

Private rental sector and home energy retrofit investment – scoping report

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1. Executive summary

This report is an introduction to the issue of effective government policy with respect to energy efficient retrofit in the private rental sector, and to some of the evidence that relates to the topic. It is intended to be relevant to both the development of energy retrofit policy in the private rental sector in Scotland, and to any persons with a general interest in the topic. It contains background information on the private rental sector and energy use in Scotland, and on the existing approach to government policy in this area, both in Scotland and across the UK. It follows this with a summary of some of the evidence on the issue from the academic and non-academic sources that were gathered for this scoping report. Finally, the report highlights some of the key topics that emerged from the evidence reviewed.

This scoping report accompanies the full Energy Policy Effectiveness (EPE) evidence review - 'Private household investment in home energy retrofit: reviewing the evidence and designing effective public policy' (see Kerr & Winskel, 2018). Many of the policy recommendations from this evidence review (that was focused on the owner-occupier sector) also apply to the private rented sector (PRS). Energy retrofit implementation in the PRS will, for example, benefit from a policy framework that engages with the supply side, is aware of the appropriate trigger points for renovation and is also stable and well-understood by households and the surrounding industry. While this scoping report relates to that evidence review, it draws on evidence that is specific to the PRS and describes some of the reasons that the PRS is distinctive in terms of retrofit policy.

Key features of the private rented sector (PRS)

It is important to note that unlike the owner-occupier sector, where the subject (the owner-occupier) is essentially the same in different countries, how the PRS is defined and structured can vary between international contexts. In the UK, the PRS is estimated to comprise roughly 75% 'individual' landlords and 25% institutional landlords, with the proportion of 'individual' landlords estimated to be even higher in Scotland (84%). This is a similar structure to countries like the USA and Norway, but different from countries like Denmark, Austria and Sweden where companies or municipal bodies (not-for profit but where property is allocated by a market) operate the vast majority of the PRS. As a result, evidence relating to the UK has been prioritised in this scoping report.

Like the owner-occupier sector, policy interventions in the PRS are complicated by the level of actors that need to be addressed i.e. many thousands of individual landlords and tenants. Alongside this, the difficulty which is most commonly cited in the literature reviewed in this report is that of a split incentive between those who are most liable to pay the costs of energy retrofit – the property owners – and those who will most likely reap the benefits – the property occupants.

The structure of tenure in the Scottish housing stock means that there is a natural tendency to focus on the owner occupier (58%) or socially owned portion of the stock (23%), as these are

respectively the largest (owner-occupier) and the most straightforward area for public intervention (social). In 2016, the PRS was 15% of the Scottish housing stock.

Although currently the smallest housing sector in Scotland it is by far the fastest growing. It has a below average energy efficiency and has the highest relative proportion of properties in the lowest E/F/G bands. This is despite the majority of the sector being flats – a property type that is ordinarily more energy efficient. The poor energy performance is in part due to the high number of pre-1919 properties in the sector (39%).

There are a variety of reasons why the PRS is considered ‘harder-to-treat’ in terms of energy retrofit. The split incentive between property owner and property tenant is well documented. Additional barriers in Scotland include that landlords are small-scale, disaggregated, typically non-professional (property rental is not their primary occupation) and thus can be a difficult population for government policy to address. Further complications for retrofit policy in Scotland arise due to the high number of PRS properties built pre-1919 and that there is a disproportionate number of flats (63%) as opposed to houses (37%). The number of flats in the sector draws attention to the issue of multiple ownership or tenure overlap i.e. buildings that contain some private rental, some owner-occupiers and/or some social housing occupants, that may be jointly affected and therefore, need to jointly agree to energy retrofit.

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2. Background

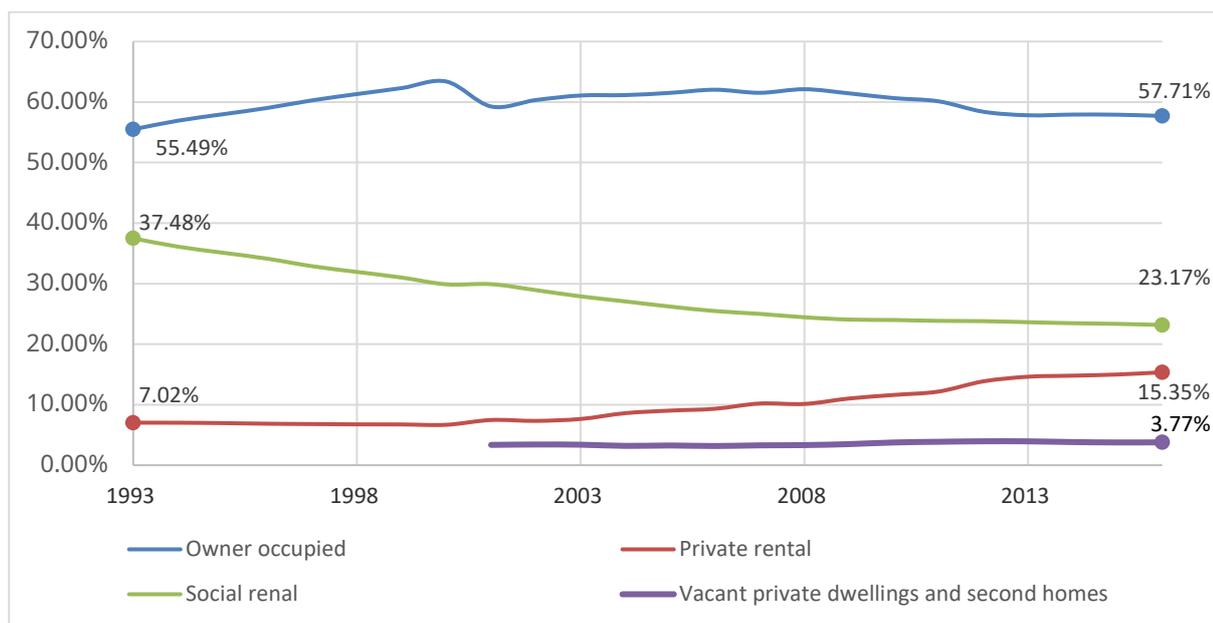
2.1 Private rental sector in Scotland

This section sets out some of the key data on the nature of the Scottish PRS in terms of its scale and the composition of its occupants and properties. It contains multiple references to data from the ‘Scottish House Condition Survey’, which can be accessed via this web link <https://www.gov.scot/Topics/Statistics/SHCS> and the ‘Scottish Household Survey’ via this web link <https://www.gov.scot/Topics/Statistics/16002>.

2.1.1. Scale

According to the most recent data, the PRS composes around 15% of the Scottish housing stock (approx. 394,000 properties). When the housing stock is segmented using the policy categories of owner-occupier, social housing and private rental, it is the smallest category of housing in Scotland, with owner-occupied (i.e. owned outright and mortgaged) properties making up 58% of the stock, and social housing (i.e. local authority and housing association) making up 23%. The PRS tends to be larger in urban areas with the highest percentages in Edinburgh (26%) and Dundee (23%). Historically, the PRS has been a much more prevalent form of tenure. In the UK as a whole it is estimated that 90% of the housing stock was privately rented at the time of the 1901 Census (Rhodes, 2015).

Figure 1: Scottish housing stock by tenure



Source: (Scottish Government, 2017b)

- NB: these estimates differ to the estimated stock of dwellings by tenure figures presented in the Scottish Household Survey due to a different methodology see <https://www.gov.scot/Publications/2017/09/9979/345322>

The PRS has been growing in recent years, with a rough doubling in size in the last 25 years in Scotland. In England and Wales the sector has also grown in recent years and is currently slightly larger than in Scotland with an estimate of around 19% of the stock in 2015 (DHCLG, 2017).

The sector entails a larger portion of the housing stock in other European countries such as Germany (>40%), the Netherlands and Sweden (>30%) (Ricardo-AEA, 2015). It is important to note, however, that the structure of ownership can be very different in these countries i.e.

companies or municipal bodies operating the PRS as opposed to many single property landlords in the UK (see (Scanlon & Kochan, 2011)).

2.1.2. Composition

The occupancy of the PRS in Scotland is 22% families (at least one child under 16), 12% older households (at least one resident over 65) and 65% “other” (all other types of household) (Scottish Government, 2016a).

Table 1: Households type by tenure (Figure 6, Scottish House Condition Survey (SHCS), 2016)

	Older households	Families	Other households
PRS	12%	22%	65%
Owned outright	60%	5%	34%
Mortgaged	8%	39%	53%
Social rented	30%	24%	46%
All	31%	22%	47%

Source: (Scottish Government, 2017c)

The Scottish Household Survey 2016 (Scottish Government, 2016b) provides more insight into the types of households living in the PRS. It estimates that around 14% of the PRS are renting from friends/family/employer with the rest from private landlords. Segmenting housing in terms of the age of the highest income earner, it records that the PRS is the largest sector for 16-34 year olds, much smaller in the 35-59 category and lower still for the over 60s (see Table 2). About 41% of the PRS have been in their property for less than a year (see Table 3) and roughly 20% of the sector is estimated to be students (Table 3.4b, Scottish Household Survey (SHS), 2016).

Table 2: Tenure by age of household (Tables 3.3, 3.4, 3.5, Scottish Household Survey (SHS), 2016)

Age (of the highest income earner)	PRS	Owner occupier	Social sector
16-34	40%	36%	23%
35-59	12%	63%	24%
Over 60	4%	72%	22%

Source: (Scottish Government, 2016b)

Table 3: Length of time at current address (Table 3.4c, SHS 2016)

	Less than 1 year	1-2 years	3-4 years	5-10 years	Over 10 years
PRS	41%	27%	15%	12%	5%
Owner occupier	6%	10%	8%	20%	56%
Social sector	12%	15%	14%	24%	36%

Source: (Scottish Government, 2016b)

The sector is composed of a disproportionate amount of older properties and multiply-owned properties (see Table 4). The PRS in Scotland is mainly flats (63%) as opposed to houses (37%). This compares with a 20%/80% split in the owner occupier sector, 24%/76% in the Mortgaged sector and 60%/40% in the Housing Association sector. In the England and Wales PRS, the ratio of houses (62%) to flats (38%) is almost the complete reverse (see English Housing Survey, 2015-16, Fig 2.3)

Table 4: Dwellings by age and tenure group (Table 8, SHCS, 2016)

Dwelling Age and Type		Private rented	Owned	Mortgaged	Local Auth.	Housing Asc.
Houses	Pre-1919	12%	15%	10%	0%	2%
	1919-1982	17%	47%	36%	45%	17%
	Post 1982	7%	18%	29%	3%	22%
	Subtotal	37%	80%	76%	48%	40%
Flats	Pre-1919	27%	8%	9%	4%	8%
	1919-1982	20%	9%	11%	47%	31%
	Post 1982	17%	4%	4%	2%	21%
	Subtotal	63%	20%	24%	53%	60%
Total – houses & flats	Pre-1919	39%	23%	19%	4%	10%
	1919-1982	37%	56%	47%	92%	48%
	Post-1982	24%	22%	33%	5%	43%

Source: (Scottish Government, 2017c)

The PRS is below average in terms of its energy performance, (see Tables 5 and 6), and it has the highest level of emissions per square metre, 13% above the average (see Table 26, Scottish House Condition Survey (SHCS), 2016). This relatively poor energy performance should be seen in the light of the number of flats that are in the PRS (63%). Flats ordinarily have higher energy efficiency ratings (largely by virtue of having less external walls) and this is the case when considering properties across all tenures in Scotland (see Table 21 in the SHCS 2016). The poor energy performance of the PRS, despite having such a high proportion of flats, indicates a lack of building fabric (walls, windows, doors etc.) efficiency where it is possible. The poor energy performance is likely connected to the age of the PRS in Scotland and the high number of pre-1919 properties. The emission intensity of all tenures has fallen in the last 6 years but it has fallen the least for PRS (Table 26, SHCS, 2016).

Table 5: EPC Band by tenure in 2016, SAP 2012 (Table 19, SHCS 2016).

Tenure	Band					
	B	C	D	E	F	G
Private rented	3%	34%	36%	19%	6%	1%
Owned occupied	2%	32%	47%	15%	4%	1%
Social sector	2%	50%	40%	6%	1%	3%
All tenures	2%	37%	44%	13%	4%	1%

Source: (Scottish Government, 2017c)

Table 6: Housing stock by tenure and energy efficiency (EPC), (Table 20, SHCS 2016).

Tenure	Mean EPC rating
Private Rented Sector	61.5
Owned outright	60.8
Mortgaged	64.6
Local Authority	65.8
Housing Association	69.9
All	63.7

Source: (Scottish Government, 2017c)

The Energy Efficient Scotland Route Map establishes that all PRS properties should be at least EPC band E by 2022 – requiring 7% of the stock to improve their rating – and for all PRS properties to be at least band D by 2025 – a further 19%. The Route Map also *proposes* that all PRS properties should be no lower than band C by 2030 – requiring another 36% to upgrade (Scottish Government, 2018). This proposal is undergoing a consultation process in the latter half of 2018.

Table 7: Fuel poverty rates (Table 35, SHCS 2016)

	2016	
	000s	%
PRS	74	23%
Owned outright	296	37%
Mortgaged	78	11%
LA/ public	127	36%
HA/co-op	73	27%
Private	449	25%
Social	200	32%
All Scotland	649	26.5%

Source: (Scottish Government, 2017c)

While the recorded fuel poverty rates in the PRS in Scotland are low relative to other tenures (see Table 7), in the rest of the UK the sector has substantially higher fuel poverty rates than other tenures – 21% to an average of 11% in 2015 (BEIS, 2017). This difference is likely related to the different definitions used for measurement with a low income, high cost definition in the UK and a definition solely related to relative income spent on household fuel use in Scotland (Scottish Government, 2017d). Why the definition in Scotland would lead to a PRS with lower levels of fuel poverty is not a question that can be properly addressed in this scoping report, but it is possible that it relates to differences in the overall housing stock, for example, the large number of flats in the PRS in Scotland compared to England and Wales. The disparity draws attention to the need to understand what it is that should be addressed with respect to fuel poverty, as different definitions may lead to the targeting of different households. A new definition of fuel poverty is set to come into place in Scotland via a Fuel Poverty Bill in 2018/19.

Despite having relatively low levels of fuel poverty, PRS households in Scotland are perversely the most likely of any tenure to cite all of the ‘Reasons Heating a Home is Difficult’ i.e. poor heating, draughty, poor insulation (see Table 8). The likelihood of PRS occupants to complain about the causes of fuel poverty could relate to the responsibility dynamic of owner and occupier i.e. an occupant may be more likely to complain about property defects if they are not the property owner and are thus less able to correct the defects.

Table 8: Reasons heating home is difficult by tenure, 2016 (% of households) (Table 39, SHCS 2016)

	Private rented	Owner occupied	Social sector	All Tenures
None reported	57%	71%	64%	67%
Poor or inadequate heating	20%	12%	17%	14%
Draughty	17%	9%	18%	13%
Poor insulation	12%	8%	8%	8%
Need new windows	11%	6%	7%	7%
Can't afford to heat house	7%	3%	7%	4%

Hard to control heating	4%	3%	4%	3%
Rooms too big	3%	2%	0%	2%
Other	1%	1%	0%	1%

Source: (Scottish Government, 2017c)

The PRS does not perform well on other home quality indicators. Although private rental properties do not legally have to meet the Scottish Housing Quality Standard (SQHS) their performance in relation to it is recorded. The sector has a higher proportion of properties failing the SQHS (Table 50, SHCS) than any other tenure i.e. 53% in 2016 (Own Oc. = 51%, Mortgaged = 40%, LA = 45%, HA = 29%). It is also the sector that suffers the most from overcrowding (Table 57, SHCS) i.e. 7% PRS is overcrowded, compared to Own Oc = 1%, Mortgage = 2%, LA = 1% HA = 6%. The PRS also has the highest proportion of dwellings which have some form of critical disrepair i.e. 60%, compared to 46% for Owner-Occupier, and 49% for the social sector (see Table 46, SHCS 2016).

Summary

The PRS in Scotland is a relatively small portion of overall households, accounting for 15% of the Scottish housing stock; it is however, the leading form of tenure for 16-34 year olds. Occupants are predominantly adult groups below pensionable age with no children, with the majority of tenancies (68%) lasting less than 2 years. The majority (63%) of PRS properties are flats and the sector is more carbon intensive with a slightly worse energy efficiency than other categories of home. In Scotland, there are relatively low levels of fuel poverty in the PRS, compared with the PRS in England and Wales but perversely PRS inhabitants are more likely to be unsatisfied with the condition of their home. The PRS in Scotland also performs slightly worse in terms of other housing quality indicators such as overcrowding and general disrepair.

Government energy retrofit policy in the Private Rental Sector

Regulations

The recently released Energy Efficient Scotland Route Map (Scottish Government, 2018) sets out the target for all private rental properties in Scotland to be EPC band E by 2022 and band D by 2025. There is currently in a consultation process with respect to the proposal for all properties to be band C by 2030. These requirements are connected to a change in tenancy with the requirement for band E applying to properties where there is a change of tenancy after 1 April 2020, and then to all properties regardless of any change of tenancy by 31 March 2022. The same approach is applied to the band D ambitions. The proposals that relate to band C are only required to be realised if 'technically feasible and cost-effective' and with the possibility of exemptions for certain building types. What constitutes 'technically feasible and cost-effective' and what exemptions might be included in the ambitions will be considered in the consultation process, with final details expected to be released in early 2019.

A similar set of regulations have been introduced in England and Wales following the Energy Act 2011 (Arup, 2016). From the 1st April 2018 all F/G properties must be brought up to at least an E rating at the point of change of tenancy and no later than the 1st April 2020 (if the property is continually let between 2018 and 2020). There are, however, some exemptions and mitigating circumstances. A 'no cost to landlord' clause (cost to be covered by available public funding e.g. ECO or by tenants) is potentially to be replaced by a cost cap with UK government currently considering a cap on the cost to landlords of £2,500.

It is important to note that there are multiple other regulations that already apply to the PRS in Scotland and the UK – in Scotland there is the Repairing Standard and the Tolerable Standard. Existing regulations relate to issues such as fire escapes, disabled access, asbestos, carbon monoxide etc. but there are concerns over how well they currently enforced (APPG, 2016). In England and Wales there are even regulations relating to the energy performance of the PRS prior to the 2018 minimum standards, with the UK Housing Health and Safety Rating System (HHSRS), which came into force through the 2004 Housing Act (the HHSRS does not apply in Scotland). This enables local authorities to serve an Improvement Notice to

private landlords if they discover Category 1 or 2 hazards, which can include *excess cold*. This hazard can, however, be addressed with the use of an electric heater and local authorities may not have the resources to properly enforce such regulations (Westminster Sustainable Business Forum, 2016).

Financial incentives

Alongside these regulations, there are also some financial incentives for property owners to retrofit. The UK-wide policy of Energy Supplier Obligations is relevant to the PRS. At the UK level a relatively low level of supplier obligations have been implemented in the PRS in recent years (no Scottish specific data was found) (APPG, 2016). Overall, however, a disproportional amount of supplier obligations have been carried out in Scotland (across all tenures) (Ryan-Hume, 2016). The Scottish specific Home Energy Efficiency Programmes (funded by central Scottish Government funds) saw 18.5% of publically funded retrofit installations in the PRS and the rest in the owner-occupier sector. This split is only slightly lower than the proportional share of the PRS in the private stock i.e. 20.5% in 2016 (the social rented sector is addressed by other schemes) (Scottish Government, 2017a). In Scotland there are also 0% loans currently available for up to £32,500 for “certain private sector landlords” to retrofit their properties (EST, 2018).

Demand-side incentives often apply to both the owner-occupier sector and the PRS. One of the intended features of the UK policy the Green Deal was its potential to address the split incentive that occurs in the PRS. The potential short-term nature of tenancies mean that occupants lose incentive to cover the cost of energy efficiency improvements. As the Green Deal ‘pay-as-you-save’ mechanism tied the cost to the property one of the barriers to PRS retrofit was (in principle) addressed. The collapse of the Green Deal has removed any potential future benefit on this front.

Another UK-wide policy the Landlord Energy Savings Allowance (LESA) was a tax allowance of £1,500 that landlords could claim between 2004-2015, if they installed certain energy efficiency measures. Like the Green Deal the policy was discontinued in 2015 partly as a result of a lack of uptake (APPG, 2016), before the implementation of the minimum standard regulations (Palmer, 2015), leaving the implementation of these standards lacking much other policy support in the UK as a whole.

Information-based policy

The 2010 recast of the Energy Performance of Buildings Directive (EPBD) mandated the introduction of Energy Performance Certificates (EPCs) to every property at the point of sale or rental. Across Europe EPCs can vary, but in the UK an EPC displays details of the current energy performance of a property, as well as providing information on what opportunities there are for energy efficiency retrofit. These retrofit opportunities include an estimate of the cost of the action and a prediction of the potential energy savings.

There is concern that EPCs are not visible or salient enough and that tenants are not aware of the consequences of energy efficiency and their ability to change supplier (APPG, 2016). This general lack of information (sometimes misinformation) and concern around energy issues also applies to landlords. Research that has looked at how households might use this information outlines the routine and cultural embeddedness of energy use behaviour and how ‘expert’ information is unlikely to be received uncritically (Gram-Hanssen, Bartiaux, Jensen, & Cantaert, 2007). Information based policy mechanisms are perceived at times as merely having a “supportive” role in overall policy packages (Murphy, Meijer, & Visscher, 2012) (see Kerr & Winskel, 2018).

As an EPC assessment is normally required to be ‘non-invasive’ (for example, the assessor will not necessarily check for cavity wall or loft insulation), the accuracy of the energy efficiency ratings within them has been called into question (APPG, 2016; Majcen, Itard, & Visscher, 2013). This is important as the EPC-rating dictates whether a property conforms to the minimum standard regulations. For example, there are approximately 21,000 PRS properties in the F/G categories in Scotland that will be subject to the new minimum standard regulations in the next few years.

3. Literature review

Literature search

Table 7: Search terms and search results

Search terms	Scopus			Web of Science		
	Number of articles	A-rated	Duplicates	Number of articles	A-rated	Duplicates
Private, rental, energy, efficiency, policy, retrofit	1	1	0	0	0	0
Private, rental energy, efficiency, policy	7	5	1	2	2	0
Private, rental, energy, policy, effective	6	2	2	3	1	1
Private, rental, energy, policy, effectiveness	1	0	1	1	0	1
SME, retrofit						
Total	15	8	4	6	3	2

In the academic literature search, A-rated literature is that which on consideration of the title and abstract is deemed suitable for full reading. The full reading may, however, reveal that the article was not of sufficient relevance to contribute evidence to this quick scoping report. Not all of the A-rated articles above have, therefore, contributed to the ‘Relevant scoping literature’ section below.

The literature that was considered relevant was read and is summarised in section 3.2. This academic literature acts as a base that provides direction toward other potentially relevant academic and non-academic literature.

Relevant scoping literature

The following literature includes the most relevant academic and non-academic sources of evidence found in the quick scoping report. The scoping period involved an initial search of the academic search engines, Scopus and Web of Science with results outlined in the Table above. From reading the most relevant articles and applying a reference checking approach (Horsley, Dingwall, Tetzlaff, & Sampson, 2011) further relevant material was gathered relating to the topic of energy efficient retrofit policy for the private rental sector. The following section contains brief summaries of the most relevant sources of evidence.

In ‘Towards a Sustainable Private Rental Sector: The lessons from other countries’ Scanlon & Kochan (2011) gather evidence on the approaches to the private rental sector in various other

countries. They point out that there is some variability in how the PRS is defined in different countries. In the UK, the definition is a rented dwelling that is not owned by a local authority or housing association. They also draw attention to the differences in the types of landlords in different countries

- “The types of landlords and how they are financed varies enormously between different countries, as do the conditions that investors require with respect to risk and return. In the UK, the USA, Australia and some European countries for instance rent and security regulation are seen as important impediments to investors. In other countries notably Germany, Switzerland and Austria they are seen as stabilising the system and reducing the risks for both parties.”

The book describes the composition and the nature of the PRS in Germany, the Netherlands, USA, Denmark, Ireland, France and the UK. Across all of these countries PRS tenants are more likely to be low income, single people without children, single parents, immigrants and the particularly young or old. Most countries see individual landlords dominate but some, like Austria and Sweden, see organisations – municipal bodies or companies – manage the majority of the PR stock.

In Scotland, Crook et al. (2009) estimate that about 84% of landlords are individuals or couples, with 14% for profit companies and 2% not for profit. The authors state that only 7% of these landlords (individuals and companies) have property rental as their full-time profession. These landlords are categorised as ‘business landlords’ - full-time and seeking a return on investment. The report estimates that in Scotland ‘sideline investor landlords’ - part-time but still seeking returns – make up 65% of the sector – ‘sideline non-investors’ – part time and not principally motivated by returns (may let to family members) - 26% - and ‘organisational landlords’ - for example universities and charitable trusts – less than 2%.

Hope & Booth (2014) “investigate the factors that influence private sector landlords when considering energy efficiency improvements to their tenanted homes” in the UK. The authors survey and interview “casual” landlords rather than real estate agents. The three “major deterrents” on landlords with respect to energy efficiency detected in the survey were: ‘high upfront costs’ (67%), ‘tenants seem perfectly happy with current energy efficiency’ (47%) and ‘no personal benefit to making improvements’ (40%). A lack of information (0%) and a lack of finance (7%) are seen as a deterrent by almost no landlords. ‘Increased thermal comfort for tenants’ (47%), ‘Improved home marketability’ (37%), and ‘reduced home running costs’ (33%) were given as the 3 main drivers.

Ambrose (2015) carries out a literature review and 30 interviews with landlords (whose property portfolios range from 1 to 200 properties) in a Northern English town as a means of understanding why they are averse to energy efficiency improvements in their properties. The author identifies some commonly understood issues with energy efficiency and the PRS. These include the split incentive, the time and hassle costs of changing a property, and a lack of information on the retrofit options available. The interviews reveal that landlords are sceptical that many energy performance improvements can be made in their properties aside from some of the more ‘low-hanging’ measures that they have already implemented. They also highlight that landlords are very likely to prioritise cosmetic renovation over energy. They draw attention to the importance of the “dynamics of the local rental market” tenants in low incomes areas much less likely to pay higher rent for energy performance improvements, while in more dynamic rental markets like London landlords may have the option of replacing existing tenants with more affluent ones.

Femenías et al. (2018) consider “how renovation is carried out, bringing the subject of time in renovation” comparing deep, all at once renovation to the over time, sequential approach in the rental sector in Sweden, where there is 22% private rental housing. The authors highlight that in Sweden the rent increase as a result of renovation can lead to a kind of gentrification or “renoviction”. The authors compare the attitudes of public and private rental organisations via

interviews with relevant actors and consider private companies to lag behind public organisations when it comes to levels of investment in renovation. Private companies are more interested in investments being profitable.

In Denmark, Astmarsson et al. (2013) research how regulatory changes and contractual solutions can help solve the split incentive between landlord and tenant in relation to sustainable renovation of residential buildings. They give recommendations specific to Denmark about how policy could be changed. Recommendations relate to information labelling systems, the use of Green leases and Energy Service Companies. They suggest national and local government should lead by example showing the PRS organisations the way.

The **RentalCal project** is an EU-wide research collaboration looking into the issue of energy efficiency improvements in the home rental sector. The project's main purpose is to develop models and tools for landlords and investors that assess the commercial viability of investing in energy efficiency in the 'rental housing industry'. The project entails various pieces of research from across Europe. As part of this project **Zeitler** (2018) considers retrofit from the 'investor's' perspective and the relative cost of energy saving from retrofit in different countries in Europe. Whilst identifying the common issues with the sector – split-incentive, lack of information for landlords, low energy prices – they suggest that it is important for landlords to be able to share the cost of work with tenants and highlight the possibility of legislation that regulates in this area. In another Rental Cal paper, **Stevens (2017)** compares the relative influence of the perceived barriers to energy efficiency investment in rental housing in countries around Europe. Most of the barriers considered were deemed to be 'relatively high' in the UK.

In 2016, the **UK 'All Party Parliamentary Group for the Private Rented Sector'** (APPG, 2016) released a report on improving the energy efficiency of the PRS in the UK as a whole. The group highlight the possibility of ring-fencing Energy Company Obligation funds for the PRS (currently a disproportionately low amount of ECO funding goes to the PRS) but do not go so far as to actually recommend this approach.

Frontier Economics (2017) assess the potential impact of minimum energy performance standards in the UK on tenants and supply of rented properties. Their modelling suggests that even if all the cost of the work was passed to the tenant in a rental increase, the tenant would still receive a net benefit via energy bill savings. This was the case in all scenarios. They also conclude that the regulation is unlikely to have a significant impact on the supply of homes in the PRS due in part to the inelastic nature of supply in this sector.

A report on domestic energy efficiency policy in the UK from the Westminster Business Forum (Westminster Sustainable Business Forum, 2016) suggests that whilst the PRS in the UK has more than doubled in size between 2011 and 2014 - 2.3 million to 5.4 million - it could reach 7.2 million by 2025. Whilst criticising the utility of the minimum energy performance standards policy in England and Wales they also make some policy innovation suggestions for the PRS. They suggest that the mandatory gas safety check for rental properties could entail a simultaneous test of the efficiency of the heating system. They recommend that the government mandates the advertising of monthly expected energy costs alongside monthly rental costs.

Further policy innovation could relate to the impact improved energy performance has on rental value. This topic is addressed in section 4.3.4 of Kerr & Winskel's (2018) full owner-occupier evidence review, which highlights the evidence from various countries that a higher energy efficiency rating may increase rental value.

This scoping report considered one additional piece of evidence on this topic from Bio Intelligence Service (2013) that found a positive relationship between energy efficiency and rental value in Austria, Belgium, and Ireland. It found, however, that the effect on rental value was smaller than that on home sale, but still statistically and economically significant. In the UK (Oxford) however, a

negative relationship was found between energy efficiency improvement and sale value hinting at the emerging and context specific nature of the evidence on this topic.

While considering the willingness to pay for more energy efficient properties of renters in Ireland Carroll et al. (2016) observe that for an energy rating system like EPCs to be effective it must be made visible and salient for every property on the market, providing points of reference for potential occupants. Their research is motivated by the observation that only a minority of rental properties in Ireland at the time were advertised with an energy rating.

In a working study of the relationship between building EPC ratings and actual gas usage in the UK, Adan & Fuerst (2017) disaggregate their results for the rental sector. As 63% of rented properties in Scotland are 'flats' their finding that flats are the most energy intensive (gas use per sq. metre) of all property types is of particular interest. It is estimated that terraced and semi-detached homes use 7-8% less gas per sq. metre than detached properties around 18% less. These differences are slightly less between rented flats and other rented properties i.e. 5-7% less in terrace and semi-detached and 17% less in detached.

4. Findings – key topics identified in the scoping report

In the following section, we consider some of the key topics that have emerged from the scoping report.

Split incentives of owners and occupiers: this is the most commonly given reason for a lack of investment in energy retrofit in the PRS. It is argued that this barrier will remain unless “tenants routinely choose properties with better energy efficiency and performance” (Hope & Booth, 2014). In interviews with landlords in the UK it is also observed that landlords note that tenants do not often ask about energy costs or the information within EPCs, with the result being a lack of incentives for landlords to act (Ambrose, 2015). Although an important issue, the idea of a split-incentive leans on the rational actor model i.e. if costs and benefits were aligned action would be taken. In the owner-occupier sector it is regularly argued that there is too much emphasis on households as rational economic actors (see Kerr & Winskel, 2018). In the PRS, property owners are likely to act with greater economic awareness, but individual, non-professional landlords make up the vast majority of the sector in Scotland and in many other countries (Crook et al., 2009; Hope & Booth, 2014; Scanlon & Kochan, 2011). Similar to the owner-occupier sector, technical economic cost effectiveness, via a rental or sale premium, is therefore, unlikely to guarantee action.

The owners: multiple, distributed and disengaged: In Scotland and the UK, the sector is made primarily of landlords who own few properties who do not consider being a landlord as their primary career (Crook et al., 2009; Hope & Booth, 2014). Although all landlords must be registered, unlike social housing, there is no “mandatory or associative governing body for private landlords”. A minority of landlords use letting agents or are members of the National Landlords Association. It is thought that a “mandatory, government led associative body or database could provide ... accessibility and cohesion” (Hope & Booth, 2014). Due to the distributed, non-professional nature of the sector a number of landlords and tenants will be unaware of new regulations, for example, those recently announced in Energy Efficient Scotland.

Whilst most individual landlords do not have property rental as their primary career they will operate more like a small business than an owner-occupier “and thus require incentives” (Hope & Booth, 2014). Return on investment is often highlighted as the main motivation of landlords, whether they are individuals or organisations (Ástmarsson et al., 2013; Zeitler, 2018). For the PRS return on investment comes from the property becoming more valuable from the perspective of potential tenants but also potential buyers.

The occupiers - younger and transient: the PRS is the most prevalent form of tenancy for 16-34 years olds in Scotland with most tenancies lasting less than 2 years. A very low number of over 60s (4%) are private renters in Scotland.

The properties – older, flatter, less energy efficient: the PRS in Scotland is mainly flats (63%) and of these a significant portion are very old i.e. pre-1919 (39%). The next category with the most pre-1919 is owned outright with 23%. There PRS in the rest of the UK differs with the majority (62%) of the properties houses (62%) rather than flats (38%). The older, more multiply-owned nature of the PRS mean that it is likely to be harder to treat in terms of home energy retrofit. Although the PRS is not the worst performing sector in terms of average SAP rating, it is well below the overall average and it does have a relatively high proportion of properties rated in the lowest EPC bands of E/F/G. It is, therefore, a priority for policy

PRS, energy performance and fuel poverty: in Scotland the connection between PRS, energy performance and the likelihood to be in fuel poverty is complicated. As highlighted, the PRS housing stock is currently relatively energy inefficient. Despite this, it has relatively low levels of fuel poverty, but according to the data in Scottish House Condition Survey, it is the sector most likely to complain about the causes of fuel poverty. These findings highlight the complicated nature of fuel poverty measurement and the potential difference that definition of the issue can make. In

the UK, for example, where there is a different definition of fuel poverty, the PRS energy performance is also relatively poor (see Table 2.6 DCLG, 2017) but fuel poverty levels are substantially higher than in other tenures (see Figure 4.18 BEIS, 2017).

PRS and regulations: there are multiple existing regulations for the PRS not related to energy i.e. health and safety etc. Regulation does not necessarily mean change will occur, as is seen with the troubled implementation of minimum energy performance standards in England and Wales and concerns over local authorities' ability to enforce Housing Health and Safety Regulations (Westminster Sustainable Business Forum, 2016).

Preference for cosmetic, non-energy improvements: like owner-occupiers PRS landlords have a tendency to prioritise improvements that can be seen (Ambrose, 2015). This tends to exclude energy efficiency retrofit - although some changes can achieve cosmetic and efficiency improvements i.e. double glazing and a well-functioning energy supply i.e. boiler is also demanded by tenants and thus of interest to landlords. Like the owner-occupier sector there is an opportunity for energy retrofit to be integrated alongside non-energy home renovations via incentives and/or regulations (see Kerr & Winskel, 2018).

Housing market: the cost of change should be considered in relation to the value of the property. If the value is low, expensive changes will be considered less worthwhile (Ambrose, 2015). If tenants have low amounts of money they are not likely to be interested in properties which are more expensive to lease, even if their bills will be lower.

International differences in the PRS: As highlighted by Scanlon and Kochan (2011) the PRS is operated quite differently in countries around the world. The UK has roughly 75% 'individual' landlords and 25% institutional landlords (Scotland is estimated as having 84% individual landlords). This is a similar structure to countries like the USA and Norway, but different from countries like Denmark, Austria and Sweden where municipal bodies or companies operate the vast majority of the PRS. This matters because, unlike in the owner occupier sector where policies in different countries are operating with a very similar subject, the 'subject' in the PRS can be quite different, in different countries. This potentially means that evidence from countries such as Norway and USA with respect to encouraging energy efficiency improvement in PRS is more valuable.

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