

# **Green leasing in theory and practice: A study focusing on the drivers and barriers for owners and tenants of commercial offices**

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## **Abstract**

This paper investigates the drivers and barriers for green leasing associated with the relationship between building owners and tenants, whilst also considering the extent to which this should be considered during the life cycle phases of a building.

The procurement of appropriate rental property and its services is an important consideration for businesses. In terms of issues associated with this, few are more topical than factoring in sustainability. Emerging from this trend is a leasing product that deals with this directly. This product is a green lease. This not only impacts on the operations associated with a tenancy, but also requires a re-evaluation of the traditional owner, tenant and facilities management (FM) relationship.

Using a mixed methods approach, this paper evaluates how green leases and tenancies require a reconsideration and re-evaluation of the key drivers and barriers for the development, refit and occupancy of sustainable commercial office spaces. This is evaluated using a theoretical model that outlines the interrelation between the roles of owner, tenant and FM.

This research is based on existing literature and semi-structured interviews that studied qualitative and quantitative elements in the context of ownership and tenancy of sustainable buildings. The data collection and analysis is supported by literature research, with a focus on the provision of rental space and services in commercial office buildings with a 'Building Research Establishment Environmental Assessment Methodology' (BREEAM) certification.

This paper concludes that data gathered from practice contradicts some of the statements within existing literature, diminishing the importance of cost and the barrier of split incentive, but instead illuminate the importance of less tangible considerations such as company policy or a sustainability strategy. These findings have the potential to further develop theories, and provide an insight into how actors' relationships need to be developed to ensure more proactive green leasing of sustainable

buildings, along with where strategic attention is required during the building design, construction, operational and use phases.

**Keywords:** Sustainable facilities management; sustainability strategy; sustainable buildings; sustainable facilities and services; green leasing

## 1. Introduction

The procurement of sustainable office space and its environmentally friendly, “green”, operation is an important consideration for businesses demands on improving the sustainability of their primary activities and supporting facilities and services. Emerging from this trend is a leasing product that deals with this directly. This product is ‘green leasing’. This not only impacts on the operations associated with a tenancy, but also requires a re-evaluation of the traditional owner, tenant and facilities management (FM) interaction. The industry, from both the perspective of building owners and tenants is facing a change both in terms of their relationship, and what they expect from their buildings in terms of quality, service provision and operating costs. With considerations for greener tenancies seemingly stemming not just from supply and demand, but also from an increased need for legislative compliance associated with sustainable development (Collins & Junghans, 2015, pp 131-133), demand for sustainable office buildings has the potential to increase. Considering the significance in the rise in demand of more sustainable building stock, services and greener leasing, there is also a call to better understand the drivers and barriers for their development and occupancy.

Referring to the overall objective on investigating the innovation needs for sustainable facilities management (SFM) this paper investigates the drivers and barriers of green leasing implementation associated with the relationship between building owners and tenants, whilst also considering the extent to which green leasing should be considered during the earlier lifecycle phases of new buildings’ development or the modernisation of existing buildings. With a selection of case studies on green leased offices in the UK and Norway, the aim is to better understand and analyse the following key issues:

- 1) The drivers and barriers for organisations (primary activities / core business) in demanding sustainability and energy efficiency in their building stock and associated services.
- 2) The roles that main stakeholders in the building-life-cycle can have in the way that they impact on the sustainability of building design and construction and operation and maintenance.

The following research questions will lead the investigation of these key issues:

- What are drivers and barriers for building owners to develop and provide sustainable office space in new or existing buildings?
- What are drivers and barriers for tenants to rent and occupy sustainable office space in new or existing buildings?

This paper will consider each research question by looking both at theories based on state of the art literature analyses, as well as empirical studies based on semi-structured interviews with owners and tenants. The reasoning behind the choice of stakeholders (owner and tenant) was due to the involvement they have in developing and occupying their respective buildings. A more detailed explanation as to this research choice will be outlined in the theoretical background.

## 2. Theoretical background

### 2.1 Definitions of green leasing and sustainable buildings

In moving forward, it is necessary to understand what is meant in this paper by green leasing. Whilst Bright et al. (2014) accept that it is difficult to define such leasing, they broadly define a green lease as standard lease that also “*purposively supports and facilitates the adoption of leasehold practices that enable the improvement of the environmental performance of buildings and their use*” (Bright & Dixie, 2014, p.6). Example clauses in a green lease could be to “*agree targets and strategies to improve the Environmental Performance of the Premises and/or the Building on a regular basis*”, or “*reduction in or improved efficiency of water consumption*” (Bugden et al., 2013, pp. 14, 16 and 22). There is however no universally recognised definition, a conundrum that causes difficulties in both research and practice. In the context of tenancy, it is also important to note the context of the role of owners, tenants and FMs in an office building. This was described by Haugen (2008) who stated that owners adopt the perspective of “*value creation for the company throughout the life cycle of the building*”, the FM or building manager viewing the building from the perspective of ensuring “*that the buildings’ function optimally for their users, owners and surroundings over time*” and the user/tenant operates from the perspective of a building that “*supports their own activity to the greatest possible degree*” and “*efficiency of the building according to how it meets their own requirements per cost unit*” (Haugen, 2008, pp.15-16).

Similarly to green leasing, defining a sustainable building offers challenges in terms of a definition. From an academic perspective, a definition was offered by Berardi (2013), who concluded that a sustainable building is “*a healthy facility designed and built in a cradle-to-grave resource-efficient manner, using ecological principles, social equity, and life-cycle quality value, and which promotes a sense of sustainable community*” (Berardi, 2013, p.76). From the perspective of practice, the US Environment Protection Agency define a sustainable building as: “*the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building’s life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. Green building is also known as a sustainable or high performance building*” (“Green Building - Basic Information,” 2014). To this end, a so called ‘green tenancy’ can be considered to be a tenancy relationship where the activities of the users are as such that they are compatible with the sustainable credentials and infrastructure of the buildings that they possess a lease to occupy.

The definition of ‘sustainable commercial office buildings’ in this paper is referring to new and existing commercial offices with a BREEAM certification, as opposed to those directly with green leases. By new buildings we refer to them being BREEAM certified during the buildings initial development, whilst existing buildings refer to buildings with a retrofit certification. The choice of BREEAM certified buildings is due to definition concerns surrounding not just what constitutes a green lease, but also what even constitutes a sustainable building, regardless of whether it is new or existing. Using BREEAM certified buildings as a framework affords the opportunity to compare buildings through an internationally utilised and recognised certification framework that is already recognised as sustainable by many when considering its market share. Thus, using BREEAM would be an appropriate framing for the analysis of green tenancies. BREEAM has been the certification of choice in this paper due to BREEAM’s 80% European market share (BREEAM, 2015). In the UK since 2008 alone, of the 6761 individual BREEAM certificates issued 1261 of these are for offices. Their largest single certified building type is the education sector, with 1472 total certifications. These figures include both interim and final certifications (“Certified BREEAM Assessments,” 2016). In

Norway, which has only been using BREEAM (known as BREEAM-NOR) since 2011, the figures are equally as profound with offices representing the largest certified building type, amounting to 35 of the total of 54 interim and final BREEAM certificates issued at the time of writing in March 2016 ("Certified BREEAM Assessments Norway," 2016). The choice to focus on offices centres primary process similarity that is broadly pan European. Accounting for minor differences in office cultures and practices between Norway and the UK, most of their operations will be similar enough to offer comparisons.

## **2.2 Theories on what influences supply and demand of sustainable buildings and green leasing**

The emerging and growing market for more sustainable office buildings that are available for rental are a part of a change that represents an increasing move toward a more sustainable approach to tenancies (Piper, 2014, p.4). The adoption of green leases and greener leasing options such as memorandums of understanding (MOU's), is limited in scope in the attention that it receives from academics at present. Whilst data on the growth of green leases specifically is not easily available, the Sydney chapter of the Better Buildings Partnership (BBP), a collaboration of property owners working together to improve the sustainability of existing building stock, have stated that 60% of leases signed in the financial years 2012/13 to 2013/14 included green clauses, compared to 15% in 2008/09 (Bright et al., 2015, p.3). According to Bright et al. (2014), the challenge of developing more environmentally friendly leasing options to improve the sustainable performance of commercial real estate is very much an international one (Bright & Dixie, 2014, p.18). From the perspective of building owners, Wiley et al. (2008) note that there is interest in answering as to "*whether the economics of "green" design will result in higher occupancy, rents or selling prices for their project*" (Wiley et al., 2008, p.229). Looking directly at coupling trends with those of tenants, Langley et al. (2008) write that a move to more sustainable real estate is stemming from corporate social responsibility (CSR), and is manifesting in better environmental management systems and policies in buildings, which in turn may result in tenants eventually becoming reluctant to sign leases for buildings that have poor energy performance (Langley et al., 2008, p.2). Hinnells et al. (2008) try to make clear to scholars and practitioners that there cannot simply be a development of green leases that adopt a format for everyone, as "*different classes of occupiers will have different attitudes to the greening of leases*" (Hinnells et al., 2008, p.549).

From a more theoretical perspective, academic literature does note drivers that may encourage the development of sustainable buildings stock. Steward Brand (1997) for example, took a less specific but more holistic approach to this definition by stating the kinds of elements drivers could contain. He notes what he calls "*driving forces*" that shape the future environment. In the case of business, he states that this comes in the form of changes to technology, regulation, the competitive environment and the demands of customers. In the buildings themselves, the drivers are slightly more technical in nature. They also contain the technological forces noted in business drivers, but also are impacted by the economy and the use by tenants (Brand, 1997, p.182). An example of a more specific identification of factors however can be found in the work of Bansal and Roth (2000). In their paper titled 'Preliminary Model of Corporate Ecological Responsiveness', they identified the drivers of 'Legislation', 'Stakeholder pressures', 'Economic Opportunities', and 'Leadership Corporate Values/Ethical Motives' that in their eyes impact corporate ecological responsiveness (Bansal & Roth, 2000, p.718).

There is also a noticeable deficit in knowledge surrounding the development of sustainable buildings, green leases and associated tenancies, partially due to the relatively short amount of time this and

periphery issues have caught the attention of academia and practice. Häkkinen and Belloni (2011) in their research on the barriers and drivers of sustainable buildings note in their Finnish case studies and interviews, that occupants and owners are increasing their demands and expectations for such buildings, which in turn requires a development of new products and services to support this (Häkkinen & Belloni, 2011, p.250). Whilst not naming BREEAM specifically, they note that assessment tools that offer support for designers in creating sustainable building solutions are one of these services (Häkkinen & Belloni, 2011, p.247). Oyedokun et al. (2015) note numerous unsolved issues in their research on the sustainable office market in the UK, with one being of particular importance in the context of this paper. They note that a recent property boom has resulted in an increase in the development of sustainable buildings, but are uncertain if this will reflect in a long term strategic change as the boom diminishes (Oyedokun et al., 2015, p.282). This poses an interesting point of consideration for this paper, in the case of understanding whether building owners are employing a sustainable/BREEAM approach to only the building being studied, a minority of their buildings, or a prospective portfolio wide strategy. Further to this, Wiley et al. (2008) concluded in that there is deficit in the 'behaviour' of sustainable office space in national commercial markets, as well as more research being needed in what added value exists in such offices beyond simply savings in operational costs (Wiley et al., 2008, p.240).

Bond (2010) claims in her research on the Australian experience, that perceived higher costs are putting off some developers from developing sustainable buildings (Bond, 2010, p.6), despite evidence by Kats (2003) that suggests premiums on such buildings average from only 1% to around 6.5% (Kats 2003, cited in Bond, 2010, p.6). There is however no mention in the research as to whether a reduction on operating costs for example, could be a driver that could overcome this barrier. In terms of other unanswered questions on this topic, Roper and Beard (2006) offer a broad list of research needs in the realms of sustainable office studies. They cite the cost implications of sustainable appraisal, data on lower vacancy rates and tenant lease-up along with return on investment information that they claim would be of considerable use to the real estate and FM sector that is aiming actively to push for sustainable real estate (Roper & Beard, 2006, p.101).

### **3. Methodology / Research approach**

#### **3.1 Interviews with owners and tenants of sustainable office buildings**

For this research, interview participants from Norway and the UK were chosen. In the case of the tenants, they were chosen based on their occupancy of a BREEAM certified commercial office. In the case of building owners, they were chosen based on their role in commissioning the construction or refit of their BREEAM certified office, lease development and their instrumental role in procuring tenants for the property, along with being involved in the buildings management. This meant that their roles varied between being directly involved in leasing or the properties development; however their ultimate involvements in the buildings were the same. 46 potential participants were approached for study, and 15 interviewees agreed to take part over a course of 7 individual interviews and 4 group interviews with a total of 9 different buildings. The stakeholder make up consisted of 6 interviewees representing tenants, and 9 representing owners. The interviews were conducted between September 2015 and March 2016. Although the sample size is small and difficult to generalise, there is none the less scope for the preliminary results to 'shed light' on the issues addressed (Yin, 2014, p.40), as well provide scope to expand the study further.

Each of the interviewees were asked a multiple choice question regarding what factors of ‘drivers’ were important to them when choosing to develop, refit or occupy their building to BREEAM standard. The motivators reflected those most commonly found in the state of the art, both from academia and practice. They were asked to rank in order of ‘1-6’ (1 being the highest priority) the categories of **A)‘Costs’, B)‘A Green Certification’, C)‘Legislative Compliance’, D)‘CSR’, E)‘Company Policy/ Culture’ and F)‘Industry/ Customer Demand’.**

The above drivers were influenced and informed by an extensive examination of the literature, with the previously mentioned drivers by Bansal and Roth (2000) being of particular influence. The number of drivers was kept at six in order to concentrate the results and provide a workable scope within the timeframe of the interviews, and to follow up the quantitative answers with further and deeper qualitative questions. These drivers are described in more detail in table 1.

The quantitative questioning did not deal with barriers directly; however this was covered in qualitative follow up questioning with the interviewees. Qualitative discussions were semi structured in nature, but instigated by asking the interviews to explain the narrative behind their decision to develop or occupy their building, and by asking them about what challenges they faced during their development or occupancy. Some barriers were also illuminated when the interviewees explained their reasoning behind their choice of quantitative answer. The barriers raised as a result of these qualitative responses will be discussed later in the section on the discussion of the findings.

The key aim of the quantitative results is to demonstrate the difference in priorities between building owners and tenants regarding what they most value in their respective buildings. This is the reason for the data being displayed in a division of these roles. Within the analyses of the responses, those which were given highest priority (ranking 1-3) were considered as “high priority” drivers for implementing sustainability in building development (owner perspective) and operation and use (tenant perspective). Those categories with lowest ranking (4-6) were considered as “low priority” drivers.

The following overview outlines more directly the “High” and “Low” priority factors for each of the drivers presented to the interviewee (Table 1):

*Table 1: ‘High’ and ‘Low’ priority factors for the drivers for owners and tenants*

<b>Categories</b>	<b>Description</b>	<b>Owners response: “high priority” (1-3) or “low priority” (4-6) driver?</b>	<b>Tenants response: “high priority” (1-3) or “low priority” (4-6) driver?</b>
<b>Costs</b>	<i>In the context of owners, this referred the overall business case of the development of their building with a primary consideration of operating costs (if it is the responsibility of the owner), overall building development costs, and added financial value.  For tenants, this referred to their outgoings in their tenancy related to rent, and utilities (if their lease makes this their responsibility).</i>	<i>Low Priority</i>	<i>High Priority</i>
<b>Green certification</b>	<i>In the context of owners, it was referring to the level of importance they placed the BREEAM certification in comparison to the other factors when developing their building.  The same considerations exist for the tenant, with the</i>	<i>High Priority</i>	<i>High Priority</i>

	<i>exception of them considering how important the BREEAM certification was as a factor in them choosing to rent this particular space.</i>		
<b>Legislative Compliance</b>	<i>The meaning of this category is similar in both stakeholders' cases, in the sense that it asks the interviewee to gauge how important mandatory legislative obligations (national or international) were in their choice to develop or occupy their BREEAM certified building. This legislation could derive from the likes of local government, national buildings code, or international legislation (such as from the European Union).</i>	<i>Low Priority</i>	<i>Low Priority</i>
<b>CSR</b>	<i>Both stakeholders are asked to consider the importance of Corporate Social Responsibility (CSR) as an externally presented policy in their respective choices. CSR based decision making is also impactful on the reputation and brand image of the respective owner or tenant.</i>	<i>Low Priority</i>	<i>High Priority</i>
<b>Company policy / culture</b>	<i>This refers to the culture within the respective company or organisation of each stakeholder, and how important internal policy and cultural motivators impacted on their choices.</i>	<i>High Priority</i>	<i>High Priority</i>
<b>Industry/ Customer Demand</b>	<i>This category in case of owners refers to the degree to which demands from existing or prospective tenants influenced the development of their BREEAM building. Pressure from within their own industry is also a factor that they were asked to consider.</i>  <i>This was reflected similarly in the case of tenants, however in the context of their decision to occupy their respective building.</i>	<i>High Priority</i>	<i>Low Priority</i>

The presented interview results demonstrate difference in the driver's priority levels depending on whether they were the owner a tenant (table 1).

There was near universal consensus amongst owners that their own '*company policy/ culture*' was the most important factor in the development of their respective building, with only one interviewee valuing their '*Green Certification*' over this and having '*Company policy/ culture*' at number 2. Another building owner placed '*Industry/ customer demand*' at number 1, with '*Company policy/ culture*' at number 2. Thus, '*Company policy/ culture*' can be considered as the most important driver from building owner perspective in the context of this study. Their lowest priority was split between five owners placing '*Costs*' at number 6, with only two interviewees placing '*Legislative Compliance*' at the same placing, with one interviewee valuing '*Costs*' much higher at number 2, and another at number 3. There was less consensus on the other priorities, with three interviewees placing a '*Green Certification*' near the middle of the scale, and with two interviewees placing '*CSR*' at number 5.

With regards to tenants, there was less agreement as to what their priorities were when choosing to occupy their respective buildings. There was little consensus on the top priority, with the only commonality being two interviewees placing '*Green Certification*' at number 1. A similar lack of consensus was found at the bottom of the scale, with two tenants placing '*Legislative Compliance*' and another two placing '*Industry/ customer demand*' at number 6, representing the only commonality for the lowest priority factors. Two interviewees placed '*CSR*' at number 2 making it a "high priority" driver, and two interviewees placed '*Costs*' at number 3., and two of the tenants placed '*Legislative Compliance*' at number 5, which might be considered as a potential "low priority" driver.

The results show that ‘Costs’ are mainly valued as a “high priority” driver amongst tenants, whilst in many cases the building owners consider it as “low priority” driver, (4-6). Whilst there was little commonality amongst tenants, the interviews point towards ‘Company Policy/ culture’ as being a key “high priority” driver of the development of sustainable buildings amongst owners. Amongst almost all of the actors in the study, ‘Legislative Compliance’ was considered as “low priority”, and placed in the lower half of the rating scale (4-6).

## 4. Discussion of findings

### 4.1 The barriers and drivers for owners of BREEAM certified commercial offices in Norway and the UK

The literature notes numerous difficulties in the development of sustainable buildings. Bright et al. (2014) notes how there is little incentive for building owners to install energy efficient technologies in their buildings due to the upfront costs and expensive maintenance (Bright et al., 2014, p.17). Literature also claims that sustainable building management and FM is being increasingly driven by legislation, and less so by corporate image (Casals, 2006; Ayres et al., 2007; Shiers et al., 2007, cited in Elmualim et al. 2012, p.17) . The results of our study however, were indicative of the opposite. One of the British building owners for example, claimed that their investors were keen to have as many new and retrofitted high performance BREEAM buildings as possible, due to the long term financial benefits as well as those associated with CSR. This was despite the substantial upfront costs necessary to make this approach possible. Similar comments were echoed by other interviewees, all of whom cited a combination of company policy and long term financial benefits in terms of maintenance as being important factors in their investments. Despite some discussion on the contrary, an industry wide survey by law firm DLA Piper of more than 100 building developers did illustrate a consideration that was reflected in our study. DLA Piper claimed that only 3% of their respondents felt that existing or pending legislation influenced their decision to deliver sustainable real estate products (Piper, 2014, p. 17). This was reflected in our results, where less tangible considerations such as company policy were a higher priority than the likes of legislative compliance.

The key difficulties were technical and structural, with one of the Norwegian building owners, for example, being aware that their tenants were experiencing difficulties with their Building Management System (BMS). Many of the building owners also felt that the BREEAM process was overly difficult. One of the Norwegian building owners cited the frustrating lack of points received for building on an empty site and not demolishing an old property. The owners of existing buildings had experienced some construction difficulties when retrofitting their buildings, especially with regards to planning regulations. Of note was the planning restrictions experienced by one of the British building owners. Their building is a refitted Georgian building, and they were not permitted to replace the old sash windows with a modern equivalent. Although the building performs well, this they considered to be a frustrating barrier in the sustainable upgrade of existing building stock. Due to the BREEAM certification system not accounting for an issue such as this; it was a contributing factor in the building not receiving the level of BREEAM certification that was intended earlier in the buildings design phase. This is recognised by Dixon et al. (2008) referring to the point that cost effectiveness and the social acceptance of some refurbishment and retrofitting is an ongoing barrier to sustainability (Dixon et al., 2008, p.14).



## 4.2 The barriers and drivers for tenants occupying BREEAM certified commercial offices

Current research suggests that sustainable buildings are valued more by potential occupants due to their lower running costs, along with providing a more attractive working environment (Sayce et al., 2010, p.4), although some evidence suggest that their real world performance does not match the technical specifications (Turner and Frankel, 2008; Paul and Taylor, 2008, cited in Sayce et al., 2010, p.4) . The interviews conducted so far however place the likes of costs (both in the context of ‘operational’ and ‘developmental’) far closer to the middle and bottom of the priority scale, making it less of a consideration. The majority of buildings owners associated more closely with the development costs of the their building (for which they are more directly responsible) and tenants more with operational costs, which greater impact the day to day financial elements associated with their tenancy.

Wiley et al. (2008) suggests factors that could encourage tenants occupy a sustainable building. As well as helping enhance other aspect of the business, they note that a reduction in operating costs could offset some larger expenses (i.e. rent) that a high performance building may command (Wiley et al., 2008, pp.233-234). Whilst no tenants stated that a reduction in costs was a key factor in their decision to move to their respective buildings, they were none the less aware of the positive impact on their operational costs. One of the Norwegian tenants saw a 50% operational cost reduction, achieved through a combination of the building technology and the 50% reduction in space when moving from cell to open plan offices. Another Norwegian tenant also reflected on this, saying that whilst operational costs were not a key concern for them in choosing this building, they have always pursued operational cost reductions and even went as far as to attempt a green certification of their previous premises to act as a ‘toolkit’ to help reduce their energy.

When pursuing the occupancy of any building let alone a sustainable one, there are inherent barriers that risk the ease of both the buildings procurement and occupancy. The literature points mostly to financial and legal barriers to negotiating these tenancies, with the likes of split incentive causing a lack of trust and an growth in tensions (Wilson & Tagaza, 2006, p.2), with one scholar going as far as to say that split incentive is “*a notorious obstacle to improving the environmental performance of tenanted commercial space*” (Bright et al., 2014, p.17). Each of the tenants was asked specifically how the negotiations went with their landlord, and if any tensions or difficulties had arisen. None of the tenants claimed to have had any such problems, even, as is the case of one of the Norwegian tenants, appreciating the ability to be involved in the buildings design and even paying for the BREEAM certification themselves at the suggestion of the owner. This contradicts a potential barrier noted in literature, that states that often adversarial relationship between the landlord and tenant that can potentially stifle the development of sustainable buildings, and their associated greener tenancies (Hinnells et al., 2008, p.544). Whilst not necessarily a tension, one of the Norwegian tenants noted that their office building had experienced problems due to the tenant not engaging enough with the owners during the buildings initial development. Poor communication during the earlier design phases resulted in a building that was, according to the tenants “*not to the standard we had expected*” and a lack of progress meetings leaving numerous design problems that are not easily fixed now that the building is in operation. The tenant went on to say that “*we are also in the process of acquiring two new BREEAM buildings and we know the mistakes not to make again. One of them is now finished and we are very happy with it, mostly because the developers and we worked as a team this time*”. The barrier of communication is one issue that the literature has recognised in these kinds of buildings (Hinnells et al., 2008, p.544), but also note that there is potential through the leasing structure to allow

for “*effective channels of communication to promote green issues, and to promote day to day property use and management that takes account of environmental issues*” (Hinnells et al., 2008, p. 544), and thus go some way towards alleviating this barrier. In the literature studied for this paper however, there was no discussion on how this communication barrier could be addressed at an earlier life cycle stage. So far, all of the technical barriers relate exclusively to the buildings BMS systems, with this being a particular issue for one of the Norwegian tenants of a new BREEAM building. The integration of technology had been problematic for them to the extent that one of the tenants hired their own ‘integrator’ to help with the software implementation during the buildings development, which they felt averted larger problems. To quote the same tenant, “*developers are great at building buildings, but they need to work harder at understanding the technology they put in it and how to make it all work together*”.

## 5. Conclusion

When looking more directly at what we know and do not know about the study of sustainable offices, there is a notable need for research to pursue what is driving not just the development of these buildings, but also what drives their tenants to sign leases for them. Whilst we know that there has been an increase in the uptake of the likes of BREEAM and other sustainable certification schemes, it is unsure at present as to if this is a temporary consideration by developers, or a long term commitment for their portfolios. In the context of BREEAM certifications, there is scope for the certification to consider the drivers and barriers presented by the development of sustainable building stock, both in terms of the context of its assessment criteria and how they make the scheme and methodology more attractive to prospective clients. This paper also demonstrates to some extent the business case of these buildings from the perspective of owners and tenants, and an understanding from both stakeholders as to the operational costs savings achievable in a sustainable office building with a BREEAM certification.

From the perspective of the delivery and development of green leases in theory and practice, the results in the paper have illuminated differences between both. The literature represents a need to understand ‘value’ from the perspective of both owners and tenants beyond what has been cited in the literature. The results have demonstrated that despite what is often in literature; less tangible drivers such as company policy and CSR are of significance. There is also scope to recognise some of the technical barriers associated with these buildings, and that the landlord\ tenant relationship may not be as adversarial as was previously believed in some literature. Overall, the results demonstrate that different needs, drivers and barriers exist depending on whether attention is placed on the owner or tenant, with a need to adjust priorities accordingly. Understanding these differences not just impacts on the development of sustainable office buildings as per the questions asked in the interviews, but also emphasises the consideration stakeholders need to be mindful of when developing an attractive and achievable green lease strategy for a sustainable office building. The development of sustainable buildings relate not just their development of their physical structure, but also how attractive their leasing and policy decisions are to the tenants who may occupy them. The results in this paper have also shown little demonstrable difference in the barriers and drivers of a building whether it is new or existing.

With these concluding thoughts in mind, this paper has scope to further existing research needs by providing a better understanding as to what drives key stakeholders in sustainable office buildings whilst also demonstrating a potential path for further research with larger samples, different focuses and the involvement of other stakeholders such as facilities managers and architects.

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The main objective of ZEB is to develop competitive products and solutions for existing and new buildings that will lead to market penetration of buildings that have zero emissions of greenhouse gases related to their production, operation and demolition. The Centre encompasses both residential and commercial buildings, as well as public buildings.

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