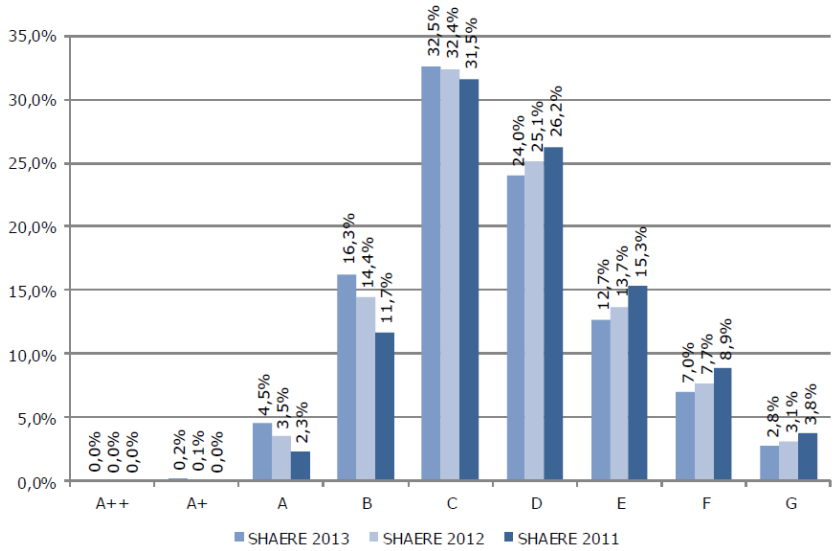

Figure 1 - Monitored energy performance of the social housing stock in the Netherlands based on SHAERE data

Energy saving and sustainability are high on the agenda of Dutch social housing organisations. The updated National Covenant on Energy Saving in the rental sector aims at an average energy label B by the end of 2020. This represents an energy saving target of 33% between 2008 and 2021 and concerns building- and installation-related energy consumption for space heating, hot water and ventilation. The present rate and depth of energy renovations are, however, not sufficient to meet this target. Moreover, the total investment needed to reach this goal amounts to approximately € 8 billion.

Prior to 2011, the rent ceiling was evaluated using a point system established in order to take into account various criteria such as the dwelling quality, location and size. This ceiling defined the maximum rent social landlords could charge. A bill, however, which was approved in March 2011, enabled the incorporation of the energy performance of the dwelling in the criteria list used in the evaluation. This change now offers landlords

[1] SHAERE (Social Rented Sector Audit and Evaluation of Energy Conservation Results) is a database collecting and monitoring the total energy consumption, CO_2 emissions and average energy index of social housing dwellings.

the opportunity to increase the rent if the energy label improves and thereby an opportunity to recuperate part of the investment costs for energy efficiency upgrades.

- **An average energy index of 1.25 (label B) for social housing dwellings has been set as a target in the Netherlands. Current investments need to accelerate in order to meet the target.**
- **The social rent ceiling evaluation has been revised in order to include the energy performance of the building in the criteria list. Social landlords can charge a lump sum, consisting of rent and utility costs (i.e. gross lease).**
- **An Aedes database collecting energy-related data of social dwellings allows the monitoring of the energy performance of the social housing stock at a yearly basis on a national level.**
- **The Dutch social housing sector acts as one large revolving fund, where social housing corporations invest in energy efficiency upgrades of rented dwellings and use repayments to reinvest in new upgrades.**

In addition to the 2020 target, the National Covenant on Energy Saving in the Rental Sector also states that a "total housing costs guarantee" must be achieved, which simply means that tenants must be assured an overall reduction in their "total housing costs" [2] as a result of the intervention. That is, the reduced utility costs together with the revised rent should be lower than the sum of utility costs and rent before the intervention. The housing costs guarantee, which involves the use of a phased plan and a computation model, was set up by Aedes[3] and the Dutch Tenants' Association and is based on the calculated energy cost savings for building-related energy use, assuming a normalized (standardized) consumption.

With the total housing cost guarantee, revised rent ceiling evaluation and 2020 social housing target, the ground is better prepared for more energy efficiency upgrades to become reality in the Dutch social housing sector. The lack of major legal obligations is also considered as a positive step. It should be noted that a key element for success is the availability and accessibility of financing. The Dutch social housing corporations have the possibility to obtain relatively easy upfront financing through guaranteed, long term commercial bank loans with low (below 3%) interest rates. By attaining long term loans, it is possible to maintain a low rise of the rent, which in turn ensures a reduction in the total housing costs after the intervention is carried out (i.e. meets the total housing cost guarantee mentioned above). The financing structure of the Dutch housing corporations is such that the social housing sector functions as a revolving fund. Although this approach has proven a success, it is currently under heavy pressure.

[2] Total housing costs refer to the sum of rent and utility costs

[3] Aedes is the national association of social housing organisations in the Netherlands

Italy

Speaker: Marco Corradi, Acer

In the Italian region of Emilia Romagna, a law was approved in December 2013 that permits the use of energy cost savings for investment repayments of energy efficiency interventions. This overcomes a major hurdle faced by many social housing companies across the EU which cannot pass any costs to tenants in case of energy renovations. If this is however allowed, energy cost savings can then be used to repay part of the investment through the provision of a "heat" service or rent increase. This mechanism can facilitate the work done by ESCOs in the social housing sector.

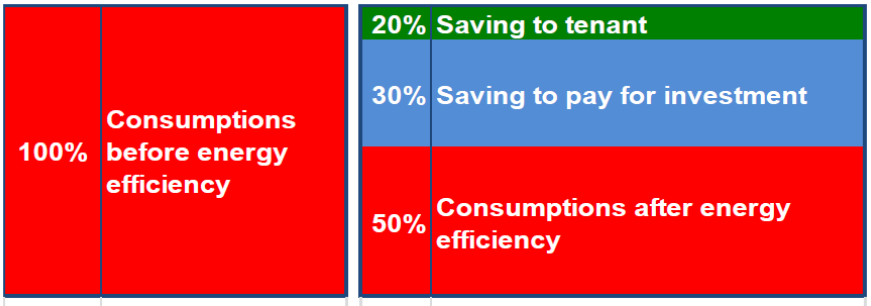

Figure 2 - Distribution of energy costs before (left) and after (right) an energy efficiency intervention

The FRESH project (an IEE-funded project) demonstrated that energy performance contracting (EPC) can be used for energy efficiency upgrades in the social housing sector on a large scale. The project results confirmed the possibility of this cost recovery model (via a rent fee) through the involvement of ESCO companies. For example, energy efficiency interventions which can yield 50% savings were paid back by allocating 60% of the savings as a fee, while the remaining 40% savings remained to the tenants. In this way, tenants enjoyed 20% energy cost savings after the intervention throughout the duration of the contract (Figure 2).

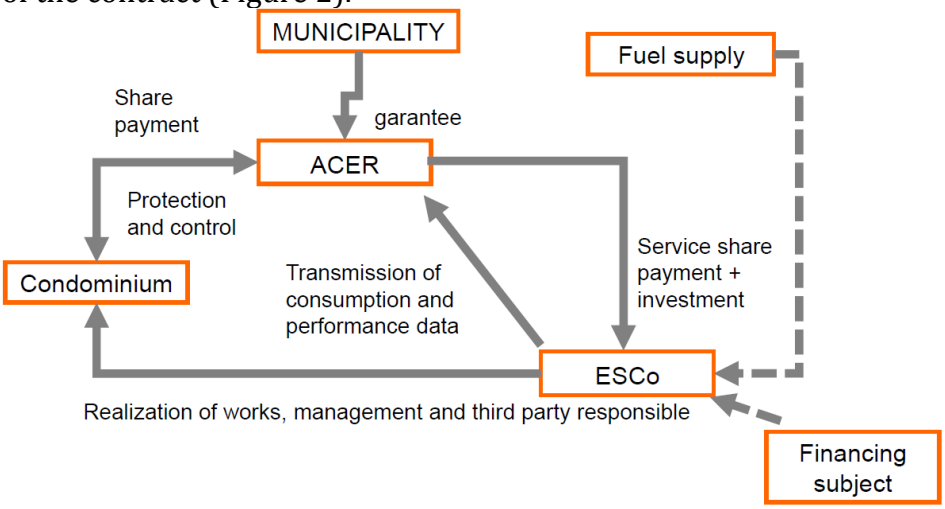

Figure 3 - Contractual relationship between main actors in an energy renovation for social housing through an EPC contract

Under this scenario, the contractual relationships (illustrated in Figure 3) are as follows. The ESCO company guarantees and certifies a minimum percentage of energy savings (e.g. 50%), while the tenants agree to renounce part of the savings to pay back the investment during the contract lifetime. A 12-year contract is signed between the social housing company and ESCO company, which can be renegotiated in case of future interventions. The ESCO company bills the social housing company at 2-month intervals and provides a monitoring report on individual consumptions. The social housing company recovers the costs from tenants and pays the bills issued by the ESCO company.

While energy performance contracting has been proven a successful approach in the social housing sector, a number of obstacles need to be overcome. The main difficulties are associated with collecting historical costs for individual electricity consumption as well as comparing real (historical) and theoretical consumption levels. Other obstacles include the lack of access to credit facilities, lack of knowledge and information on ESCO companies and EPCs and fragmentation of incentives. A number of legal obstacles are also present. These are related to the lack of knowledge and dissemination of EPC contracts in the public administration, lack of specific legislation giving management authorities a sufficient decision-making power to manage the project operation with a high degree of autonomy, lack of a contract type in which the operator finances the necessary works to ensure energy efficiency through savings achieved by the intervention. In addition, public administration contracts are still not allowed to separate the supply of fuel and activity of energy efficiency (that is, work and management).

United States

Speaker: Stephen Bird, Clarkson University

Low income tenants in the U.S. affect 1.89% of all energy use[4] and are associated with potential energy savings equivalent to $4-11 billion per year. While the energy burden has increased for all income groups in the period 2001-2011 (**Figure 4**), low income households have experienced the sharpest increase with energy costs representing nearly 70% of the after-tax income of households earning less than $10k.

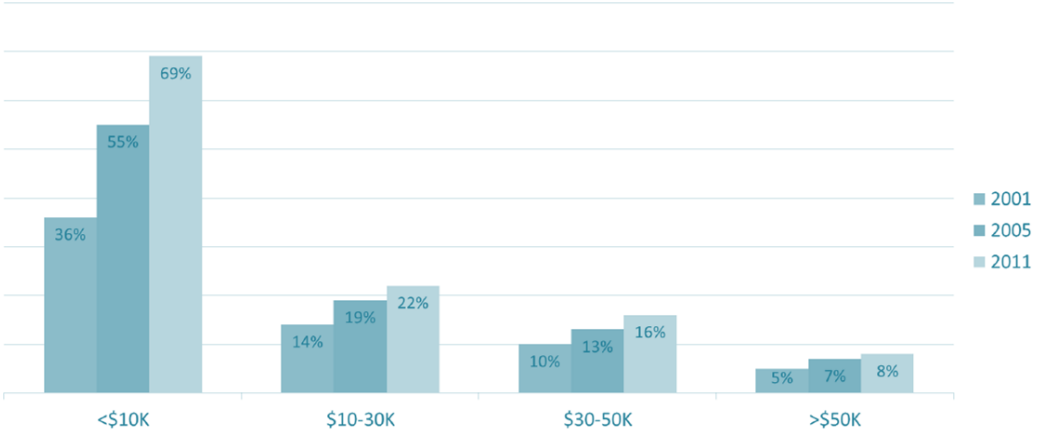

Figure 4 - Energy costs as a percent of after-tax income in the U.S (Source: ACCCE, 2011)

[4] All energy use includes transport as well

Current policy responses for split incentives in the U.S. are generally attached to a number of drawbacks. *Green leases* – enabling an energy saving agreement between landlords and tenants – have gained increasing popularity in the past few years in the U.S. They are, however, more appropriate for large, commercial buildings rather than small units such as houses. Externally funded loans based on the *PACE* model can be effective at addressing split incentives as the loan is attached to the property and paid back by an additional charge on the property tax bill. While this type of loans has gained a lot of momentum since its inception, in 2008 the main U.S. mortgage Freddie Mac and Fannie Mae, handling around 77% of the U.S. mortgages, refused to finance any more PACE loans as a response to the financial crisis. This was attributed to the risk attached to the "first lien" status associated with PACE loans meaning that municipalities had a priority over the lender in case of default. Some efforts are now being taken to revive the programmes in certain areas; however they currently do not offer an immediately available solution.

On-bill financing, which allocates the financing responsibility to the utility and maintains the loan attached to the property, is not considered an appropriate solution to overcome the split incentives between landlords and tenants[5]. This financing mechanism is, in fact, faced with some controversy among tenant groups in the U.S. especially in terms of its appropriateness as a solution for the social housing sector. This is due to the benefits accrued to the landlords as a result of upgrading the rented property (e.g. higher property value) with payments trickled down to tenants. In practice, however, the actual interest of landlords has not met expectations as it is believed that high transaction costs linked to the realisation of investments deter landlords from engaging in renovating their rented property.

Regulatory measures such as building codes can be effective but apply only to new constructions in the U.S., while low-income rental mandates are often politically unpalatable and can create a severe disincentive for landlords to participate. All-In services programmes such as the U.S. Weatherization Assistance programme are generally very expensive, and thus cannot offer a scalable solution. It is generally believed that solutions of voluntary nature are more appropriate for social housing, a sector which already has to comply with a variety of government regulations.

Modifications applied to some of the above policy responses could address some of the concerns. If landlords are allowed to get an incentive in the form of a small share of savings, covering the transaction costs attached to the upgrade, this could trigger participation in on-bill programmes on behalf of social housing landlords (see examples in **Table 1**). Certain conditions however need to apply: inspections, transparent energy information and commitment by the landlord to maintain participation. Utilities should be protected from risk/default while decoupling legislation, allowing utilities to gain incentives for running effective efficiency programmes, is critical. A revolving fund, using sources such as system benefit charges or carbon charges, could be set up to provide guarantees, address default and risk concerns for financing these upgrades as

[5] It is believed that it is more suitable for the target group of owner occupiers

well as lower the interest rates if considered necessary. It should be stressed that these funds are not used to fully finance the investment.

Table 1 - Examples of on-bill financing schemes with landlord incentives

Loan amount	**6000**	**3800**
Financing	3% @ 15 years (interest rate subsidised)	0% @7 years (interest rate subsidised)
Financing cost per month	$43	$45
Landlord incentive (month)	$10 (first 5 years)	$5 (first 4 years)
Projected savings (month)	$67 in electricity & heating	$53 in electricity & heating
Monthly savings for tenant	$14 (first 5 years) $ 24 (years 6-15) $ 67 (years 16 and on…)	$4 (first 5 years) $9 (years 6-7) $54 (years 8 and on…)
Total Landlord Incentive	5x$120/yr payments Total: $600	4x$60/yr payments Total: $240

It should be stressed that in addition to the split incentive issues, attention should also be paid in the cases where reverse split incentives are found, i.e. in situations where residents have little or no incentive to conserve energy and/or do not practice energy saving behaviour due to the fact that they are not responsible for paying their utility bills. In the U.S. this is typically the case in university housing and public housing projects. A pilot programme with the objectives to provide energy information/education, real time feedback as well as motivation and goal setting has been kicked off in a university campus. Preliminary results have so far shown a 3-5 degree Fahrenheit average temperature reduction as well as a 12-18% electricity and water reduction.

- **Regulatory measures are generally not considered appropriate for the social housing sector. Green leases mostly focus on commercial properties, while PACE loans do not offer an immediate solution.**
- **On-bill finance programmes designed to provide incentives to all participating groups – landlords, tenants and utility companies – can offer an attractive solution for addressing split incentives. Under such programme, social landlords should be compensated for transaction cost in order to undertake energy efficiency investments in social housing units.**
- **Attention should be paid in housing units where reverse split incentives occur. In these cases, different measures can be applied in order to provide real time feedback and motivate the user**

Aligning incentives of landlords and tenants in private residential units

United Kingdom

Speaker: Andrew Warren, Association for the Conservation of Energy

In Britain, privately rented units account for around 30% of all dwellings and 50% of all commercial properties[6]. Rent prices are entirely set by the market place as there are no forms of rent controls in the private rental sector. The average homeownership is 10 years, while the average tenancy is around 18-19 months. A number of legislative and fiscal initiatives to overcome the landlord/tenant barrier on energy efficiency improvements exist with various levels of success.

The Landlords Energy Saving Allowance, a tax break scheme which has been in existence for many years, gives the opportunity to landlords to deduct the cost of acquiring and installing certain energy saving measures against their income tax. The scheme has, however, had a limited impact with only 0.03% of landlords benefitting from it thus far. The flagship policy in the UK instead is the so-called Green Deal which aims to use the on-bill finance concept to deliver major energy savings in the UK's building sector, inter-alia addressing split incentives barrier. The UK has been the first European country which adopted an on-bill finance scheme, designed to address, inter-alia, the split incentive barrier. The Green Deal, which came into force in the beginning of 2013, allows owners to install measures at no upfront costs and enables repayments to be made through a charge on the occupants' utility bills. The repayment stays with the utility bill rather than the occupier and gets transferred to whoever is the electricity supplier. The scheme has so far failed to attract sufficient participation as it is attached to a number of weaknesses, the main one being the high interest rate attached to the Green deal loans. The interest rate attached to the loan is at least interest rate of 7% plus add-ons, which is considered uncompetitive. Despite the attractive Green deal element of attaching the loan to the property, traditional commercial bank loans or re-financing existing mortgages offer cheaper forms of financing.

[6] Northern Ireland is not included here as it generally follows very different policies with the rest of the UK area

- **Every successful energy saving programme needs three main components: carrots to provide incentives, sticks to ensure compliance and tambourines to increase awareness.**
- **The landlords energy saving allowance, a tax break scheme aimed to improve the energy performance of rented properties, has not been successful. The Green Deal, which is the first on-bill finance scheme in Europe, has so far failed to attract sufficient interest by owners and occupants.**
- **There are a number of new instruments that are designed to overcome the landlord/tenant barrier: a law under which all properties of energy label F or below cannot be let out after 2018, a law allowing tenants to demand energy efficiency upgrades on their properties from 2016 onwards and a tax break scheme supporting residential landlords in the transitional period 2014-2017.**

A recent legislation, adopted in 2011, stipulates that no landlord can let out a property with an energy performance label F or below by 2018[7]. While sale transactions of buildings with label F or below can still be undertaken after 2018, these properties can only be occupied by their new owners. With a 7 year period between its adoption and enforcement, it is hoped that the legislation will provide a sufficient window opportunity for landlords to take measures before the law is in effect. This has already had some impact in the non-residential sector, which can be justified by two main reasons: (1) leases in the non-residential sector tend to be of longer duration and therefore early action is expected and (2) property agents have been supportive as they viewed it as a market opportunity for themselves. This is, however, not the case with the residential sector where no actions have been observed thus far. A push during this transitional period is anticipated by the enforcement of a new legislation allowing tenants to demand energy performance improvements in the rented property from 2016 onwards. This should be also complemented by a new tax break (with a dedicated annual budget of £35 million) designed to target residential landlords in the period July 2014 to March 2017. The remaining question is whether the scheme should be designed to encourage early movers (that is, before the deadline of 2018) or incentivise larger improvements than the minimum energy label E.

Denmark

Speaker: Per Anker Jensen, Technical University of Denmark

Buildings in Denmark are responsible for around 40% of the total energy use. District heating is the main energy carrier followed by electricity. While there are many financially profitable energy efficiency measures, these are not implemented in reality and principal-agent split incentives comprise a major market failure.

To tackle misalignments between landlords and tenants, packaged policy solutions are necessary. In the Danish context, a number of measures exist, however improvements are imperative if a real change is to be achieved. Mandatory energy savings to be realised by energy supply companies as part of the energy efficiency obligation scheme is a key legislation in Denmark. Through these obligations, energy supply companies

[7] It has been estimated that around 18-20% of the properties are currently labelled as F or below

provide consultation services as well as direct subsidies for energy renovations in the premises of their customers. While this is in general a successful scheme, it does not currently focus on customers in the residential sector. Increasing the interest of supplier companies in residential energy savings as well as prioritising rented housing units could help the scheme deliver more energy savings in this particular segment of the residential sector.

- **Split incentives can be addressed through a packaged solution consisting of mandatory energy savings, revised rent act, green leases, improved energy labels and actions to further facilitate ESCO activities.**
- **Although Denmark was one of the first countries to enact an energy performance certification scheme in the early 1990s, its impact so far has not been as expected.**

In addition, the examination and revision of the rent act is key to a successful package tackling split incentives. In Denmark, no incentives are given to landlords for implementing energy efficiency measures. Under Danish law, one tenant can obstruct renovation work in a condominium even if there is consensus among all remaining tenants. Increasing landlords incentives together with clearer guidelines and fairer tenant democratic rules are important. Agreements need to be made on issues such as the extent at which the rent can be increased and conditions in which the tenants can reject rent rises.

Green leases, a voluntary agreement between tenants and landlords, offers another possible solution, if combined with the necessary legislative changes. As experience with green leases is currently limited, municipalities and public institutions can lead by example by entering into green leases for their rented premises. A standard green lease based on energy label improvements, which should be made publically available, can increase awareness and guide other landlords and tenants on how they can enter into a green lease. So far, green leases have been popular in Australia. Green leasing can be part of wider scheme aiming to improve the sustainability of rented space. For example, the landlord's Responsible Property Investment (RPI) strategy, a strategy introduced by UNEP in 2005 aims to encourage property investors to consider economic, environmental and social sustainability in their decision making process regarding acquisition, management and sale of buildings.

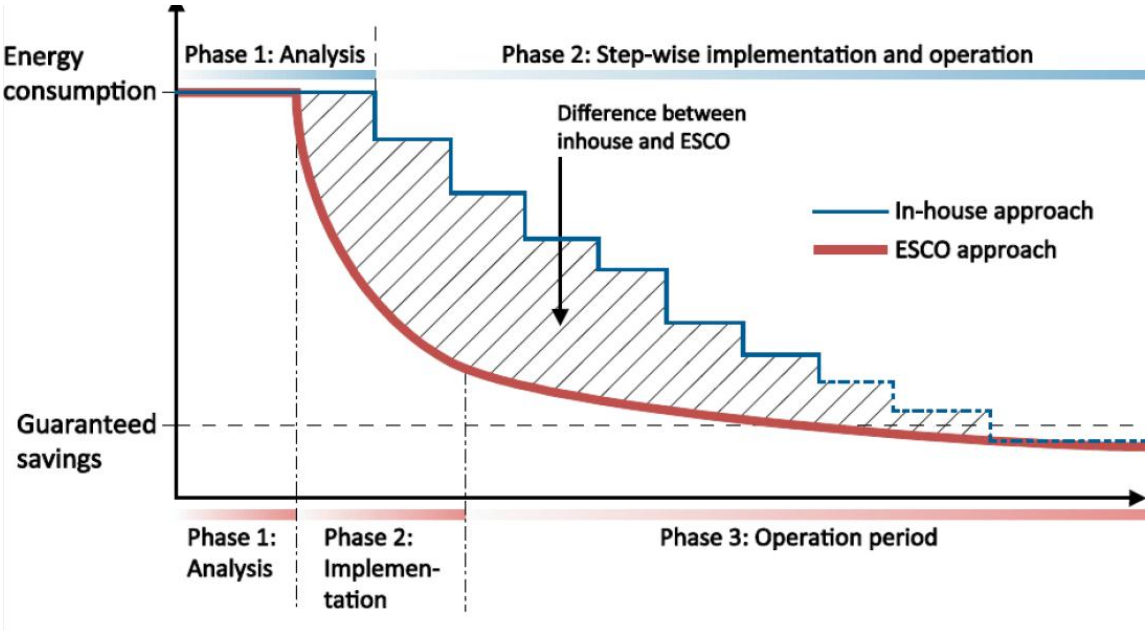

Figure 5 - Energy consumption of a renovated building following an in-house and ESCO approach

Energy labelling is another important instrument which so far has not had the effect that was originally expected in Denmark. This can be attributed to the lack of repercussions for not labelling and its long 10 year validation period. Improved label quality, shortening the interval between audits as well as the introduction of repercussions can make their effect more widespread. Changes in energy performance contracts are also necessary. ESCOs have been in operation in Denmark only in recent years where their main activity is focused on municipality buildings. The guaranteed savings model[8] is mostly used due to the fact that municipalities can have easy access to low-cost financing. It can be generally observed that energy performance contracts are of economic sense for buildings of minimum size of 7500 m^2 or 2 million DKK of annual energy costs due to the large transaction costs experienced in these projects. The need to reduce transaction costs is therefore critical for the success of this model in smaller buildings.

Sweden

Speaker: Lovisa Högberg, Royal Institute of Technology

Single family and co-operative housing units account for around 40% of all Swedish property area, while the private and public rental sectors make up for around 20%. A traditional social housing sector does not exist in Sweden as municipality housing firms, which own as much property area as private owners, need to operate in a business-like environment and thus act in very similar terms with private owners. Municipality housing firms however need to hold certain social responsibilities. In comparison to municipality owners, private owners are usually small in number and therefore scattered. Commercial properties account for around 20% of the floor area and they operate under normal free market settings.

The dominating residential lease type in Sweden is the "so-called" inclusive rent[9], where landlords charge a lump sum consisting of the base rent plus heating and/or hot water costs. The tenant pays the inclusive rent directly to the landlord, while the landlord is responsible for the contract with the utility company. Utility bills in multi-apartment building are split based on the share of the floor area each housing unit occupies[10]. It should be noted that a large share of the multi-apartment buildings is served by district heating. Commercial leases in Sweden, 64% of which are based on the

[8] In the guaranteed savings model, the ESCO guarantees the savings, while the building owner finances the investments

[9] Other commonly used terms are warm rent

[10] The main drawback of this method is that it doesn't distinguish between corner apartment and apartments which are enclosed by other heated spaces

concept of inclusive rent (**Figure 6**), are generally shorter (4-5 years) compared to other European countries. Electricity and cooling is usually metered and charged separately.
Setting the inclusive rent is typically a result of negotiations between landlord and tenant representatives, where past years' consumption levels are used to determine the utility-based costs. While an incentive is given to the landlord to improve the building in order to reach lower energy consumption, tenants have no direct incentives to save energy. In practice, landlords can set limits in the consumption; that is, they can regulate the maximum indoor temperature during the winter months (e.g. 20°C degrees) and thereby partly control the occupant behaviour. The main drawback of the Swedish model is that unless landlords put in place these temperature controls, tenants are not incentivised to reduce their energy consumption. Conversely, tenants are not reimbursed if their consumption is lower than the assumed /agreed consumption. Further incentive misalignments may arise if a third party (e.g. property manager) is involved in the negotiations.

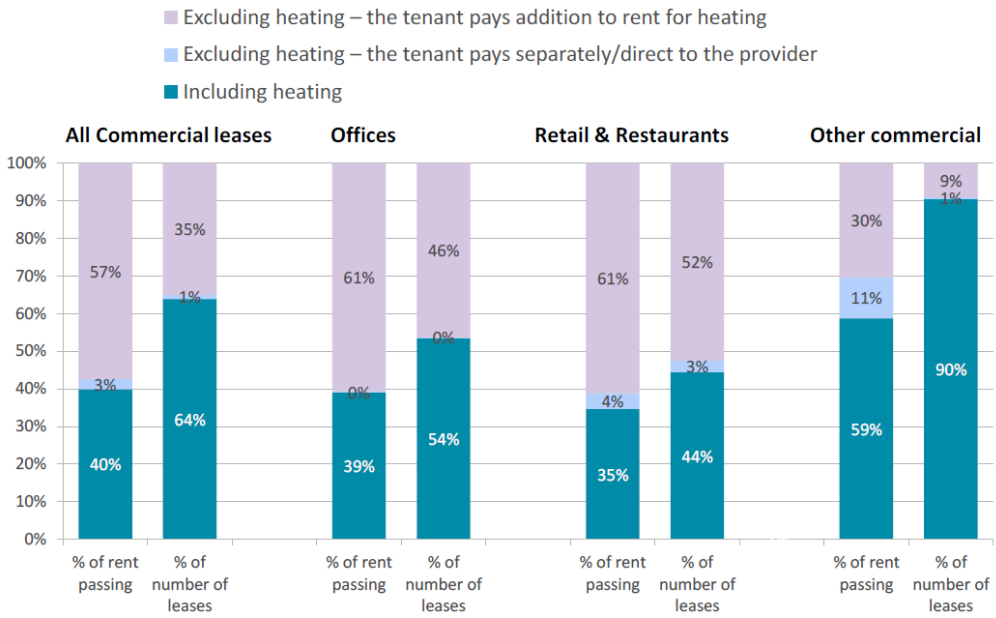

Figure 6 - Lease structure of the commercial sector in Sweden

On the other hand, it is believed that one of the advantages of the inclusive rent model used in the Swedish context is that it provides incentives for landlords to care for their buildings in the long run. This is because landlords are the actors who are most likely interested in improving the quality of their property. In addition, the Swedish model is attached to no transaction costs which would arise if metering and charging were to be undertaken. If individual metering was to be considered, poor building characteristics will not be reflected in the rent, while it would create volatile incentives in case of energy price changes.

Together with controlled indoor temperature, it is suggested that green leases may complement the existing practices in Sweden. A green lean would require both parties (tenants, landlords) to create an action plan with common goals of reducing the energy consumption, while share the costs and benefits.

Alternative approaches for incentivising tenants and owners in residential & commercial sectors

German Housing Rent Index

Speaker: Martin Vaché, Institute of Housing and Environment

The German housing market is predominantly a rental-based market where 55% of dwellings are rented. Many of these rented dwellings are in the privately rental market with an estimated 57% held by private individual landlords. The average tenant occupancy in Germany is considered long at around 8-15 years.

A rent index, a city wide listing of average rental prices, can be used as a form of rent control with the aim to protect tenants against large rent increases as well as eviction. It simply prohibits landlords from raising the rent beyond the, so-called, "average local rent" introduced by the rent index. While the system is voluntary in nature, it becomes legally binding once a city decides to adopt it. In such a case, the concerned city is required to publish officially recognised rental indices which are derived by empirical market rent surveys. The computation of 4-year averages of market rent prices at the local level is necessary to determine these indexes, which are differentiated according to a number of features: dwelling type, size, quality, location and facilities. Rather than creating incentives, this concept is designed to reduce disincentives by allowing landlords to reflect energy efficiency improvements in the rent. The whole system is therefore based on the willingness to pay.

While the dwelling age was used as the main indicator to determine the dwelling quality in the past, other factors (e.g. energy efficiency) must now be taken into consideration. A system, which considers additional factors resulting in a more accurate estimation of the dwelling quality, is therefore necessary. In 2001, the German Institute of Housing and Environment (IWU) was the first institute to attempt incorporating energy efficiency standards in the rent index as well as measuring the willingness to pay for improved energy efficiency. Following an approximate 10 year period of trial and error, the Federal Institute for Building Research (BBSR) started a field study in 6 communities[11] in 2012 with the aim to improve methodological knowledge around this topic and establish quality standards. In 2013, an amendment of the federal rent index statutes made the evaluation of energy efficiency standards mandatory in rent indexes, giving a momentum towards the establishment of such a system in the market. Earlier this year (2014), an IWU survey showed that 25% of the German rental

[11] The number of involved communities has now been raised to 7.

housing stock is under regulation of a legally qualified rent index incorporating basic energy efficiency aspects. Most large cities, however, use a system based on a very poor level of sophistication.

In addition to the disincentive reduction explained above, the incorporation of energy efficiency standards in rent indexes can create transparency and raise awareness within the housing industry. It can be used as a tool to foster investments by offering a simple and transparent compensation scheme, giving the opportunity to landlords to choose a more rewarding cost-based compensation scheme. Above all, the benefit of such system lies with its ability to overcome the temporal split incentives issues, as renters accept higher rents in order to compensate landlords for the investments. The system does not require a contract between a tenant and a landlord, and the landlord can still recover the costs from the next tenant if the current tenant moves out.
The federal government's field study aimed to work together with 7 communities using rent indexes in order to address a number of questions. The first question was how energy efficiency standards can be defined and measured. While this may be considered trivial due to the existence of energy labels, it should be noted that the German energy performance certificates are considered to be complex and therefore difficult to understand. Due to their non-mandatory status, they are hardly used where estimates show that only 10% of all tenants know about the energy label of their house. The research investigates if the physical aspects of the construction can form an alternative definition where the main qualities of walls, windows and other aspects of the construction are taken into account to determine the energy efficiency standard. Secondly, the research posed the question of how empirical evidence on the effect of the rent on the improved energy efficiency can be obtained. This is particularly difficult to answer due to the large heterogeneity in the housing market with small sample sizes of 500-3500 as well as poor market transparency. Thirdly, the research aimed to address ways of overcoming political obstructions in order to overcome differences between renter and private landlord lobbies.

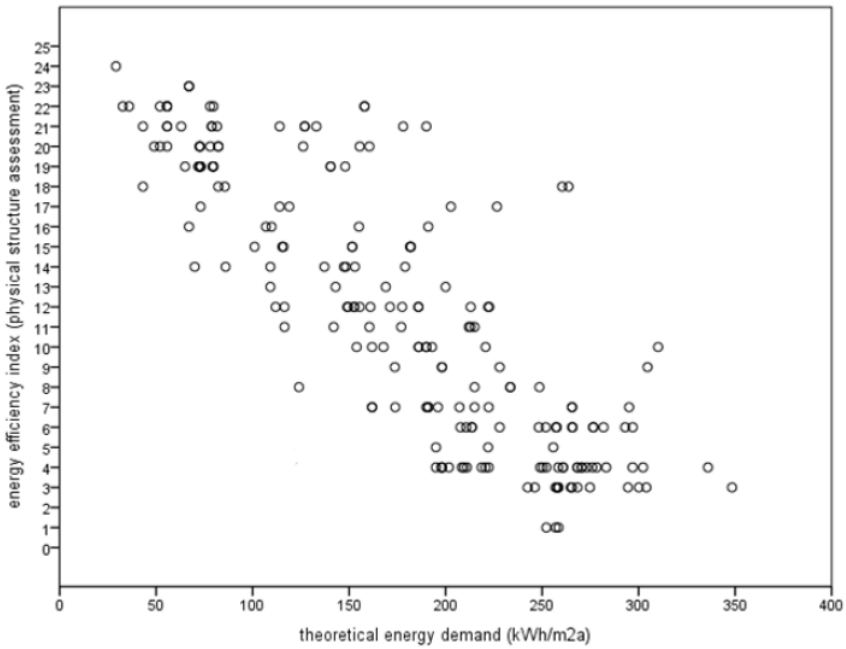

Figure 7 - Physical structure assessment as a proxy for theoretical energy demand

The results so far has highlighted a number of issues. Firstly the measurement of energy efficiency is particularly complex and without mandatory and simplified EPCs, it is difficult to implement energy performance based premiums in rent indices. In addition, the empirical findings do not necessarily prove that there are efficiency related rent mark-ups in all cities. However, it was observed that the average empirical rent mark-up ranged between 3-8%, depending on the efficiency standard. While this is positive, these levels of mark-ups are not sufficient to fully recover investment costs[12]. In addition, the willingness to pay usually ignores non-monetary aspects such as comfort, which is of important value for tenants. From a political perspective, an increased share of efficient housing can help reduce lobby opposition while from a distributional point of view, rent premiums are considered better than cost-based compensation. It can be conclude that this approach can indeed help reduce split incentives; however they cannot fully cover individual investments risks, such as high transaction costs and low economies of scale.

- **The current German energy performance certificates are considered to be complex and therefore difficult to understand**
- **Energy performance based premiums can help reduce disincentives for landlords; however they cannot fully overcome the split incentives between landlords and tenants.**

[12] With a 4-7% increase, investment costs can be recovered within a 20-year period.

U.S. Green Leases

Speaker: Adam Sledd, Institute for Market Transformation

Current practices and programmes are not always perceived as an effective solution to overcome split incentive issues which is the main reason why there is a fresh focus on leasing issues in the U.S in the last years.

Traditional commercial leases in U.S. are considered a "zero-sum" game in that one party's gains are considered as loses by the other. These are a result of complex, often long negotiation processes between tenants and owners, where each side seeks to promote its own interests. This is primarily caused by incentive misalignments between tenants and landlords which effectively prohibit them from joining forces to save energy in the concerned property. Further complications typically arise by the fact that owner or tenant company staff that are responsible for sustainability or energy efficiency issues, are not involved in the leasing process. High transaction costs that accrue from delays due to prolonged negotiations are another hurdle.

There is currently a large U.S. interest in green leases for the private sector. Green leases aim to split costs and benefits between the parties in such a way that both parties can benefit from an energy retrofit. Distributing costs and benefits with respect to utilities in a lease are essentially associated with the question of *who* assumes the costs and risks. In the case of electric rent inclusion[13], landlords are responsible for both operation and capital expenses. The risks are therefore held by the landlord as tenants have no incentives in saving energy. Conversely, if tenants are directly responsible for their utility bills in a triple-net rent[14], operating costs and thereby risks are passed through to tenants and landlords have no incentive in carrying out energy efficiency upgrades in the property. Commercial leases based on electric rent inclusion were practiced in the U.S. up until 40 years ago, when a total shift towards direct electricity leases followed. However, neither concept offers an effective solution to split incentives. Green leases can form a bridge between the 2 concepts by offering a tool that addresses the asymmetries in the relationships between building owners and tenants.

[13] In an electric rent inclusion, the landlord charges electricity directly to the tenant on a monthly basis at a fixed amount.

[14] A lease agreement that designates the lessee (the tenant) as being solely responsible for all of the costs relating to the asset being leased in addition to the rent fee applied under the lease

- **Traditional forms of leases (gross or net) create asymmetries in the relationship between landlords and tenants.**
- **Green leases can bridge the differences between landlords and tenants created by these traditional forms of leases.**
- **Information on common green lease practices is not widely available due to private nature of these transactions. Different versions of green lease clauses exist.**

Under a green lease, costs associated with investments undertaken by the landlord can be compensated by a small amount of energy savings that can be passed through to the landlords. The cost recovery is typically done by amortisation, which can be based on the actual or predicted energy savings. There are many different versions of green lease clauses due to varying lease language. In New York City, recovering the cost based on predicted energy savings is considered risky by tenants in case energy upgrades underperform. For this reason, the owners' capital expense that can pass through can be up to 80% of predicted savings in a given year. This is based on industry's experience which showed that actual savings are generally within ± 20% of predicted savings. Tenants are therefore protected from underperformance by a 20% "performance buffer".

In addition to split incentive solutions, leases are affected by other sustainability trends such as the LEED, GRESB and Energy star programmes including the revolution in creating smart metering technology which have all made property owners more aware of energy use in tenant spaces.

As leases are private transactions, it is almost impossible to find reliable information on common practices. The green lease library (**greenleaselibrary.com**) is an online platform which aims to collate all available green lease resources, including European, Australian and Canadian practices.

Green Lease implications in 11 European Countries

Speaker: Aart C. Hordijk, European Property Federation

A survey was initiated in the beginning of 2013, with the goal of developing an inventory of the hurdles related to split incentives in practice, highlight differences between European countries and provide suggestions on how to increase the understanding around the issue of split incentives. While green leases deal with all aspects of sustainability in buildings, the focus of this survey was primarily on energy efficiency. The questionnaire was answered by practitioners and European Property Federation country representatives.

Some interesting results can be highlighted through the responses of the on-going survey. For example, passing the costs of energy savings to the tenant in the leasing contract is possible in Sweden, Norway, Romania, Bulgaria, the Netherlands and the UK. This is also possible in Spain but in reality hard to realise. In Finland and the UK, costs can also be passed indirectly through the service charges, while passing the costs of energy savings to the tenant in Portugal is forbidden by law. Standard green lease clauses are included in the leases in the cases of Sweden, Norway, Finland, UK and Netherlands, while negotiations prior to drafting these clauses are needed in Romania, Bulgaria and Spain. It is forbidden to include any green lease clauses in Portuguese contracts.

In terms of energy prices, large variations are observed ranging from €0.10 to 0.25 per kWh electricity. The share of energy costs in terms of the total operating costs is considered low in Spain, Sweden, Norway and the UK, medium in Finland and high in Bulgaria and the Netherlands; in the latter case, energy costs account for 50% of services charges and 10% of the rent paid. Discounts in energy prices for the industry sector are common in many countries.

Energy savings investments are not typically funded by capital expenditures in Norway, Spain, Portugal, Finland, Bulgaria and the Netherlands; they are instead postponed to major maintenance or renovation. In Romania, government action and subsidies exist for house renovations, while in Sweden there is currently a proposal to create tax relief but no final agreement has been made by the tax authorities. Capital allowances permit the investment of certain energy efficiency measure to be offset against corporation tax.
While energy labelling is mandatory for all new buildings, energy labels are neither systematic nor obligatory for existing buildings as they are only required at sale or lease transactions. Definitions of energy labels are under national review in Sweden and the Netherlands, while strong improvements in the case of Portugal and Bulgaria and a more rigours enforcement in the UK are necessary. Improvements to streamline energy savings process are perceived to be helpful in Spain.

In summary, it can be stressed that there has been a slow progress so far in terms of tackling split incentives in the building sector in the examined countries. One of the main hurdles is how to get tenants contribute to the owner's investments through the realised energy savings. Low energy prices reduce the cost effectiveness of energy efficiency investments, while the need to improve energy labelling is stressed by many responses. Further work should be done in order to explore how the user- and building-related energy consumption can be separated. Experience so far has shown that this can be done by individual metering and debiting of energy

consumption by the user where the remainder is considered as energy consumption by the building. If individual metering does not exist, the indicative building energy consumption by the building (energy label) and the residual energy use will be used to determine the user energy consumption.

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