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Attitudes, ability and willingness: Rethinking split-incentives of non-domestic building tenure to overcome energy inertia

Dr Kay Emblen-Perry

**Worcester Business School, University of Worcester, City Campus, Castle Street,
Worcester, UK**

k.emblenperry@worc.ac.uk

Key Words

Energy efficiency; non-domestic buildings; tenure; owners; users; energy inertia; Owner-User Stalemate

Abstract

Split-incentives of non-domestic building tenure that divide the benefits of implementing energy efficient technologies and behaviours between property owners and users are generally recognised to act as a financial barrier to the adoption of energy efficient interventions in UK non-domestic properties. Despite the extensive availability of cost effective energy efficient interventions that could overcome financial split-incentives for UK non-domestic building owners and users, widespread energy inertia prevails. This suggests the barriers presented by split-incentives of ownership exert an influence beyond financial decision making. Rethinking the impact of split-incentives may therefore assist in unlocking energy inertia and contribute to the mitigation of climate change.

This paper reports the findings of a qualitative survey undertaken to investigate the impact of non-domestic building ownership on the owners' and users' ability and willingness to adopt energy efficient and conservation technologies and behaviours. It explores the impacts of ownership beyond the reach of financial disincentives to adopt energy efficiency improvement and identifies four types of constraint affecting non-domestic building owners' and users' energy behaviours; ownership constraints, financial constraints, knowledge constraints and regulatory constraints.

The paper extends the understanding of the scale and scope of split-incentives of non-domestic building ownership for energy performance improvement within non-domestic buildings and presents a wider scope of the split of incentives of ownership than previously established. It also explores the opportunity this new understanding offers for reforming UK energy policies. Findings suggest the impacts of tenure are influential beyond monetary considerations for non-domestic building owners and users and include practical and attitudinal barriers from relationships, contractual constraints and ownership concerns which drive energy inertia through the Owner-User Stalemate.

Introduction

The current UK energy system and policy approach reflects long-term historical forces that have driven continual improvements in the availability and efficiency of energy over the last 150 years (Unruh 2000). Whilst these have traditionally provided low cost energy technologies and services, market forces have provoked an energy culture that

considers energy to be in limitless supply and excessive consumption acceptable (Emblen-Perry 2016). However, in spite of increases to energy efficiency technologies these interventions have resulted in a vastly increased per capita consumption of energy (Warde 2010), creating an energy system and usage patterns that are now widely recognised as key contributors to carbon emissions.

Research into building energy consumption and efficiency has to date largely focused on domestic properties and energy intensive commercial sectors and views building type (Schleich & Gruber 2008, Janda 2008, de Groot *et al.* 1999) or commercial sector (Janda 2014) as the driver of carbon emissions. This approach mirrors the structure of Government policies whereby organisations below the intensive energy user threshold of the Carbon Reduction Commitment energy efficiency scheme have largely been excluded. Non-domestic buildings account for 300 TW (13%) of final energy consumption and contribute 18% of UK carbon emissions (Carbon Trust 2013).

Government non-domestic energy policy, based on attempts to provoke a rational economic response from consumers, has been split between “carrots” and “sticks”. Greater importance on taxes and levies (sticks) has been harnessed to provoke change by non-domestic energy consumers within energy intensive buildings in an attempt to follow the Polluter Pays Principle. This has ensured that at least some of the costs of carbon pollution are borne by those responsible and to obtain political momentum for higher taxation levels (Environment Audit Committee 2011). However, for smaller, less energy intensive non-domestic users, on which this research focuses, a non-interventionist approach through incentives (carrots) such as low-rate loans, grants and the provision of information for good practice have been the principal policy mechanisms. Although these initiatives have applied a balance of “command and control” and encouragement they have proved unable to sufficiently lower energy consumption or change energy attitudes for smaller users to benefit from reduced energy expenditure and contribute to the mitigation of climate change. Since this was recognised by Lyon & Maxwell (2002) over decade ago little has changed to drive energy consumption reduction. Consequently, a state of energy inertia now exists within small and medium enterprises (SMEs). New approaches to unlock energy inertia within SMEs are now therefore required. This research suggests that rethinking the impact of split-incentives could achieve this.

Split-incentives of building ownership resulting in a simple financial disincentive for both owners and users to invest in energy improvements have been proposed as a driver of energy inertia (McAllister, Quartermaine & McWilliams 2009, Bright 2010, Axon *et al.* 2012, Kontokosta 2016). However, despite the growth of green leases, a majority of SMEs in the UK continue to work within the Landlord-Tenant Divide proposed by Bright (2010) and the historically developed economic infrastructures that have built up around the availability of low cost energy.

This research, offers an alternative perspective on non-domestic building energy consumption, efficiency and conservation and considers the scope of split-incentives created by building ownership extends beyond the financial environment previously proposed. It investigates practical and attitudinal perspectives of non-domestic building owners and users as well as financial impacts of tenure to explore the full impacts of tenancy agreements and relationships on the ability and willingness of non-domestic building owners and users to adopt energy efficiency and conservation interventions.

The energy challenge from non-domestic buildings

Energy policy

The role energy plays in the emission of carbon is generally accepted by the UK Government, politicians and the public, with energy access, efficiency, cost and security concerns high on the national political and business agendas. However, energy consumption reductions and adoption of lower carbon energy generation, targeted through existing conventional approaches of encouraging voluntary energy conservation actions, taxes and financial and non-financial incentives have fallen short of climate change requirements.

In response challenging Government targets have been agreed to mitigate climate change: Zero Carbon new non-domestic buildings by 2019 and 80% reduction in carbon emissions over 1990 levels by 2050 with at least 35% by 2020 (Committee on Climate Change 2015a). However, despite extensive energy information campaigns and financial and motivational incentives most writers and energy analysts agree that energy improvements have not been adopted as expected (DeCanio 1993, de Groot *et al.* 1999, Janda 2009, Warde 2010) and only a small proportion of the UK's smaller non-domestic buildings have adopted energy efficiency and conservations opportunities. This has resulted in energy inertia within SMEs, with an "Energy Inconsistency"¹ developing between the technically viable, cost effective and retrofit feasible interventions widely available and what is adopted (Emblen-Perry & Duckers 2016).

Greater sustainability in building design, driven through Building Regulations legislation and good practice from architectural practitioners, has delivered improvements in new buildings and large scale retrofits. However, as new non-domestic buildings (less than 5 years old) represent less than 2% of the present building stock, energy savings must also come from existing non-domestic or commercial buildings if climate change targets are to be met (Janda 2008, Kelly 2010, Carbon Trust 2013a, Committee on Climate Change 2015b). Retrofitting energy improvements within existing smaller non-domestic buildings remains a voluntary intervention. This is a missed opportunity to provoke reduced expenditure on energy and contribute to the mitigation of climate change.

The current rate of progress on carbon emissions reductions and future emissions projections cast doubt on energy policy's ability to deliver UK targets. Whilst the UK is on track to meet the second carbon budget (2013-17) there is an acknowledged gap in the emission reductions required to meet the fourth carbon budget (2023-2027) which will jeopardise meeting 2050 targets (Committee on Climate Change 2015b). Withdrawal of funding for the Green Deal and Home Improvement Cashback Scheme in response to low take-up rates will put further pressure on energy policy to create new solutions to provoke carbon emissions reductions. Significant expansion of energy efficiency and reduction of energy demand within the stock of existing non-domestic buildings therefore provides a significant opportunity for carbon abatement in the UK (Carbon Trust 2013).

Non-domestic property ownership

The evolution in UK non-domestic property ownership over the last 150 years has created a complex pattern of building ownership and occupation within the overall sector (Dixon 2009). This evolution has resulted in a legacy building stock which is being replaced at only 1% per year (Scottish Government 2015); 70% of the non-domestic

¹ The 'Energy Inconsistency' is a gap between proven energy efficiency improvements and what is actually implemented

buildings standing in 2050 will have been built before 2005 to less energy efficient standards (Kelly 2010). The current building stock also exhibits diverse tenancy styles that have generated non-cooperative relationships between owners and tenants which frequently lead to energy inertia (DeCanio 1993).

This evolution of tenancy structures has also created a complex picture of energy supply routes, including non-domestic building users purchasing energy directly from the utility company, purchasing from the building's owner or receiving supplies within full-service contracts. This legacy of complexity may further widen scope of split-incentives that is explored by this research.

The author's experience of organisational energy behaviour suggests that the rates of adoption of, and involvement in, energy efficiency and conservation differs between SMEs due to varying levels of interest in energy management, willingness to invest in energy improvements and ability to control the changes to buildings necessary to achieve energy improvements.

Building type (de Groot, Verhoef & Nijkamp 1999, Janda 2008, Peacock *et al.* 2008, Schleich & Gruber 2008) and levels of building awareness (Lorenzoni, Nicholson-Cole & Whitmarsh 2007, Fawcett 2010, UK Green Building Council 2011) have been allocated a contributory role to SME's energy inertia. However, non-domestic building ownership as a driver of energy inefficiency and source of carbon emissions has received less attention within energy research and by policy planners. This research aims to extend this understanding and offer alternative observations of barriers that hinder opportunities to improve energy efficiency and reduce energy demand which are widely considered to be the most promising, fastest, cheapest and safest means to mitigate climate change (Sorrell 2015).

The design of the study

A qualitative survey of owners and users of smaller UK commercial premises was undertaken to extend understanding of the impact of non-domestic building ownership on the owners' and users' ability and willingness to adopt energy efficient and conservation technologies and behaviours. The survey questions explored building owners' and users' practical and attitudinal perspectives of energy actions and behaviours, along with the financial impacts of their building tenure on energy performance. Together these established the full influence of tenancy agreements and relationships on the ability and willingness of non-domestic building owners and users to adopt energy efficiency and conservation interventions.

The online survey was distributed to more than 300 SMEs and owners of smaller non-domestic properties in the UK. The SME sector was selected for this research as SMEs have traditionally been excluded from non-domestic energy policies and initiatives in UK despite accounting for 5.5 million business premises and employing 60% of the nation's workforce (Federation of Small Businesses 2016). Together these SMEs represent an untapped source of energy and carbon emissions reductions (de Jong 2013) and could benefit from potential avoided energy cost and carbon savings of c. £13bn/86MtCO₂ by 2050 (Low Carbon Innovation Co-ordination Group 2012).

Participants were recruited from across a range of tenure structures and commercial sectors (manufacturing, service, retail and agriculture) which is representative of the UK SME sector recognised by the Department for Business Innovation and Skills (2015) and the non-domestic tenure profile estimated by the Federation of Small Businesses (2016). Responses were received from 60 participants.

Four areas of constraint that have impacted the behaviours of non-domestic building owners and users emerged from these responses; ownership constraints, financial constraints, knowledge constraints and regulatory constraints. These four themes have been used to structure the data analysis which has illustrated the wider scope of the split of incentives of ownership presented in this paper.

The impact of non-domestic building ownership

Ownership in context

Overall, almost 80% of the SMEs participating in this research lease or rent non-domestic buildings from a private building owner. Fewer rent or lease their business premises from Local Authorities (7%), operate as franchisees with premises provided free of charge (7%) or are owner occupiers (8%). All the owners lease their properties to SMEs. The research findings indicate that 80% of building users purchase their energy directly from the utility company. However, only 43% of them are solely responsible for energy efficiency within their premises. A further 7% of participants report they have a collaborative approach to energy management through a sharing of responsibility with their building's owner. This suggests, however, that half of SMEs have no influence in how energy is managed within their business premises despite paying for it.

The research also finds that only a small number of participants (8%) have installed renewable energy generation systems. This suggests the majority of SMEs' non-domestic buildings continue to operate within the historical energy culture described above.

Energy improvement incentives and barriers

In order to explore barriers to energy consumption reduction non-domestic building owners and users are asked to identify factors that had acted as incentives and disincentives when considering the adoption of energy efficient technologies and behaviours during the previous twenty-four months. The findings suggest 90% of participants had evaluated interventions to improve their building's and organisation's energy performance. However, although participants reported experiencing incentives and disincentives, overall barriers outweigh incentives and prevent interventions to improve energy efficiency. When viewed discretely, users experience fewer incentives up improve energy than owners; an average of 0.4 incentives per user against 0.7 per owner. They also encounter more disincentives; an average of 1.5 per user against owners' 1.2.

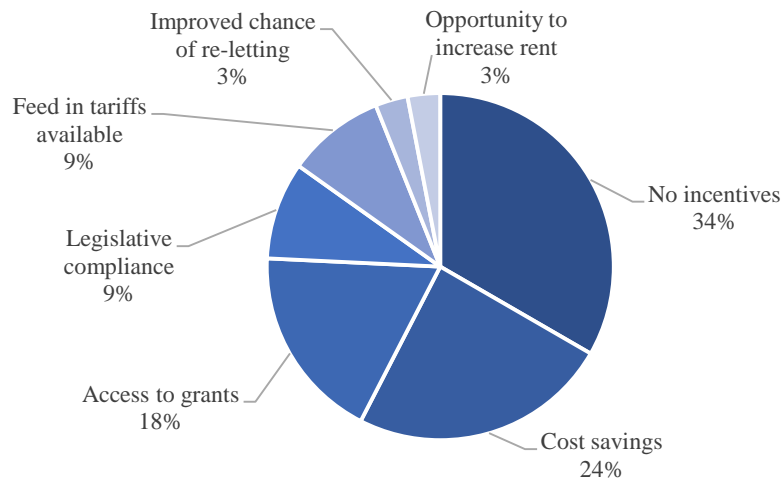


Figure 1. Incentives to adopt energy efficient technologies and behaviours

Despite the recognition of some, largely financial, incentives (Figure 1) not all owners and users prove able and/or willing to intervene to reduce energy consumption. For example, over a third of participants indicate they have no incentive to intervene in their own, or their building's energy performance. However, where changes to technologies and behaviours are adopted, users appear more sensitive to opportunities to benefit from energy consumption reduction than owners; owners implement an average of 1.14 interventions and users an average of 1.33. For both parties the majority of these interventions involves retrofitting less invasive energy efficient technologies such as lighting, IT equipment and kitchen appliances rather than the more disruptive interventions such as insulation, glazing and heating systems which could achieve greater financial and carbon savings.

If the scope of split-incentives of building ownership are financial as previously proposed (McAllister, Quartermaine & McWilliams 2009, Bright 2010, Axon *et al.* 2012), the majority of participants' disincentives and barriers to energy improvement would be expected to be financial. However, the research findings illustrate that this is not the case. Participants' responses suggest that whilst financial disincentives exist, non-financial disincentives present more significant practical and attitudinal barriers to the adoption of energy efficient technologies and behaviours within the non-domestic buildings surveyed (Figure 2).

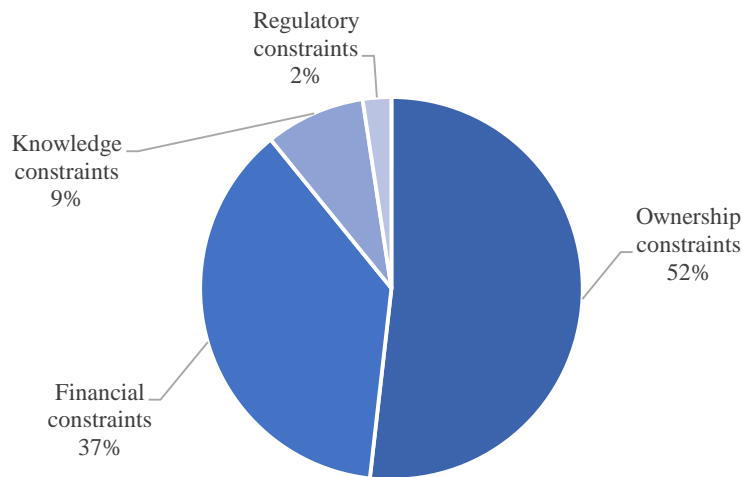


Figure 2. Owners’ and users’ barriers to improving energy performance

When explored in more detail the research findings suggest both owners and users face major barriers to the adoption of energy efficiency from the non-financial impacts of ownership; two-thirds of users and over half of owners appear constrained by the ownership structures of their buildings such as restrictive lease clauses including dilapidations requirements, other contractual issues and length and security of tenure. For non-domestic building users these are appreciably greater than the financial constraints (Figure 3).

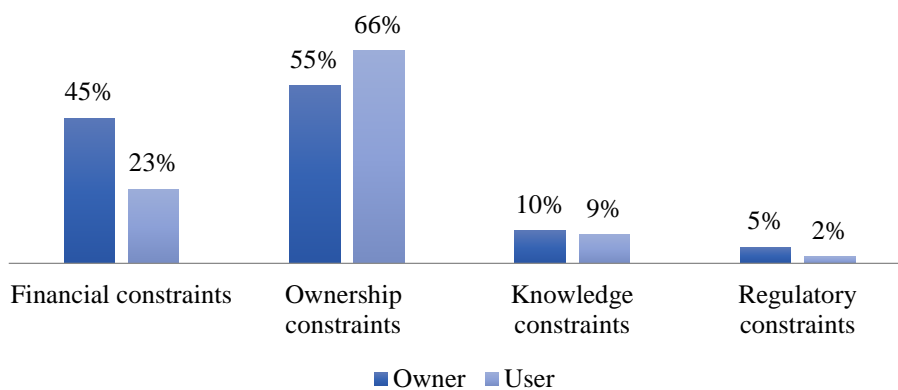


Figure 3. Barriers to improving energy performance – owners vs. users perspectives

The research finds the majority of non-financial barriers to energy efficiency improvement align to the impacts of ownership stemming from the tenure of the properties. Over 50% of both owners and users identify barriers to improving their energy performance driven by contractual issues which prevent both parties from

implementing changes that would be of financial benefit and contribute to carbon emissions reductions.

These ownership barriers appear more restrictive for users, with two thirds of participating users confirming they experience ownership barriers. For example:

"We wouldn't change things that we could not take with us if we were to leave the premises" (User)

"The only problem we see is that we are ground floor with flats above, the Local Authority own and rent out. If we want to put solar panels on we would have to go through tenants and local authority before [we would be allowed to do so]" (User)

"We wanted to install new local exhaust ventilation (LEV) with ventilation outside premises. The Landlord was very difficult over this. Even though it would save energy we decided it simply wasn't worth the hassle." (User)

These non-financial barriers to the adoption of energy efficiency and conservation interventions stemming from ownership suggest the scope of split-incentives is wider than previously proposed. Such constraints present practical and attitudinal influences that obstruct non-domestic building owners' and users' attempts to reduce energy consumption and obtain financial and carbon savings.

The research findings also illustrate the presence of attitudinal barriers embedded within previously recognised financial disincentives for the implementation of energy efficiency. Owners' and users' indirect barrier of an unwillingness to invest in energy efficiency improvements appear more influential than direct barriers such as the lack of internal and external financial resources and initiatives or compliance with organisational rules (Figure 4). Almost 50% of participants recognise that unwillingness to invest is a distinct barrier to energy improvement. Monetary constraints to energy consumption reduction appear to act as attitudinal as well as financial barriers.

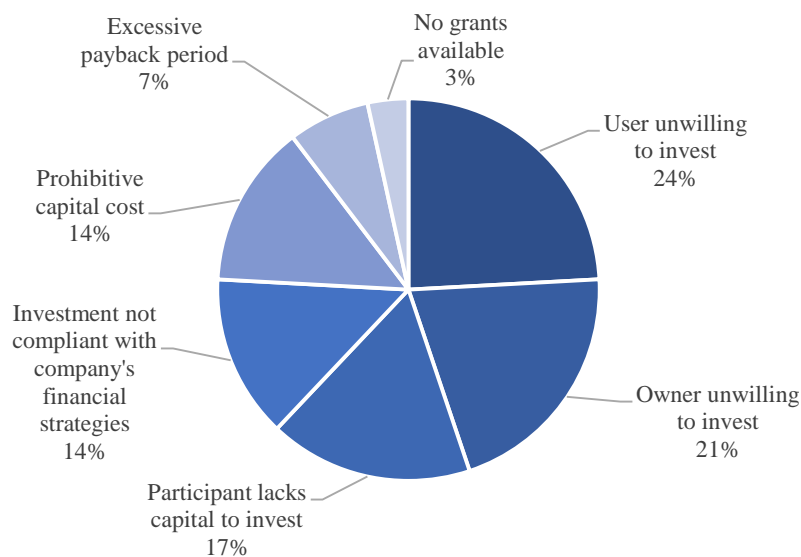


Figure 4. Owners' and users' financial barriers to the adoption of energy efficient technologies and behaviours

Participants have contributed examples of these direct and indirect financial barriers:

*“There are no incentives, just disincentives insofar as the costs far exceed any savings”
(Owner)*

“Landlord is never interested in contributing to any improvements whatsoever” (User)

*“We've had a (funded) study done which said that the only things we could do all had a
very long pay-back period” (User)*

*“Would have done more in respect of renewable technology e.g. solar panels but no
grants available” (Owner)*

The impact of tenancy agreements

The research finds that almost half of the lease and rental contracts held by research participants restrict users from making changes to their premises. A further 23% restrict owners from making changes to the building during the tenancy period. This suggests that traditional tenancy agreements prevail within this sample of SMEs surveyed, rather than the less restrictive green leases. It appears from the participants' responses that these leases and the relationships of owners and users continue to provoke the wider scope of split-incentives which incorporate practical and attitudinal barriers to energy improvement proposed by this research. Examples of these impacts of tenancy agreements include:

“Lease clauses restrict tenant making changes so we are unable to get solar power” (User)

“We lease, utility is included in the service charge and areas are not separately metered. It is particularly difficult to evidence actual use and to inspire occupants as the cost and use is invisible” (Owner)

It is encouraging that less than 10% of participants surveyed are tied by contracts subject to dilapidations clauses. Users, however, recognise the energy inefficient issues related to the actions required, for example:

“Clauses are prohibitive and encourage waste...especially under dilapidations e.g. you have to put the place to a shell. When you leave you rip everything out even though it is in fine condition and replace with cheap items such as cheapest lighting and carpets which are not energy efficient” (User)

Owners and users' relationships within energy management

The research finds that there is a fairly even split of cooperative², collaborative³ and preventative⁴ energy relationships experienced by participants. It is encouraging that almost 30% of both owners and users feel that are able to collaborate to improve energy performance (Figure 5).

² Owners agree to change without financial support provided

³ Owners and users work together to improve energy performance and share investment costs and benefits)

⁴ Owners prevent users from making changes

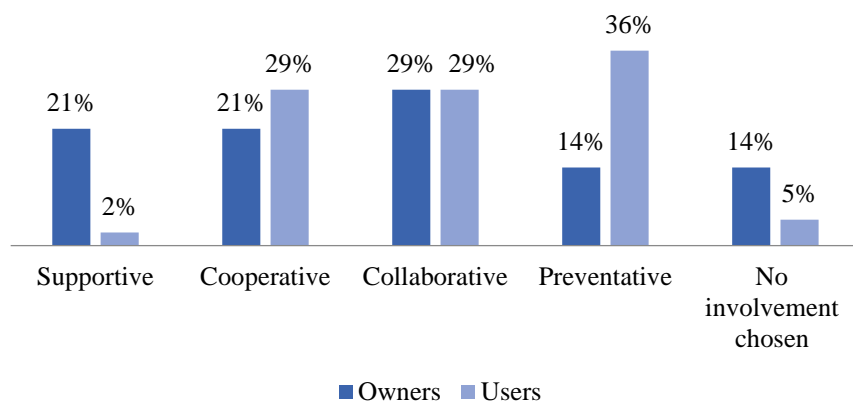


Figure 5. Owners’ and users’ perceptions of owner-user energy relationships

However, when considered from the perspectives of owners and users, a larger proportion of users appear to have a preventative relationship with their building owner that creates a barrier to the adoption of energy efficiency and conservation improvements. Participants’ responses provide examples of this:

“So much depends on the relationship with the landlord” (User)

“A great deal of tenants that would like to have a more energy saving building unfortunately their hands are tied” (User)

“I choose to have no involvement in energy management” (Owner)

“In the majority of properties we deal with, energy costs aren't a significant factor” (Owner)

Although it is not possible in this research to report on owners and users of individual buildings these responses suggest that at least one third of UK SMEs are prevented from making changes that could offer a financial benefit from reduced energy consumption and contribute to carbon emission reduction. A further third of participating users recognise that they are able to make changes at their own expense which may also benefit the building’s owner despite no contributory investment.

These perceived relationships intensify the barriers to energy efficiency and conservation described above. The research findings illustrate the way in which the owner-user relationships widen the scope of split-incentives to restrict users and owners from improving energy performance, thus provoking energy inertia.

The impact and implications of rethinking split-incentives

As shown above, energy policies based on financial and non-financial incentives and disincentives have not delivered the economically rational responses to energy price control expected or changes in energy behaviours planned by Energy Policy makers. This research suggests that split-incentives of non-domestic building ownership have introduced a number of barriers to energy efficiency and conservation beyond the previously recognised financial constraints. These practical and attitudinal barriers

appear to result from constraints to energy consumption improvement related to ownership and behaviours rather than energy regulations and knowledge and have emerged as more influential than the financial constraints recognised by this and previous research (McAllister, Quartermaine & McWilliams 2009, Bright 2010, Axon *et al.* 2012, Kontokosta 2016). The research findings suggest that for many SMEs these attitudinal and practical barriers combine to further split the incentives for change.

This research has presented an alternative context within which SMEs operate; a context in which behaviours and attitudes present practical and attitudinal barriers that are more influential than financial ones. The new view of the scope and extent of split of incentives for energy efficiency may help explain why UK SMEs are trapped in their ongoing state of energy inertia that has been recognised over the last 25 years by DeCanio (1993), de Groot *et al.* (1999), Janda (2009) and Warde (2010). The findings of this research therefore offer an alternative view as to why energy policy has not achieved the energy consumption reduction required to meet UK carbon emissions reduction targets designed to support the mitigation of climate change.

This research has added to the knowledge of the impact of tenancy agreements on the ability and willingness of non-domestic building owners and users to adopt energy efficiency and conservation technologies and behaviours. Findings extend the scope of the previously recognised financial split of incentives to incorporate practical and attitudinal barriers to energy change; relationships between owners and users, disincentives presented by tenancy structures, disinterest in energy improvement and owners' and users' inability and unwillingness to make changes to building structure, fixtures and fittings and energy behaviours. Research findings suggest these wide-reaching barriers stemming from current tenancy structures have created an "Owner-User Stalemate" in which neither party is able or willing to adopt major improvements to substantially reduce energy consumption to benefit from financial savings and contribute to climate change mitigation through the reduction of carbon emissions. This results in energy inertia.

This presence of the "Owner-User Stalemate" appears to prevent change taking place or dilutes the incentives for change by splitting the rewards from energy consumption reduction between the building owners or users. This has dis-incentivised both parties from undertaking financially and environmentally beneficial interventions. Encouraging smaller non-domestic building owners and users to adopt energy efficiency technologies and behaviours through voluntary good energy practice may therefore not be the most effective route to provoke behaviour change.

A permanent change in energy attitudes, ability and willingness to overcome the Owner-User Stalemate, provoked by the wider scope of non-domestic split incentives illustrated here, is also required if energy inertia is not to be further perpetuated. An energy policy approach that unlocks the practical and attitudinal constraints presented by tenancy and owner-user relationships is required so that both SMEs and commercial building owners are encouraged to collaborate to improve energy performance, with the benefits of energy consumption reduction accessible to both parties.

As alternative drivers of change will be needed to overcome the ownership, relationship and behavioural impacts of tenancy which contribute to the practical and attitudinal barriers illustrated by this research, the author recommends that further research should be undertaken on policies and initiatives that more effectively target the practical and attitudinal changes that are key to long-term energy consumption reduction.

Conclusion

Although there has been a lengthy history of energy efficiency and conservation initiatives and widespread recognition of the need for carbon savings through energy management, the UK has failed to overcome energy inertia within smaller non-domestic buildings and deliver the energy consumption reductions required to mitigate climate change. Successive governments have relied on politically attractive but voluntary energy efficiency actions which have been considered cost effective, rational investments. However, rational economic responses have not been made by non-domestic energy consumers suggesting barriers exist to provoke energy inertia. This research suggests that this energy inertia stems from the impact of ownership which extends beyond the previously recognised financial influence of split-incentives.

The research findings illustrate that the scope of split-incentives of non-domestic building ownership extend beyond than previously proposed. More extensive impacts have been highlighted that provoke energy inertia through attitudinal and practical barriers which discourage or prevent non-domestic building owners and users from reducing energy consumption by adopting energy efficient technologies and behaviours. Research participants indicated that disincentives to energy efficiency are more prevalent than the incentives; over half of the owners and users indicated they have faced disincentives to energy change based on their tenancy structures and agreements. The split of incentives from non-domestic building ownership appears to provoke the Owner-User Stalemate such that attitudes, ability and willingness of owners and users have a much greater contribution to energy inertia than previously envisaged.

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Authors Biography

Dr Kay Emblen-Perry has several years of senior environmental and ecology consultancy experience delivering consultancy projects in renewable energy technologies, contaminated land remediation, biodiversity offsetting and ecological assessment for UK organisations. She is qualified as an environmental and quality lead auditor, has implemented environmental management systems for both UK and multinational organisations and has trained environmental and quality assessors. In previous roles Kay gained senior project management and purchasing management experience in international automotive companies. She project managed the implementation of sustainable supply chain strategies, new vehicle projects and EU REACH Regulations. Kay's specialisation is in Sustainable Management including Environmental Management and Justice, Social Responsibility and Economic Sustainability.