

Valuers' Perception of Sustainability in the UK Commercial Property Market

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Abstract

The thesis examines UK commercial property valuers' perception of sustainability and how they are reflecting it while valuing commercial properties, especially offices and retail. The demand for sustainability in commercial properties have been reportedly increasing. Along with the increasing demand, governments around the world are taking measures to address climate change by reducing carbon emission. As part of such measure the UK government has a commitment to decrease its carbon emission to zero compared to its 1990 level by 2050. To achieve this target legislative policies are being added that will reduce carbon emission from the built environment. To address these changes, the Royal Institution of Chartered Surveyors (RICS) has published several standards and guidance notes to guide valuers in this respect. However, research has been slim to identify the extent to which valuers are incorporating these changes to their due diligence practices.

The objective of this thesis is to determine how commercial property valuers in the UK are adopting their practices to address the increasing demand for sustainability in the built environment, legislative changes and regulative pressure to address climate change as well as the physical risk of it. To answer these questions, a mixed method approach was undertaken. An online survey and semi-structured interviews were completed to address the research questions. The online survey has revealed reference to RICS standards and guidance on sustainability had improved since previous research reported by Michl, Lorenz, Lutzkendorf and Sayce (2016) in their paper titled "Reflecting sustainability in property valuation-a progress report" which reported on the findings of a survey conducted by the RICS in 2012. However, this research found progress on data collection is still limited though have improved. Additionally, valuers indicated that sustainability attributes were of more importance to owner occupiers than investors and lenders. In terms of how sustainability attributes were affecting market value and investment value, valuers indicated that only certification was influencing it to some extent. Other attributes related to energy and carbon, waste and water management, health and well-being were not seen to be having much impact on value. It was also revealed experienced valuers are more knowledgeable in sustainability and collects more data. Furthermore, possibilities were discovered that some variables such as type of organisation, size of organization and purpose of valuation could have influence on sustainability consideration. These possibilities were further explored through the second phase, the semi structured interviews.

The semi-structured interviews revealed though data collection on sustainability has improved since the last research, practice as well as awareness of sustainability among valuers can be inconsistent. Value impacts of sustainability factors are mostly limited to implicit considerations

through rent and all-risks yield. Some explicit considerations were reported to address EPC upgrade costs or remediations for flood or contamination. Among three commissioning clients, lenders were mentioned as the pioneers to bring in some changes to instructions to valuers. legislation such as MEES has made a real impact, whereas regulative pressure from the RICS has not been very effective. Experienced valuers reported collecting more data on sustainability and were found more knowledgeable about climate change and sustainability. local settings, purposes of valuation and size of organization are some of the other factors that may impact on sustainability consideration. Several barriers were also revealed because of which it might be hard for valuers to incorporate sustainability in valuation which include lack of data, education and training, traditional methodology, time, cost, fee, client's pressure and reliance on third party data.

Dedication

to

Ammu, Firoja Akter Kaniz, my visionary

Abbu, Syed Mozaffar Hossain, my hero

Tehzeeb Azaan, my darling doll

& B, Sharif Hossain Nazmuddin, my love

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Declaration

I certify that this thesis has not been submitted previously for a degree, nor has it been submitted as part of the requirements of any other degree.

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged. Any help that I have received for my research work and the preparation of the thesis has been acknowledged.

Syeda Marjia Hossain
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Abbreviations

APC:	Assessment of Professional Competence
BRE:	Building Research Establishment
BREEAM:	Building Research Establishment Environmental Assessment Method
Capex:	Capital expenditure
CCC:	Committee on Climate Change
CPD:	Continuing Professional Development
CSR:	Corporate Social Responsibility
DEC:	Display Energy Certificate
EPBD:	Energy Performance of Buildings Directive
EPC:	Energy Performance Certificate
GHG:	Greenhouse Gas
GN:	Guidance note
IPCC:	Intergovernmental Panel on Climate Change
IWBI:	International WELL Building Institute
LEED:	Leadership in Energy and Environmental Design
MEES:	Minimum Energy Efficiency Standard
NABERS:	National Australian Built Environment Rating System
RICS:	Royal Institution of Chartered Surveyors
UKGBC:	UK Green Building Council
UN:	United Nations
UNEP:	United Nations Environmental Programme
UNFCCC:	United Nations Framework Convention on Climate Change
WELL:	Well Building Standard
WTP:	Willingness to Pay

Chapter 1: Introduction

1.1 Introduction

Property valuers play a major role in the real estate market in the UK and, critically, the figures they report can influence economic decisions which have wider societal implications. Within the lifecycle of a building, valuers provide value for almost all stages (design, construction, operation, demolition) (WGBC, 2013). Unlike the stock or bond market, properties are not traded in open markets and therefore valuers are the professionals who would provide values for properties. Additionally, commercial properties are heterogenous in nature, therefore, every single property is different, which creates a need for valuation advice and services. Commercial property valuers in the UK provide valuation advice for many values, such as market value, investment value or worth, fair value among which the most common ones are market and investment values. The purpose of this research is to investigate the impacts of sustainability factors on valuation practices as well as on value. Though valuers provide advice for several types of value, the focal point of this research is to identify the impacts on market and investment value only for commercial properties, especially retail and offices. This thesis will investigate the ways in which those responsible for the valuation of commercial buildings in the UK have adapted and are continuing to adapt their practices in response to the burgeoning sustainability agenda. These practices include due diligence, reporting and the methodologies they use.

The climate change and sustainability agenda are argued (IPCC, 2018a, 2018b) to have critical economic social and environmental aspects that demand an immediate response. Part of that response involves rapid de-carbonisation of buildings and associated infrastructure (RenoValue, 2016). This posits the question as to whether valuers, whose prime role is to reflect the views of market participants (Baum & Crosby, 2008; Wilkinson, Dixon, Miller & Sayce, 2018) have a role to play in supporting the sustainability agenda and, if so, how. How sustainability or its attributes should be valued for real estate has been an investigation led by both industry and academia for several years (Warren-Myers, 2018). Academic research has been conducted to identify the relationships between sustainability and value (See for example, Lorenz & Lutzendorf, 2008; Ellison & Sayce, 2006). Additionally, pricing studies have also been conducted to show the impacts of sustainability credentials on rents and prices (For example, Fuerst & McAllister, 2011a, 2011b, 2011c, Fuerst & van de Wetering, 2015). Consequently, valuers have a role to assess the influence of sustainability on the market and reflect that in valuation. However, for valuers to reflect sustainability within the valuation, evidence from the market is required. It is pivotal for valuers to

not seek to create value related with sustainability (Warren-Myers, 2018), as the purpose of their advice is to reflect the market and not lead it.

The rest of the chapter includes a background of the research, scope and rationale of the research, research questions and objectives, the methodological approach undertaken to address that along with the structure of the thesis.

1.2 Background of the research

“We are the first generation to be able to end poverty, and the last generation that can take steps to avoid the worst impacts of climate change. Future generations will judge us harshly if we fail to uphold our moral and historical responsibilities.”

Ban Ki-moon, Secretary-General, United Nations

As described by the United Nations Secretary General, we are the last generation that can stop the impacts of climate change. It has now been established that human activities are most likely to be responsible for global warming (Bates, Kundzewicz, Wu, & Palutikof, 2008; IPCC 2023). With increasing population and increase in consumption, humanity has increased its ecological and carbon footprint on the planet (Murtaugh & Schlax, 2009). The arguments in favour of environmental efficiency and sustainability are becoming stronger, with scientific studies showing the impacts (for example, Filho et al., 2021) of human activities on the planet (IPCC, 2018a; IPCC 2023). Scientific studies, notably reports from the Intergovernmental Panel on Climate Change (IPCC), have urged for drastic actions to be undertaken. The IPCC report (2018) urged all governments and the public to change policies and behaviour to address negative environmental impacts. The scientific fact that the global temperature could increase by 2 degrees Celsius could have *‘far-reaching and unprecedented changes’* in all aspects of society including real estate (IPCC, 2018b). The IPCC (2018) report suggested that changes are required in all aspects of life, including land, energy, industry, buildings, transport and cities. The report concluded that global carbon dioxide (CO₂) emissions need to fall by 45% from the 2010 level by 2030 and must reach zero by 2050 to keep global warming within 1.5 degrees Celsius (IPCC, 2018b). If human activities are not altered to reduce carbon emissions, it is highly likely that the temperature will continue to rise (global warming) and will reach 1.5 degrees Celsius between 2030 and 2052. The increase in temperature will cause long-term changes to the climate system, such as a rise in sea levels (IPCC 2018a, 2018b) which could lead to coastal areas becoming submerged. Additionally, the report published by IPCC in 2022 underlined the urgency for climate action as 40% of the world population is highly vulnerable to the impacts of climate change. Some extreme weather events are

already happening, such as floods, heatwaves, wildfires (IPCC, 2023). The worst impacts of climate change can only be averted if the rise in temperature is kept below 1.5 degrees Celsius, however the opportunity to do so will last only until the end of this decade (IPCC, 2021, 2022). Even after the warnings of the IPCC report in 2018, the actions taken by governments around the world have been deemed to be insufficient as the IPCC (2023) reported that the global surface temperature has increased by 1.1 degree Celsius during 2011-2020 and it continues to rise. The UK government report suggested the average surface temperature in the UK has already risen by 1.2 degrees Celsius since pre-industrial times (HM Government, 2022). While the aim is to limit warming to 1.5 degree Celsius, evidence showed it could go up to an increase of 4 degree Celsius or more (HM Government, 2022). The more concerning fact is that greenhouse gas emissions are continuing to increase with historical and ongoing contributions from “*unsustainable energy use, land use and land-use change, lifestyle and patterns of consumption and production across regions*” (IPCC, 2023 page 4). Because of this, changes are now visible in the atmosphere, ocean, cryosphere, and biosphere (IPCC, 2023). Moreover, strong evidence is present within the UK that even with low warming scenarios significant and costly impacts are evident unless immediate actions are taken (HM Government, 2022).

Globally, governments are taking actions to reduce carbon emissions. Recognition of and policy responses to climate change exist worldwide though these are not universal and progressive. The below timeline from the IPCC 2018 report shows historically significant dates along with international climate negotiations that have led to the publication of the IPCC reports on global warming. One of the most important conventions for climate change was the Kyoto Protocol, where it was concluded that global temperature should not increase by more than 2 degrees Celsius above pre-industrial levels. On December 12, 2015, members of the United Nations Framework Convention on Climate Change (UNFCCC) reached a historical agreement to combat climate change. It was the first time all nations were brought together to work to combat climate change as a common cause. The central aim of this agreement is to keep the global temperature rise well below 2 degrees Celsius above the prehistorical levels and pursue efforts to limit the temperature increase within 1.5 degrees Celsius. However, recent research shows that even after combining the national climate pledges from countries around the world and other mitigation measures, the world is set on a track for a global temperature rise of 2.7 degrees Celsius by the end of the century (UNEP, 2021). The most recent IPCC (2023) report also stated that it will be very hard to limit global warming to below 2 degrees Celsius during the 21st century.

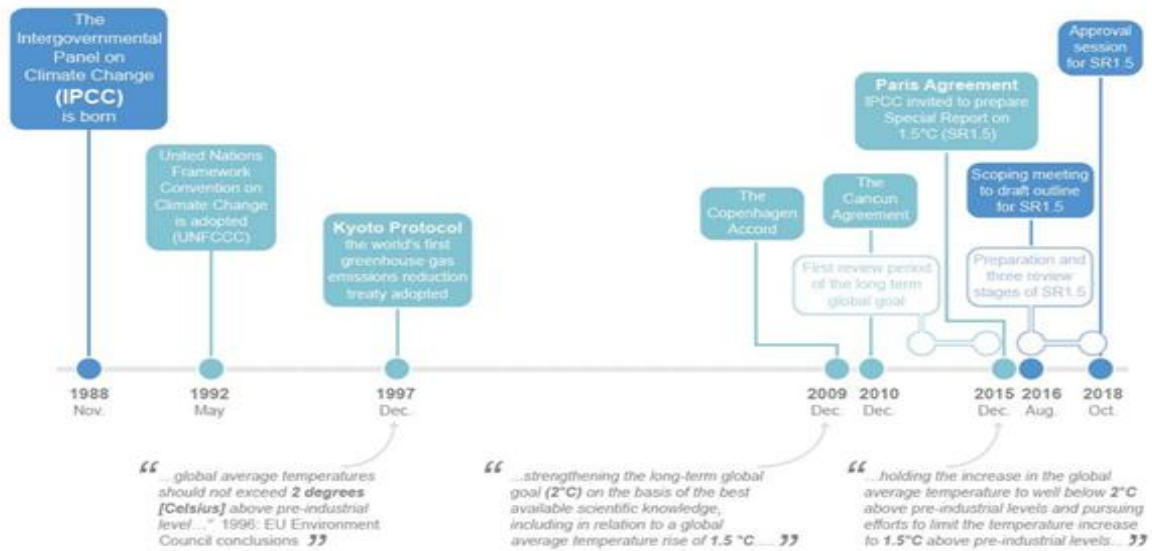


Figure 1.1: A timeline of notable dates in preparing the IPCC Special Report on Global Warming of 1.5°C (blue) embedded within processes and milestones of the United Nations Framework Convention on Climate Change (UNFCCC; Grey), including events that may be relevant for discussion of temperature limits.

Source: Chapter 1, IPCC report (2018).

Within the UK, the government passed the Climate Change Act (2008) to ensure its commitment to decreasing CO₂ and greenhouse gas emissions even before the Paris Agreement was achieved. According to this Act, the UK government was legally bound to reduce CO₂ by at least 80% by 2050 compared to its 1990 levels. The Act also established the Committee on Climate Change (CCC) and based on CCC's advice the target was changed during 2019. The current target is to meet net zero by 2050 from all sectors of the UK economy. The UK arguably is on the track to reach the net zero commitment by 2050 as recent reports showed it has reduced emissions by approximately 50% between 1990 and 2020 (CBRE, 2023). However, a closer examination of this data shows majority of the commercial real estate emissions reduction can be attributable to the power sector decarbonisation and the commercial real estate sector has reduced annual emissions by only 5% compared to the 1990 levels (CBRE, 2023). Therefore, more could be done to reduce emissions from this sector. The recent UK government report showed global warming can cause widespread losses to the UK economy in health and productivity, affecting households, businesses and public services. If global temperatures increase by 2 degrees Celsius by 2100 compared to pre-industrial times, annual damages from flooding alone for non-residential properties around the UK can increase by 27% by 2050 and 40% by 2080, respectively. If temperatures increase by 4 degrees Celsius this could increase to 44% and 75% respectively (HM Government, 2022). The COP 27 has therefore asked for a more urgent decarbonisation of the global economy (CBRE, 2023). Similar recommendations have been included in the CCC's 2023 report to the UK parliament on progress in reducing emissions. This report stated there is a lack of urgency and the UK government needs to have sustained high intensity actions to achieve its strong commitment to net zero (Committee on Climate Change, 2023).

The real estate sector has the capacity to make an important contribution to environmental sustainability, as it is responsible for a significant amount of energy consumption and CO₂ emissions. As Figure 1.2 shows, around 17.5% of global energy consumption is attributable to buildings (Our world in data, 2020).

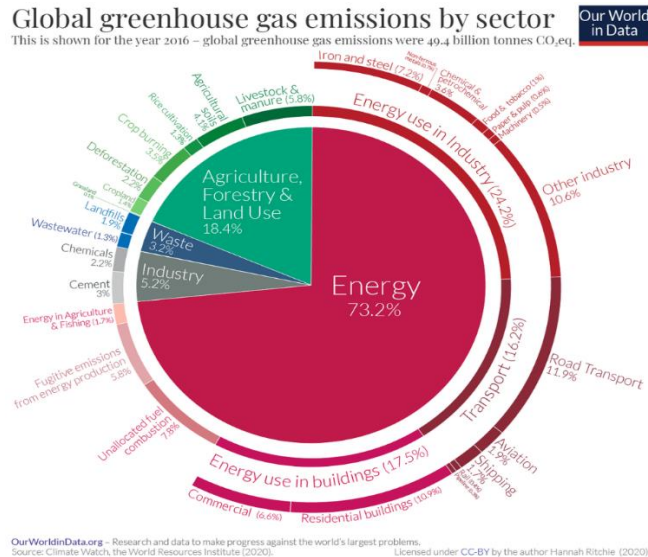


Figure 1.2: Global Greenhouse gas emissions by sector

Source: OurWorldData.org

Within the UK, the built environment is responsible for contributing around 40% of the carbon footprint (UKGBC, 2021). Additionally, buildings are identified as one of the major carbon emitters, especially through energy consumption (Bosteels & Sweatman, 2016). Between 10 and 20% of the energy that is required for the construction, operation, refurbishment or demolition of a building is used for the building’s embodied energy (associated with construction) and the rest for operational energy to run the building (Ramesh, Prakash & Shukla, 2010). About 28% of this energy consumption can be saved through energy efficiency measures (CEC, 2006). Therefore, the UK government is changing legislation and policies to help decrease carbon emissions from this sector. Some changes to legislation and policies include the Climate Change Act 2008 and the Energy Act 2011. Furthermore, the Minimum Energy Efficiency Standard (MEES) was introduced in 2008 to increase energy efficiency and to improve the quality of buildings that became effective from April 2018. The MEES requires all residential and non-domestic properties to be rated by an Energy Performance Certificate (EPC) when being transacted. However, when being let, a minimum EPC of E or higher is required. A property with an EPC certificate below E is no longer rentable in the UK unless an exemption applies. Currently, the MEES is affecting new leases, however from 2023 it is set to be extended to cover all leases, including existing ones. Additionally, the UK government has proposed to set a minimum EPC of B by 2030, which could lead to value disruption and stranding of assets as it is considered too drastic (Muldoon-Smith & Greenhalgh, 2019). Moreover, as the real estate sector has not been able to decarbonize as expected (CBRE, 2023), the recent CCC (2023) report recommended that the minimum EPC should be C from 2028 for privately rented homes. Moreover, the MEES does not cover owner occupied property, but the

CCC (2023) recommended to develop and publish policies to ensure owner occupied homes are at least EPC C by 2035. Though these recommendations are for residential properties, it will possibly impact on policies for commercial properties too. Therefore, for the built environment the changes to legislation to reduce carbon emissions pose a risk that can impact on whether a property is lettable or not. If existing stock is not improved and upgraded to the minimum standards of EPC, there is a real threat that some of these properties will become stranded. These risks associated with the changes to legislations and policies can be expressed as transition risks (Clayton, Devaney, Sayce & van de Wetering, 2021).

Additionally, climate change poses new risks for the built environment in the form of physical risks. Physical risks can include extreme weather events caused by climate change, such as an increase in floods, cyclones, wildfires or disasters related to extreme weather. According to the IPCC (2023) flooding in coastal areas and low-lying cities may become increasingly likely due to more extreme weather conditions. Risk of flooding may also increase due to the increased frequency and intensity of precipitation (IPCC, 2023). Currently and within the near future riverine and surface water will be the main drivers for flooding in the UK which will be taken over by storm surge and sea level rise as a result of global temperature increase in the future (International climate change risk analysts XDI, 2021). As the UK has a lot of coastal areas flooding is expected to become critical over the coming years, as the XDI reported half a million properties are at risk from flooding which could go up to 1.9 million properties by 2100 because of global temperature rise (International climate change risk analysts XDI, 2021). Additionally, the XDI report (International climate change risk analysts XDI, 2021) also includes the risk of windstorm events and soil subsidence during droughts on which climate signals are currently weak or uncertain. These extreme weather events can create greater financial consequences for property insurers, owners and occupiers (Clayton et al., 2021) in the form of losing rental and capital value or not being able to insure. Hence, the property market can be impacted by climate change events both directly and indirectly. The introduction of buildings that meet current and future legislative sustainability requirements provides protection for stakeholders against these future risks, transition and physical. Furthermore, sustainable attributes in buildings allow investors and occupiers to enjoy additional benefits, such as reduce operating costs (see for example, WGBC, 2018; UKGBC 2021).

Hence, the argument in favour of sustainable buildings, to not only reduce carbon emissions but also to achieve better efficiency and future proofing, is becoming stronger globally. Evidence in academic studies has emerged that voluntary sustainability certifications for sustainability are becoming part of the mainstream for class A office properties in some markets (Fuerst, Gabrieli &

McAllister, 2017). Based on these energy and wider sustainability certifications, evidence of various levels of rental or pricing premiums has also become apparent in different markets around the globe, such as the USA (Eichholtz, Kok & Quigley, 2010; Wiley, Benefield & Johnson, 2010; Fuerst & McAllister 2011a, 2011b; Das & Wiley, 2014), Australia (Newell, MacFarlane & Kok, 2011), the Netherlands (Kok & Jennen, 2012), Singapore (Deng, Li & Quigley, 2012; Deng & Wu, 2014) and the UK (Chegut, Eichholtz & Kok, 2013; Fuerst & van de Wetering, 2015). Additionally, demand for sustainable attributes in buildings has reportedly increased (Jackson & Orr, 2021).

Valuers have been criticised for not reflecting sustainability factors even though there is evidence of increasing demand for sustainability attributes and credentials in the market as well as physical and transition risks associated with climate change. Though academic studies are showing price and rental differentials for the presence of sustainability¹, property valuers are still not reflecting it (Sayce, 2018). Furthermore, the extent to which UK valuers of commercial properties reflect sustainability in valuation practices is not widely known or researched. However, research on the perception of valuers of sustainability can be found in other countries, such as in Australia, Nigeria, Poland and the UAE. Though these studies vary in terms of how they define sustainability as well as the methodology that have been used to evaluate valuers' perception of sustainability, there are some similarities in terms of some of the findings. These similarities in findings refer to the limitations faced by the valuers which are prohibiting them to not fully incorporate sustainability factors in valuation. These refer to lack of data and evidence on sustainability factors for subject and comparable properties as well as valuers' knowledge on sustainability. For example, studies conducted in Australia have reported on valuers' limited knowledge and consideration of sustainability in valuations as well as lack of evidence regarding how sustainability factors may affect property transactions (Warren-Myers, 2013; 2016). Later Australian studies also reported on values' lack of knowledge building on sustainability despite more data availability and greater defined understanding of sustainability in the property market (Warren-Myers, 2022b). Similarly in the UAE, lack of reliable market data, lack of relevant technical skills of professionals and clients' disinterest have been mentioned as the barriers to recognise value in sustainable properties (Lambourne, 2020). In a study conducted in Nigeria, valuers' knowledge on sustainability was found to be lacking (Babawale and Oyalowo, 2011). Similarly, study in Poland also identified valuers' knowledge to be a barrier for the inclusion of sustainability in valuations (Kucharska-Stasiak & Olbińska, 2018). Majority of these studies found the current guidelines and standards

¹ Pricing studies worldwide have been criticised for their methodology, rationale, data etc. These are discussed in the literature review section.

provided by professional bodies on sustainability are proving to be insufficient for valuers and recommends for further guidance, training and education of valuers in sustainability. Moreover, data on sustainability factors are not always available for subject and comparable properties which prohibits valuers to evidence sustainability pricing. The lack of awareness amongst clients in some of the less developed markets (such as UAE and Poland) regarding the risks and benefits of sustainability in properties can be another challenge. Research in the UK, on the other hand, is scarce on this subject. The only study that could be found is that by Michl et al. (2016), which reports on the extent to which property valuers have adapted to the Royal Institution of Chartered Surveyors (RICS) guidance note published in 2009 on sustainability and commercial property valuation (RICS, 2009). Very limited adaptability of this guidance note was reported and similar to Australian, Nigerian and Polish studies, lack of data, limited knowledge and considerations of sustainability in valuations were found. Therefore, studies across the world on valuers' perception of sustainability found similar limitations faced by valuers and there is a need to investigate if this is still true for the UK commercial property market. Moreover, the UK study was undertaken in 2012 after which a lot of UK legislation related to climate change came into effect (for example, MEES), the impact of which needs to be researched.

The Royal Institution of Chartered Surveyors (RICS) is the professional body responsible for developing and enforcing international standards and mandates for professional valuers. The International Valuation Standards Council (IVSC) is the independent global standard setter for the valuation profession. Both the RICS and IVSC recognise the importance of sustainability in property markets (RICS, 2021c; IVSC, 2021). IVSC do not explicitly mandates valuers to consider climate change factors for valuations (Sayce, Clayton, Devaney & van de Wetering, 2022) but mentioned sustainability in regard to valuation for development schemes (IVS, 2022). IVSC also recognised Environmental, Social and Governance (ESG) factors to have become the focal factor for both capital providers like investors as well as for the users of capital such as corporations (IVSC, 2021). It also recognised that though there was qualitative information available on ESG, quantitative information is scarce that can guide valuers to reflect ESG in valuations (IVSC, 2020).

The RICS on the other hand, has been advising valuers to collect data on sustainability, analyse and report them in valuations (RICS, 2021c; 2022). Over time, the RICS has arguably strengthen their advice on sustainability inclusion for valuation reporting, although, the RICS reference to climate change as part of sustainability agenda have been limited (Sayce et al., 2022). Majority of thee advice on sustainability inclusion for valuation reporting are still not mandatory for valuers to follow, rather they are present to ensure best practice. The contentious issue is that valuers should

follow the market and not lead them, therefore, without market evidence valuers cannot incorporate sustainability factors in valuations. Though valuers are not to lead the market towards sustainability inclusion, they are advised by the RICS to be aware of sustainability factors and their implications on property values (RICS, 2022). The RICS has updated their Valuation Global Standards, also known as the Red Book², which is mandatory for valuers to follow, several times since the last UK study (Michl et al., 2016) on valuers' perception of sustainability. Though the latest global standards were updated in 2022 (RICS, 2022), the wording around sustainability was kept very similar to previous versions (Sayce et al., 2022). Additional publications on sustainability have also appeared (RICS 2009; 2011; 2018a; 2018b; 2021c). Another study in the UK that addresses the impacts of the introduction of MEES on valuation practices and asset management and presents qualitative data in the form of semi-structured interviews is that by Sayce and Hossain (2020). However, this paper's objective was not to address wider sustainability factors or its consideration by property valuers. The findings of this research suggest that although MEES consideration has been embedded within valuers' due diligence process, value impacts are still very limited. Additionally, valuers' baseline knowledge of MEES exemptions and penalties was found to be variable and limited as well as the knowledge related to the upcoming changes related to the MEES regime. Though the dataset from this research provided a range of experts, it is still not comprehensive, hence there is a need for further research to investigate to the extent to which commercial property valuers in the UK acknowledge and reflect the risks associated with transition risk of climate change. No other quantitative or qualitative study has been conducted in the UK to address valuation professionals' awareness and use of the RICS suggested sustainability standards and guidance (discussed later) or the level of data collection, analysing and reporting related to sustainability of commercial properties in the UK.

This thesis and its research emerged from this gap in the literature and the requirement for an update of the existing research on the topic of commercial property valuers' perception of sustainability in the UK. As the previous research predates the current legislation as well as the RICS advice and guidance, this thesis will be an attempt to address this gap and report on findings related to not only valuer's perception of sustainability but also how far it is possible for property valuers to follow RICS's advice on sustainability to collect data, analyse and report it.

² The RICS has updated their Red Book and has published several Guidance notes and Information papers on sustainability which are discussed in detail in the literature review chapter.

1.3 Scope and rationale of the research

This research concentrates on UK commercial property valuers and their perception of sustainability, especially the impacts of sustainability attributes on market and investment value for the retail and office market. The reason for choosing the UK commercial market is that, within the UK, research on this topic has been scant. There is academic research undertaken regarding the impacts of sustainability on value (For example, Lorenz & Lutzendorf, 2008; Ellison & Sayce, 2006) and evidence of market premiums for sustainability certifications have been reported (Fuerst & McAllister, 2011a, 2011b, 2011c, Fuerst & van de Wetering, 2015). Additionally, increase in demand for sustainable attributes among investors and occupiers has also been reported (Jackson & Orr, 2021). However, the majority of these studies focused on office markets; research on retail markets is scant in the UK. Within the grey literature, the BCSC and CBRE (2015) report showed energy efficiency in shopping centre can be supported by compelling evidence. Though sustainability pricing and rental premiums and financial benefits of some sustainability attributes have both been reported, the impacts of these attributes on market and investment value have not been researched to a great extent on the retail or office property market in the UK. Therefore, the researcher's interest lies within the office and retail property market and to what extent valuers of these markets are considering sustainability attributes while valuing properties.

The UK property market is vulnerable to the risks associated with climate change. Two of such risks are commonly labelled as transition risk and physical risk (Clayton et al., 2021). Transition risk is associated with the changes to legislation and policies to address climate change. An example of this is the MEES. To reduce carbon emissions from the built environment, the UK government introduced the minimum standards for energy efficiency. Currently, a minimum EPC of E is required to let non-domestic properties in the UK, however, this could be stricter as the UK government has proposed B as the minimum EPC starting from 2030. The understanding is setting the bar so high can create stranding of assets as well as value disruptions for the existing stock (Muldoon-Smith & Greenhalgh, 2019). Additionally, the UK has an increasing risk of flood due to sea level rise as well as from river and surface water. The International Climate Change Risk Analysts (XDI) and IPCC (2023) both reported on the increasing risk of flood from climate change. Additionally, it was also reported that because of the climate change physical risks, insurance costs may increase for 406 counties and equivalent areas in the UK (International Climate Change Risk Analysts (XDI), 2021). Hence, this points towards a need to understand how these risks are understood by the valuation professionals and addressed when properties are being valued.

Valuers have been criticised for not incorporating sustainability within the valuation framework and an argument is present within the literature that they lack the skills, knowledge and due diligence to accurately reflect sustainability (Sayce, 2018). Evidence from other parts of the world indicates that valuers lack the knowledge and skills to report on sustainability and that there is a lack of evidence for sustainability pricing in the market that is prohibiting them to incorporate sustainability in valuations (Babawale & Oyalowo, 2011; Kucharska-Stasiak & Olbińska, 2018; Lambourne, 2020; Le & Warren-Myers, 2018; Warren-Myers, 2013; 2016). Previous study in the UK (Michl et al., 2016) on valuers' perception of sustainability also mentioned similar findings, including lack of data on sustainability attributes of properties, lack of knowledge of valuers on RICS guidance and lack of demand from clients as the combination of factors for limited incorporation of sustainability by valuers. Therefore, there is a need to check if these factors are still limiting professional valuers. Moreover the survey that Michl et al. (2016) reported on were conducted in 2012 by the RICS. Since then, a decade has passed and new policies have been introduced to tackle climate change (such as MEES), investors and occupiers demand in the market has shifted towards more sustainable properties (See Jackson & Orr, 2021) and our understanding of the implications of climate change has been improved through further scientific research (IPCC, 2018a, 2018b, 2023). Additionally, the Michl et al (2016) study is based on a survey only, whereas this is the first study in the UK that incorporates a mixed methodology to triangulate and expand results from two methods, survey and semi-structured interviews, to better understand UK valuers' perception of sustainability. Additionally it also incorporates the views of commission clients by interviewing them that previous studies did not do.

Values reported by valuers have a wider societal impact as well because based on these values decisions are being made by investors, occupiers, lenders and public bodies to purchase, sale, occupy or hold a property. RICS valuers are obligated under the RICS Rules of Conduct to abide by certain professional as well as social responsibilities. They are supposed to act in the public interest and assume responsibilities as professionals which includes the act of preventing any harm (RICS, 2021c). As professionals, valuers can therefore have a social responsibility too, to report on sustainability and identify any and every risk and benefit related to climate change. Moreover, one of the three dimensions of sustainability as recognised by the RICS is social factors (the other two being environment. and economic factors) (RICS, 2021c). Because of the wide presence of climate change issues in the media and protests by the younger generation for a better future, sustainability is arguably becoming part of culture in many societies. This change in society's view of the importance of climate change can influence decision making by market participants. Behavioural changes among industry bodies, investors, lenders and occupiers of the property market can

therefore be expected. As these sustainability and climate change issues become more salient, it is expected it will be reflected in pricing of properties which valuers are required to respond to. Hence, there is a need for this research to learn from the property valuers' perspective, how sustainability is understood within the profession and how that has been incorporated.

1.4 Research questions and objectives

This research originates from the gap in literature to show the extent to which commercial property valuers in the UK have adopted to the changes in the market due to the increasing demand for sustainability attributes within buildings as well as the risks associated with climate change and sustainability. Though a substantial amount of literature has been developed on both theoretical and practical implications of sustainability on the commercial real estate market, it is not well known to what extent commercial property valuers are able to implicitly or explicitly take account of sustainability attributes or factors while calculating investment and market value. Hence, the research aims to address the following research questions:

1. To what extent do commercial property valuers see sustainability as influencing the value drivers' spectrum, which they reflect in valuation processes?
2. How are commercial property valuers adapting to the changing requirements of the commercial property market in the UK as a result of increasing demand and legislative and regulatory pressure for sustainability?
3. How do valuation factors (clients' influence, purpose of valuation) affect sustainability considerations?

The objectives of this research are:

1. To identify if data on sustainability attributes are influencing the value driver spectrum and, if so, which ones and how.
2. To identify if and how commercial property valuers in the UK are interpreting and implementing RICS requirements of sustainability, which are:
 - actively collecting data on sustainability attributes and reporting it in valuation reports, even if these data are not currently affecting value
 - if sustainability attributes are identified and recognised to have an impact on value, they should be embedded into the calculation of value
 - to be informed of sustainability matters and climate change and relay it to their clients.

3. To identify whether valuers are also reporting premiums or discounts similar to academic studies in the UK and around the world that have reported pricing and rental premiums for sustainability credentials, such as EPC and BREEAM.
4. To identify if and how other valuation factors such as clients' influence and purposes of valuation can contribute to sustainability consideration.

1.5 Methodological approach

To seek answers for the above research questions regarding UK commercial property valuers' perception of sustainability, a pragmatic approach using mixed methodology is believed to be most suitable. Valuation and the work of valuers is a social science; hence it cannot be investigated through a post-positivist view. Though social and cultural norms play a part in valuation, a complete qualitative approach may not be suitable for this study. Previous studies used quantitative survey methods to investigate these issues (Michl et al., 2016). Additionally, similar research has been conducted in Australia using both online survey (Warren-Myers, 2011, 2013, 2016; Warren-Myers, Kain & Davidson, 2020) and interviews (Le & Warren-Myers, 2018). Similarly, using an online survey for this research has allowed the researcher to reach a large number of valuers within a short period of time and to receive an understanding of the general practices related to sustainability followed by valuers in the UK. Additionally, a qualitative method, semi-structured interviews was also chosen to gather deeper understanding of the research questions and also to answer any additional questions that have arisen from the online survey. A mixed methodology with a pragmatic view, therefore, has allowed the researcher to investigate the above research questions from a valuer's perspective. Mixed methodology also provided the usefulness of triangulation (Green, Caracelli & Graham, 1989; Cook, 1985) and expansion (Mark & Shotland, 1987; Greene et al., 1989) by using the results from various methods.

To answer the above research questions and achieve the above objectives, the combination of both quantitative and qualitative methods is therefore being engaged. Two methods have been employed to answer the research questions: an online survey (quantitative) and semi-structured interviews (qualitative). An extensive literature review has set the grounds for an online survey. The online survey was targeted towards all registered valuers for commercial properties in the UK. All measures were taken to ensure maximum coverage and 53 responses were received. After the online survey was completed, initial analysis revealed additional questions, which were addressed through the semi-structured interviews. A total of 32 interviews were conducted, among which 21 were valuers and 11 were commissioning clients. Among the commissioning clients there were

three investors, four lenders and four owner-occupiers. The following figure provides the outline of the process.

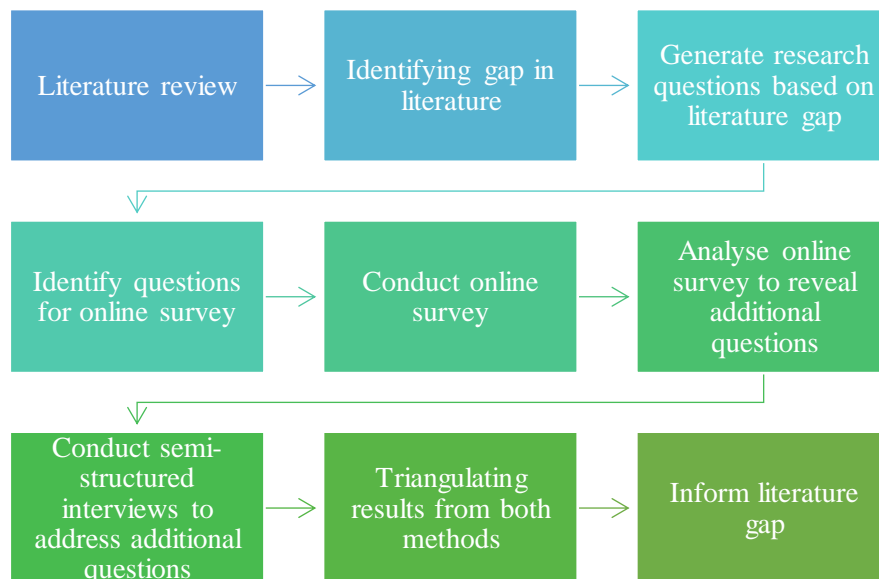


Figure 1.3 Research framework

Source: Author’s own work

The online survey was conducted during July–September 2019. Data was analysed primarily to draw questions for the second phase, semi-structured interviews. The interviews were initiated during December 2019, however the researcher had to stop interviewing because of the pandemic (COVID-19) and resulting lockdown in the UK. Nine (all valuers) interviews were conducted pre-pandemic and 23 interviews were conducted during the pandemic. A detailed explanation of the methodology and the methods used can be found in chapter 3.

1.6 Thesis structure

The thesis is organised in seven chapters. The first chapter, introduction, provides an outline of the research background and signifies the importance of the research as well as guiding the reader towards the conclusion. It also provides a brief description of the research questions and objectives and methods used.

Chapter 2, literature review, provides the reader with the relevant literature on sustainability and its attributes, the value impacts of sustainability along with some market pricing studies from around the world. Commercial property valuers’ roles are also discussed along with their education,

training and behavioural issues. The end of the chapter draws the reader towards the gap in literature.

Chapter 3 is dedicated to providing the theoretical underpinning and methodology of the research. It starts by presenting the research questions. Then it explains two conceptual models drawn from the literature discussed in chapter 2. To explain the first conceptual model the theory of Smart Regulation has been illustrated. This theory refers to a form of regulatory framework that is flexible, imaginative and innovative and is used for social control by harnessing the powers of government as well as businesses and third parties (Gunningham & Sinclair, 2017). The research design and the methods used to address the research questions and objectives are also discussed. The rationale for using each of the methods and the approach undertaken to analyse the findings of each method are also explained.

Chapters 4 and 5 are dedicated to reporting the findings from two methods that have been used: online survey and semi-structured interviews. These chapters discuss the findings of each method that has been undertaken and explains the empirical work.

Chapter 6 discusses the findings of each method and how these methods have facilitated answering the above research questions. It also triangulates the results from two methods to discuss the implications of this research in light of existing literature. At the end of the chapter, it revisits the models explained in chapter 3.

Chapter 7 provides the conclusion that has been drawn from the findings and discussion. It also sets out the limitations of this research along with some suggestions for further research.

1.7 Chapter summary

This chapter has laid the foundation of this research by introducing its background and scope. It also briefly explained the research methodology. The next chapter, literature review, is dedicated to providing an outline of existing literature on sustainability, its attributes and valuation. It sets the groundwork for establishing the gap in the literature.

Chapter 2: Literature Review

2.1 Introduction

This chapter illustrates two strands of literature, the first on sustainable buildings and the second on valuers' role and behaviour. To discuss sustainable buildings, it is appreciated that until now, no universally accepted definition of a sustainable building has been produced, though the definition of sustainable development has contributed to define sustainable buildings. Even though no universally accepted definitions are available, sustainability attributes and their impact on values is discussed within the literature. A total of six attributes are discussed that were derived from the literature. Additionally, market pricing of sustainability is discussed where a number of studies suggested pricing and rental premiums for sustainability credentials such as EPC and BREEAM. However, the results of these pricing studies vary significantly across and within national markets. Other reasons as to why these studies may not be relevant for the valuation professionals are also discussed, which include use of hedonic models that valuers do not use, methodological differences, performance gap. Furthermore, it is also discussed that value for sustainable buildings should appear from several market transformations such as the demand drive from investors as well as occupiers, the transition or legislative risks and physical risks of climate change. The findings from this section of literature reviews later contributed towards producing a conceptual framework that is presented in chapter 3 (Section 3.2).

The second strand of literature review concentrates on the role of commercial property valuers. The requirement for property valuations together with the main bases of value are set out before discussing the current guidance on considering sustainability in valuations. Other factors that influence how a valuer carries out their role are then examined. It is argued that how the valuer will perform is widely dependent upon the education and training they receive. Being a valuer is a professional job that requires one to undertake professional standards and ethics. Valuers' behaviour is also widely known to be dependent upon the heuristics and mental shortcuts that they develop over their lifetime. The influence of these factors on how sustainability might be considered is then explored. A conceptual framework was derived from this section of literature which is presented in section 3.3.

At the end of the chapter, gaps in the literature from each strand are identified, and the research questions from the gaps are presented in chapter 3 along with the conceptual frameworks and methodology.

2.2 Sustainable building and its attributes

According to the dictionary, the word sustainability means able to be maintained at a certain rate or level over time (Lexico, 2022), which indicates a building that will last over a long period of time and will be able to maintain the same level of output. The concept of sustainable building was developed over time from the concept of sustainable development. During the 1970s, The Club of Rome's publication "The Limits to Growth" advanced the concept of sustainable development (Meadows, Randers & Meadows, 1972). Later, the United Nations (UN) conference on the Human Environment, 1972 was the first major international gathering to discuss sustainability on a global scale, which created quite an impact and subsequently a series of recommendations which later led to the establishment of the United Nations Environmental Programme (UNEP). Though there are many definitions for sustainable development, a very famous one was provided by the Brundtland commission in 1987,

"In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations." (Brundtland, 1987, p. 42)

Certain terms and phrases in the above definition have been subject to critique. For example, this definition does not comment on the extent to which the relationship between environment and economy can be integrated, what conservation can mean for economic policy or how economic policies can degrade the environment or can act as an economic improvement factor (Pearce, Markandya & Barbier, 2013). Moreover, the definition only talks about the needs of human beings of current and future generations, which can be described as anthropocentric. Additionally, it can be argued that human beings are only a part of a larger ecological system and need this system to continue functioning properly in order to ensure their long-term survival. Furthermore, 'enhancing' the need for current and future generations may not mean the same as having the same opportunities on an intergenerational basis.

In 1992, the Rio Summit laid out eight principles of sustainability, providing further clues as to what is needed for sustainability and how this may be achieved. From the eight principles, three themes could be identified, as discussed by Sayce, Smith, and Cooper (2006), namely, environmental well-being, the protection and proper respect for people or overall society and the creation of an economic context through which social and environmental objectives could be identified. Therefore, the broader concept of sustainable development seeks a balance between

social well-being, environmental protection and economic growth. The picture below shows two forms of sustainability (Parliamentary Commissioner for the Environment, 2002) which can be considered to be weak (left figure) and strong (right figure). This alignment of environmental, societal and economic concerns is also known as the triple bottom line (Elkington, 1997). The ‘weak’ model includes the dimensions of economy, society and the environment as sustainability and provides equal weighting to all three aspects, whereas in the ‘strong’ model (right figure) environment is the most important aspect and economy is a subset of the society which is a subset of the environment. Hence, no subset can grow beyond the subset in which it is placed. Therefore, protecting the environment means protecting its subsets, society as well as the economy. Without protecting the environment, society and the economy cannot thrive and therefore human beings cannot survive. Disastrous elements from the natural environment, such as extreme weather and geological events, can injure and kill people whereas people cannot live without clean air, water food or other resources from the natural environment (Hartig, Mitchell, Vries & Frumkin, 2014). For survival of the human race, the natural environment plays a pivotal role.

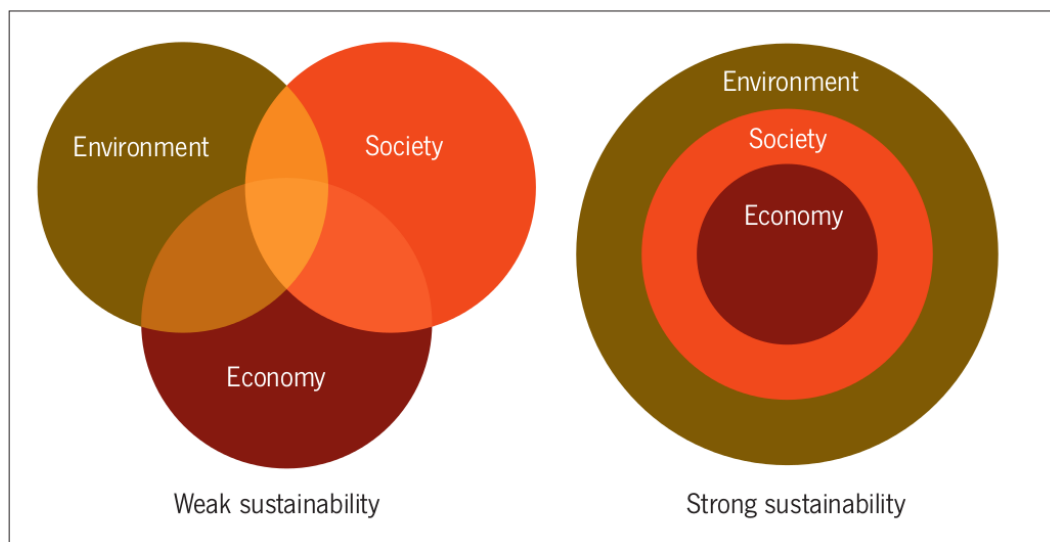


Figure 2.1: Weak and strong sustainability

Source: (PCE, 2002)

The concept of sustainable development later helped develop the concept of sustainable buildings. According to Hill and Bowen (1997), a building will be sustainable if it represents a healthy built environment based on ecological principles and resource efficiency. It may also lead to high efficiency in the use of energy, water and other materials with the facilitation of better practice in terms of health and well-being as well as the environment throughout its lifecycle (Cassidy, 2003; Berardi, 2013). Along with these attributes, greenhouse gas (GHG) emissions and reducing energy

consumption have also been considered as attributes of sustainable buildings (Lowe, 2007). There are many definitions of sustainable building, both from academia as well as professional bodies. Some of these are discussed below.

According to Lützkendorf and Lorenz (2007, p. 646),

‘By safeguarding and maximizing functionality and serviceability as well as aesthetic quality a sustainable building should contribute to the minimization of lifecycle costs; the protection and/or increase of capital values; the reduction of land use, raw material and resource depletion; the reduction of malicious impacts on the environment; the protection of health, comfort and safety of workers, occupants, users, visitors and neighbours; and (if applicable) to the preservation of cultural values and heritage.’

The above definition discusses the minimization of lifecycle costs, reduction of land, raw material and resource depletion as well as preservation of cultural values and heritage. Here, minimization of lifecycle costs is suggested to increase or protect the capital value of the building rather than protecting the environment. Though the reduction of malicious impacts on the environment is mentioned, it is not the same as protecting the environment. Additionally, the social aspects of sustainable buildings are discussed only through protecting the interests of stakeholders rather than the society as a whole. Another definition by the UK Green Building Council (UKGBC, 2008) suggests sustainable buildings are those that,

“(1) are resource efficient (physical resources, energy, water, etc); (2) have zero or very low emissions (CO₂, other greenhouse gases, etc); (3) contribute positively to societal development and well-being; and (4) contribute positively to the economic performance of their owners/beneficiaries and to national economic development more generally.”

The four points discussed within this definition, (resource efficiency, low emission, societal development and well-being and economic performance) are also covered by the definition by Elkington (1997), though it does not explain society and economy as subsets of the environment. The Royal Institution of Chartered Surveyors (RICS), the regulatory body for valuers, has also defined sustainability in its Red Book (2022) as follows:

“Sustainability is, for the purpose of these standards, taken to mean the consideration of matters such as (but not restricted to) environment and climate change, health and well-being,

and personal and corporate responsibility that can or do impact on the valuation of an asset.

*In broad terms it is a desire to carry out activities without depleting resources
or having harmful impacts.”*

The above definition from the RICS talks about consideration of some elements such as environmental, climate change and corporate responsibility, however, it also identifies that sustainability may not be restricted to that. It may include more items that are not listed within this definition. For example, the ESG factors may also incorporate sustainability factors (RICS, 2021c). ESG can be seen as the industry’s interpretation of the term sustainable development, however key features of the term sustainable development may be lost in translation (Ciccarelli, 2023). Valuers are asked to consider these elements (including ESG factors in RICS, 2021c), however the word “*consider*” can be interpreted differently by various valuers, for example is it enough to just check for a certification? Or should valuers dig further to understand the implication this certification has on value and report it accordingly? It, therefore, poses the question of whether consideration is enough or additional actions are required.

In general terms, sustainability is considered as covering a broad range of environmental, economic and social factors enumerated as the *Three Dimensions* in the global *UN Sustainable Development Goals* (RICS, 2021c). It may also include cultural and psychological factors. As di Castri (2003, page 2) stated, “*ecosystem functioning and biological diversity cannot be studied and understood while disregarding cultural human evolution, with all its intangible and perceptual patterns*”. From a psychological perspective while understanding the crucial role of diversity for sustainability, individual and interpersonal differences need to be understood as well to endorse pro-environmental values, attitudes and behaviours (Corral-Verdugo et al., 2009). Therefore, human culture can play a significant role in terms of moving a society or community towards sustainability. Same can be said about social motives that can influence pro-sustainable behaviours (McMakin, 2002). Therefore, a countries cultural and social factors may play vital roles in shaping pro-environmental behaviour among its members.

Similarly, many other definitions of sustainable buildings can be found. Sayce, Ellison and Parnell (2007) as well as Dixon (2010) discussed that there is a lack of agreed definition of sustainable buildings globally. Similarly, though the RICS provided a definition of sustainability in its Red Book, it is still not very specific, and valuers are asked to be cautious while using the term sustainability as there are “*no universally recognised and globally adopted definition of sustainability*” (RICS, 2022, p. 12)

The reason for the absence of a globally accepted definition is that the term has been defined by academics as well as by professional bodies quite often in different ways and it is a fluid concept that will be developed over time. With time, it is expected to be made more specific. The perception of '*sustainable building*' is expected to '*change over time*' and '*between locations*' (RICS, 2013, p. 8). Additionally, in some studies, sustainable buildings are also referred to as green buildings (Falkenbach, Lindholm & Schleich, 2010). The lack of a clear definition of sustainability has been noted by the IVSC too (IVSC, 2021).

Although there is no universally acknowledged definition of sustainable building, attributes of sustainable buildings have been discussed in the literature. The next section explains six sustainability attributes that have been obtained from the literature and are considered for this research. The methodology chapter provides a list of studies that have been used to derive these attributes.

2.2.1 Certification

There are different certification systems that are relevant to different countries. As this research focuses on the UK, certifications that are relevant to this country are discussed here. In the UK, mandatory as well as voluntary certifications are present that are associated with sustainable buildings. Mandatory certifications include the Energy Performance Certificate (EPC) for both public and private properties and the Display Energy Certificate (DEC) for public properties, whereas voluntary certifications include the Building Research Establishment Environmental Assessment Method (BREEAM), and the Well Building Standard (WELL). The following section provides brief descriptions of these certifications and their relevance to the sustainability agenda.

EPC: As part of the carbon reduction plan, in 2003, the European Union implemented the Energy Performance of Buildings Directive (EPBD) with the explicit goal to promote energy efficiency in buildings. According to this directive, member states needed to ensure that when buildings are constructed, sold or let, an energy performance certificate is provided. This directive eventually led to the implementation of the national Energy Performance Certificate or EPCs for residential as well as commercial and utility buildings across the European Union (EPBD, 2005). EPCs were introduced in 2008, which created the base for a minimum energy standard for buildings in the UK. The Minimum Energy Efficiency Standard (MEES) was enacted, and regulations were issued in 2015. The MEES regulation created a minimum standard for rented properties in the UK for energy efficiency. It came into force from April 2018 for new lettings, April 2020 for existing lettings for domestic properties and April 2023 for existing lettings for non-domestic properties. This means a minimum energy standard needs to be maintained to let a property in the form of an appropriate EPC. Currently, the minimum EPC rating required to let properties in the UK is an E. EPC rating can be provided on a scale of A to G (A being the best), therefore, F and G ratings cannot be let. For commercial properties, to determine an EPC the following factors are considered (Focus360, 2022):

1. the type of construction of the building (including walls, roofs, floors and glazing)
2. whether different parts (or zones) of the building are used for different purposes
3. heating, cooling, ventilation and hot water systems used
4. the lighting used throughout the building.

Based on the assessment of a non-domestic energy assessor of the above factors, the EPC of a building is determined and once an EPC is provided it remains valid for 10 years. The EPC of a building needs to be displayed in a prominent place so that it is clearly visible to the public visiting

that building. Failure to have a compliant EPC and not meeting the regulatory needs set by the MEES can result in a penalty of £5000–£150,000 for the landlord. Some exemptions to this minimum standard can be found on the government website (Gov.UK, 2022a):

- listed or officially protected building and the minimum energy performance requirements would unacceptably alter it
- a temporary building only going to be used for 2 years or less
- a building used as a place of worship or for other religious activities
- an industrial site, workshop or non-residential agricultural building that doesn't use much energy
- a detached building with a total floor space under 50 square metres
- a building due to be demolished by the seller or landlord and they have all the relevant planning and conservation consents.

However, EPCs are not exact measures of energy usage or demand. They are asset or fabric ratings (Sayce & Hossain, 2020). Therefore, practitioners have criticised the EPC. The research undertaken by Sayce and Hossain (2020) found practitioners questioning the accuracy of the EPCs as well as its appropriateness as a basis for MEES. Pre-2012 EPCs have been recognised as inaccurate as the results are dependent upon the thoroughness of the EPC survey, the skill of the assessor and the fee paid (European Commission, 2013; RICS 2019a). Additionally, as EPC is an asset rating not a performance measure, practitioners questioned its effectiveness to reduce carbon emissions (Sayce & Hossain, 2020). Moreover, the recent RICS report also recommended the UK government to modernise the EPC scheme to make it fit for purpose (RICS, 2022b). The report signified the importance of showing three main metrics with the EPC report, final energy use, carbon emissions and energy cost. To provide a comprehensive evaluation of every building's performance fabric energy efficiency, space heating demand, peak energy load and on-site renewable generation should also be added to the metrics as per the RICS recommendations (RICS, 2022b). The report also recommended to fully digitalise EPC data as well as its calculations, results and presentations which could then be used to create a comprehensive building passport. Moreover, to create awareness among public about the value of EPCs campaigns have been recommended by the RICS (2022b).

DEC: Another mandatory certification in the UK is the DEC certificate, which is mandatory for only larger public buildings over 500m². It is only mandatory for public buildings and the scale is from A to G (A being the most efficient). Unlike EPC, the DEC certificate looks into a public

building's energy usage and carbon emissions. Once issued, the certificate lasts for 10 years for buildings with a total useful floor area in between 250–1000m². However, for a useful floor area more than 1000m² it lasts for only one year (Gov.UK, 2022b).

BREEAM: In terms of voluntary certifications, the most common and popular one in the UK is the Building Research Establishment Assessment Method (BREEAM), which was first introduced in 1990 by the Building Research Establishment (BRE). It is the world's oldest method for assessing, rating and certifying sustainable attributes in buildings. It has gone through several versions, but the version introduced in 2018 has six ratings: outstanding, excellent, very good, good, pass and unclassified. It evaluates a building on several grounds such as energy, health and well-being, innovation, land use and ecology, materials, management, pollution, transport, waste and water (BREEAM, 2018). Over 2.2 million buildings have registered for this certification and over 500,000 were awarded with a BREEAM rating in the UK (BRE Global, 2019). Though BREEAM ratings have been established as the de-facto standard for sustainability in the UK (Fuerst & van de Wetering, 2015), this certification can only be applied to new properties. The existing old stock of the UK cannot be judged using this standard. Additionally, any voluntary certification requires a payment. Another criticism is that the checklist approach to incorporate green technology may not necessarily mean a more sustainable outcome (RIBA, 2018). Furthermore, sustainability outcomes and targets may not be achieved as promised based on occupiers' usage. The performance gap is addressed to some extent by BREEAM 2018 through introducing a new credit requirement to undertake a predicted operational energy consumption (POEC) modelling to analyse design and post-construction phases (RIBA, 2018).

WELL: Another voluntary certificate is the WELL building standard (WELL) which focuses on measuring, certifying and monitoring features of the built environment that may impact the health and well-being of humans through air, water, nourishment, light, fitness, comfort and mind (WELL, 2020). The certification is provided through the International WELL Building Institute (IWBI), which is a public benefit corporation to improve health and well-being in human beings through improving the built environment. However, this certification has been criticised on several grounds such as not taking extreme position on avoiding hazards, the wellness concepts identified are likely to be high-end that can be adopted by Grade A office properties only, not addressing climate change or other environmental concerns. This certification only focuses on well-being thus cannot be used alone (Fischer, 2017).

Additionally, other certifications around the world can be mentioned such as Leadership in Energy and Environmental Design (LEED) and Energy Star in the USA, National Australian Built Environment Rating System (NABERS) in Australia. There are quite a few debates within the academic literature on the use of mandatory vs. voluntary certification. For example, the expectation is that voluntary certificate adopters may have a greater tendency towards environmental stewardship, however statistical models were unable to prove significant differences in terms of energy efficiency outcomes between mandatory and voluntary adopters (Gabe, 2016). Mandatory certification may appear as a punishment whereas voluntary certification can be seen as an encouragement to building owner (Bloggs, 2013) and hence may result in better outcomes. However, mandatory certification or standards can create enhanced accountability (Arnold, 2022) which cannot be achieved through voluntary certification. Other than mandatory certification environmental regulations that are well-equipped and designed can be attributable to systematically reducing pollution (Steineback, 2022). Another issue with mandatory certification can be it normally focuses on one issue such as energy efficiency (for example EPC) rather than wider sustainability factors that are covered by voluntary certifications such as BREEAM. Real estate firms across the property industry have been criticised to focus more on certifications rather than measurement of carbon or social factors which are also part of the sustainability issues and needs to be considered (Zehra, 2023). Therefore, though mandatory certifications can create better accountability, voluntary certifications are also necessary to cover broader sustainability factors by the industry.

Additionally, it is also quite difficult to “*make sense of the web of interconnected standards, disclosure requirements and ESG rating*” (IVSC, 2021, p. 3). With so many ratings available within the built environment, mandatory and voluntary, it is possible the lack of uniformity is creating confusion among valuers, and it is resulting in hesitance from the valuation professionals to incorporate the value impacts of sustainability and ESG factors (IVSC, 2021). Additional complication arises when there is a lack of differentiation between certified and non-certified stock. Moreover, the prime properties with voluntary certifications (BREEAM) can be seen as sustainable properties as BREEAM became the de facto standard for sustainability in the UK (Fuerst & van de Wetering, 2015). Despite these confusions, valuers are advised to reflect the considerations of the investors by the IVSC (2021). Similarly, the RICS suggested sustainability and ESG factors can influence investment approaches as these factors can impact on rental and capital growth and susceptibility to obsolescence (RICS, 2021c). Hence, valuers are asked to be conscious of the relevance and weight of these certificates in evidence (RICS, 2021c).

Based on these voluntary and mandatory certifications around the world, academic research has been undertaken to determine the presence of Green Premium or Brown Discounts in terms of rental value or pricing. Green premium is the additional rental or price premium that might be attainable because of the presence of a superior rating such as BREEAM Outstanding. Brown discount, on the other hand, can be referred to the discount in rental or capital pricing because of an inferior rating. Fuerst and McAllister (2011b) first explained their assumption regarding the premium for certified buildings. According to them, the demand curve is different for certified and non-certified buildings and various levels of certification within groups of certified buildings may also have a different demand curve. For a higher certification level, as cost increases so does the Willingness to Pay (WTP) by occupiers for these features, which leads to a premium. The ecolabels or certifications can be indicators of the enhanced quality of the building. Therefore, properties with certifications are the best quality assets within their asset class (Fuerst, McAllister & Gabrieli, 2012) and hence they may achieve the rental or pricing premiums. On the other hand, as legislation around minimum energy efficiency standards is being introduced, inferior assets with less than the minimum standard may face discounts as they are not up to the current market standard. As the MEES becomes stricter, the Sayce and Hossain (2020) study reports moving forward brown discounts are more likely to emerge within the UK market.

2.2.2 Energy and carbon

One of the major reasons for global warming is the global greenhouse gas emissions, the majority of which can be attributable to unsustainable energy use (non-renewable energy that will run out and will not be replenished within our lifetimes) (IPCC, 2023). In the UK, buildings are responsible for 34% of the total carbon emissions and the commercial real estate sector contributes 27% of those emissions (CCC, 2015). It is expected that the global building stock will double in size by mid-century (United Nations Association – UK, 2020), therefore, without addressing the emissions across the lifecycle of the building, it will be difficult to reduce carbon emissions from the UK economy. Although, within a building's lifecycle, most emissions take place during the occupational phase, which is referred to as operational emissions, increase in new buildings will also cause the increase in embodied carbon, which is referred to as emissions related to materials and construction of a building's lifecycle (WGBC, 2019).

The UK government had a commitment to reduce carbon emissions by 80% of the 1990 level by 2050, which was changed in 2019 to a net zero target by 2050. Despite these targets from not only the UK government but from governments around the world, gaps remain between projected emissions from implemented policies (IPCC, 2023). The UK has been able to reduce the

operational emissions since 1990s though the switch to gas and electricity from coal, however the embodied emission is still similar as before (RICS, 2022b). Overall, both the emissions need to be reduced by around 95% and 85% respectively to achieve the net zero target by 2050 (RICS, 2022b). Therefore, there is a chance that the levels needed to meet climate change targets will not be met (IPCC, 2023). One way to reduce carbon emissions from the UK economy is to ensure energy efficiency and switching to renewable energy sources. Though energy efficiency is in a way covered through the mandatory certification EPC in the UK, certain shortfalls of the certificate have been reported by practitioners that possess the need to investigate energy efficiency, renewable energy sources and carbon reduction separately (Sayce & Hossain, 2020). Additionally, EPC is an asset rating and not a performance measure, hence, it does not examine the actual energy consumption or usage, rather it is constructed on how a building is supposed to perform based on its design. Therefore, some practitioners suggested the use of DEC or NABERS in the UK market which are performance-based certifications (Sayce & Hossain, 2020). Additionally, it is not tied up to carbon emissions in any way and is provided for ten years. Furthermore, achieving an E, the minimum standard, is considered too easy (Sayce & Hossain, 2020). Because of these shortfalls, EPCs cannot be linked to actual energy consumption of property or carbon emission or energy sources.

Several advantages of energy efficiency have been discussed in literature such as ensuring better risk adjusted returns for investors, possible rental premiums (or avoidance of brown discounts), reduced holding costs associated with lower vacancy rates, reduced operational costs associated with energy savings, reduced depreciation associated with the latest technologies, reduced regulatory risks and increased WTP (Popescu, Bienert, Schutzenhofer, & Boazu, 2012). The buildings built with more energy efficiency could achieve superior risk adjusted returns, which should act as a financial incentive for investors (Fuerst & McAllister, 2011c). Academic research on eco-labelling for energy performance certifications (EPC) reported on price and rental premiums for superior energy efficiency labelling (Brounen & Kok, 2011), though Fuerst and McAllister (2011c) found no significant premiums in the UK market for EPC. However, the existence of a green premium or brown discount may depend on several things, for example, share relative to the general consumers, costs associated with superior energy performance, awareness of consumers (Fuerst & McAllister, 2011a) as well as what the market norm is. With time, certain energy efficient tools are becoming the market norm, for example, having double glazed windows is now standard practice. Not meeting these minimum requirements may result in a brown discount. Additionally, for occupiers it may ensure lower operating costs, increased productivity, meeting corporate social responsibilities (CSR) or environmental, social and governance (ESG) commitments, marketing

and image benefits and can help attract financial incentives or helps avoid environmental taxes (Fuerst & McAllister, 2011a).

Elliot, Bull and Mallaburn (2015) explained the lack of a compelling business case is the main barrier to energy efficiency. On the contrary, industry reports by the British Council of Shopping Centres (BCSC) and CBRE (property consulting and management firm) along with reports from UKGBC and JLL (property consulting firm) suggested that there are compelling financial benefits to energy efficiency that the investors as well as occupiers can enjoy. For example, the BCSC and CBRE both suggested that there is compelling financial evidence to support energy efficiency upgrades in shopping centres, however some barriers were also mentioned such as availability of capital, limited awareness of costs and benefits and the role of fixed service charges (BCSE and CBRE, 2015). Additionally, having a building upgraded to have better energy efficiency can allow it to avoid future risk of obsolescence because of strengthening legislation (Sayce, Ellison & Parnell, 2007). The MEES in the UK is expected to become much stronger in the coming years, which will require property upgrades, without which properties will not be allowed to be let. Therefore, without the upgrades to building with inferior energy efficiency there is a chance of value erosion or price-chipping by prospective acquirers (BCSE and CBRE, 2015) which is also known as the brown discount. Cooremans (2011) added that investment decisions are not always dependent on financial considerations, but rather may be driven by other strategic considerations such as risk avoidance. Other business cases for energy reduction and subsequent cost savings were reported by UKGBC (2018) along with JLL (2020). The UKGBC reported several case studies from UK companies such as Akzonobel, Grosvenor etc. to showcase the financial benefits achieved by these companies through using renewable energy and ensuring energy efficiency. Additional benefits were also reported such as reduction in energy and CO2 emissions and protection of future rental income. Furthermore, JLL (2020) reported on premiums achieved for superior energy efficiency ratings (EPC A or B) in London.

As the above discussion shows, the benefits of energy efficiency can have several financial impacts. It could also create premiums or lead to discounts when not up to the standard. Therefore, these should have an impact on rental values as well as market and investment values. Earlier studies on sustainability and its attributes examined the relationship between various sustainability attributes and their relation to market and investment value. Operational energy efficiency can reduce the running cost of properties which means tenants will have more available cash flows for rents (Ellison & Sayce, 2007). It can also ensure the CSR targets for a company. Ensuring energy efficiency and carbon reduction can also help avoid certain risks, for example, regulatory risks,

default risks, vacancy risks and risks of not future proofing, thus further contributing to value (Ellison & Sayce, 2007). However, earlier studies undertaken by Michl et al. (2016) reported very limited impact of energy on market and investment value according to valuers. Similarly, Sayce and Hossain (2020) also reported that although valuers check for EPC rating while valuing properties, value impacts of EPC are still very limited.

2.2.3 Waste and water management

Waste and water management are important factors of natural and social elements of the triple bottom line concept. Preserving water helps preserve the natural environment for future generations. Because of global population growth and increasing consumption rate, natural resources are under pressure (UKGBC, 2021). Traditionally in UK water usage had been viewed as less important than other factors such as materials (Ellison & Sayce, 2007; UKGBC, 2021). However, water scarcity is present in some of the UK regions, which is expected to increase because of climate change (UKGBC, 2021). A recent government report in the UK reported that there are high risks to the public water supply as well as risks to businesses from water scarcity (HM Government, 2022) due to climate change. Water usage in buildings can be swayed through careful designing and specification such as sprinkles taps, leakage detection and grey water systems whereas change in behaviour could be achieved through metering (UKGBC, 2021). As to how this could impact financially, examples can be drawn from the UKGBC report (UKGBC, 2018). Several examples from UK companies within this report suggested saving water and eventually reducing the cost of water along with other operational savings related to energy and waste can create a significant financial impact for a business. As water management could create operational cost savings, it could impact on market and investment value. However, Michl et al. (2016) reported water conservation or recycling measures had no impact on market or investment value according to the valuers who participated in that study.

Waste, on the other hand, is becoming a growing burden not only for businesses but for many cities. Because of increasing population, urbanisation and changing consumption patterns, waste disposal and treatment is expected to grow even more in future. If waste is not properly managed, it can create additional problems such as polluting water bodies, air and soil. It can also create severe risk for marine ecosystems and natural life (WGBC, 2021). For businesses, waste management can become a significant issue when landfill tax needs to be paid, which could be quite significant. There are several ways to reduce the cost related to waste management as well as income opportunities from waste recycling (UKGBC, 2018). For example, fees can be generated from recycling or operational cost of handling waste and landfill taxes could be reduced through

recycling (UKGBC, 2018). An example of a case study of Grosvenor can be found in the UKGBC (2018) report, where this investor has diverted the construction and operational waste from landfill through recycling. Another example is Barratt Developments PLC which reported on saving £850,000 in waste management cost through waste reduction targets (UKGBC, 2018). However, the implications of these cost savings on valuation practices or market and investment values have not been studied to a great extent. The Michl et al. (2016) study reported that during 2012 (the time of the survey), valuers reported no impact on market or investment value because of waste reduction facilities.

2.2.4 Health and well-being

“Buildings are the places where people work, live, play, heal and learn.” (WGBC, 2018, p. 4) Therefore, it has a direct impact on people’s health and well-being. Climate change poses a threat to human wellbeing and health (IPCC, 2023). This can occur through temperature increases, risks to health and social care delivery as infrastructure to deliver them may be hindered by increasing natural disasters, risks to health and wellbeing from air pollution and aeroallergens and risks to health from reduced water quality (HM Government, 2022). Additionally, businesses can also face risks from reduced employee productivity due to infrastructure disruption and increases in temperatures in the working environment (HM Government, 2022). Climate change is also causing extreme weather conditions which are affecting vulnerable communities who may not have contributed to climate change (IPCC, 2023). Moreover, mental health challenges can be associated with increasing temperatures, as extreme weather events can cause mental traumas and can cause loss of livelihoods and culture (IPCC, 2023). The *“window of opportunity to secure liveable and sustainable future for all”* is closing fast (IPCC, 2023, p. 25).

A sustainable building with more natural light and better air quality will help occupants feel better over time and staff sickness will reduce, which will eventually decrease absenteeism and increase productivity (Aroul & Hansz, 2012). Though calculating the monetary benefits of health and well-being factors are not easy, WGBC provided some evidence from around the globe in their 2018 report on health and well-being. In this report, several companies have reported that sustainable or green building features can benefit people and can help companies make economic savings from resource efficiency, reduced turnover, absenteeism and presenteeism. As for example, Cundall’s UK office saved £200,000 in a single year from lower staff turnover and sickness after green building occupancy. This report also found that most employees prefer green buildings as it makes them feel healthier and more productive. Another example could be Floth’s net zero carbon office. The staff satisfaction survey on this building reported 94.5% staff satisfaction and 72% of

employees also reported better health post-occupancy. Another example is Sherwin-Williams' Centro América headquarters which had 86% reduction in respiratory problems and staff sick days were reduced by 50%. Building's asset value was also reported to have increased as the greener and healthier features were found to be more prominent by the Delta Development Group, Plantronics and Henderson Land Development (WGBC, 2018).

Though these health- and well-being-related financial benefits are difficult to quantify, as explained above, some examples are appearing to reveal how this could be done. However, it is not well researched as to what extent valuers consider health and well-being factors while valuing commercial properties and if these factors have any impacts on market and investment value. As Michl et al. (2016) reported, UK valuers considered health and well-being factors as having low market and investment value impacts.

2.2.5 Quality of external environment

The quality of external environment of a building is dependent upon the proximity to open or green spaces as well as public transport. It can also be affected by any pollution in areas that are contiguous to the building environment. Additionally, density of the surrounding environment can have an impact on investment performance. Pain et al. (2018) studied the significance of good density for real estate investment returns and urban extent and built-up area density were found to be highly correlated with office capital values. Moreover, there is a medium to high risk from climate change-driven natural disasters that transportation networks may increasingly fail in the UK (HM Government, 2022).

Scientific papers indicate that the presence of the natural environment such as gardens, urban parks forests, green belts can contribute to quality of life in many ways (Najafpour, Bigdeli Rad, Lamit & Fitry, 2014). Increase in green spaces can also contribute to reduction of air temperature and heat islands, improving air quality, decreasing air pollution, reduction of noise and cleaning up contaminants, thus contributing to human and social well-being (Rakhshandehroo, Yusuf, Arabi, Parba & Nochian, 2017). Therefore, a building's proximity to open and green spaces can contribute to the health and well-being of the occupants and can reduce absenteeism and increase productivity. Employees have been reported to work best when they are in a space with "*ample natural light, good air quality and access to greenery and amenity*" (WGBC, 2018, p. 6), although calculating the financial gains from these factors might be hard.

Though commercial properties such as offices and retail are at low risk of creating a pollution incident, environmental regulation affects all businesses, and investors and owner-occupiers need to be aware of its implications. The Environmental Act (1995) states that if the polluter cannot be found or is unable to pay, the cost of cleaning or potential prosecution can fall upon the landlord (Jayne & Skerrat, 2003). The fines related to pollution can be significant depending on the seriousness of the incident (Ellison and Sayce, 2007).

To what extent these factors may impact on market or investment value were studied and reported by Michl et al. (2016). Accessibility of location and known contamination or pollution were found to be more important than the other factors in the UK for both market and investment value as indicated by the valuers. However, no other research was undertaken later on to identify if these results have changed according to valuers in the UK.

2.2.6 Adaptability and resilience to climate change

Natural disasters kill around 90,000 people every year and affect around 160 million people globally. During 1994–2013, flooding caused more catastrophes accounting for 43% of all recorded natural disasters and affected about 2.5 billion people. Because of construction in flood plains, the likelihood of more people being affected by flood has increased (WGBC, 2021). Furthermore, climate change is also a leading cause to increase the frequency and severity of extreme weather events. The IPCC (2014) report discussed that since 1950 extreme weather and climate events have been observed and there is evidence from attribution studies that the human contribution is worsening these events. The most recent IPCC (2023) report as well as the HM Government (2022) report confirmed human activities as the principal reason for emissions of greenhouse gases which has caused a temperature increase of 1.1 degree Celsius during the years 2011-2020.

Environmental disasters such as flood, wildfire, extreme heat can bring devastating socio-economic outcomes such as damage in infrastructure, vital services, resources, housing and livelihood of local population as well as disruption for businesses. With climate change, the risk of these natural disasters accelerates what are known as the physical risks of climate change (Clayton et al., 2021). Though the initial target was to limit global warming by 1.5-degree Celsius IPCC (2023) and UK government (HM Government, 2022) reports confirmed preparation must be made for an increase up to 4 degrees warming of global temperature. Strong evidence can be found in these reports that even in low warming scenarios the UK will face significant costly impacts unless drastic measures are taken immediately (HM Government, 2022). By the year 2045 the UK could face the cost of climate change equivalent to 1% of the GDP (HM Government, 2022).

While it is a challenge to equip communities with disaster resilience, it is possible to consciously design the built environment with climate resilience strategies and adaptation that can provide long-term benefits (WGBC, 2021). Evidence from the UK government reports showed ‘low regret actions’ should be taken for decisions with long term effects, such as building property or infrastructure to avoid costly remedial actions in future (HM Government, 2022). Other than natural disasters, the UK could be exposed to more extreme weather such as hotter summers and colder winters (Met Office, 2015). Buildings, therefore, will need to be made more resilient and adaptable to extreme weather patterns because a small average change in the climate can lead to a significant acceleration in the occurrence of extreme events, for instance a 1 in 100-year risk of flooding can become 1 in 10 year event (HM Government, 2022). Additionally, it will be challenging to improve existing buildings that were not built or designed to address extreme weather events. Moreover, it is quite difficult to predict the extent to which, or how, changes to weather patterns may affect local weather in the short or long term (van de Wetering, 2018).

One of the major natural disasters that can be caused by climate change is flooding. Flooding can cause high to very high risk³ to infrastructure and business sites that may be caused by river, surface or groundwater flooding and the increased occurrence of this may be driven by global warming (HM Government, 2022). Economic theory suggests that all other things being equal, properties located within a floodplain should suffer a price discount (Beltrán, Maddison & Elliot, 2018). The UK is particularly vulnerable to flooding as it has a lot of coastal areas. Additionally, the UK could suffer from the risk of flooding from rivers, groundwater, sewers, reservoirs and surface water (EA, 2009). There is also risk of flooding from sea level rise in the UK (HM Government, 2022). The XDI (International climate change risk analysts XDI, 2021) report showed that currently half a million properties are at risk from climate change, which could increase to 1.9 million by 2100. The increase in risk can cause physical risk as well as increasing the cost of insurance for 406 counties and equivalent areas in the UK (International climate change risk analysts XDI, 2021). However, Lamond and Bhattacharya-Mis (2015) reported that businesses with flood experiences provide greater weight to prime location and expected income level than those without. Therefore, though flood prone areas are susceptible to higher physical risk from climate change factors, some of it, such as coastal areas, can be lucrative for many businesses. Furthermore, Pottinger and Tanton (2013) reported that there is a lack of clear understanding of where and how much real estate

³ Very high is over £1 billion per annum, high is over £hundreds of millions per annum and Medium is over £ tens of millions per annum (HM Government, 2022, page 9)

investment could be at risk of flooding. Also, investors perceive flood risk levels are unlikely to change.

The risk of flood in the UK has been studied and the extent to which it can cause impacts on real estate were also investigated. Findings from these studies showed the property value and prices can be impacted by flood on various levels. One of these impacts is through the price increase of insurance premiums or difficulty in obtaining insurance. Availability of insurance is an important factor for the valuation of commercial properties (Kenney et al., 2006). It is also important as it provides reliable compensation, supports recovery and reconstruction for flood (Lamond et al., 2019).

Commercial property insurance is provided by private companies in the UK and is not mandatory. The Lamond et al. (2019) study found that larger companies were more likely to self-insure, and small businesses can avoid claiming against their policies to avoid the increase in premium. Valuers were aware that some companies who had been flooded were facing difficulties obtaining insurance, which was a serious issue. Additionally, it was also found that the insurance industry may have a major influence on the “*motivation of companies to take active steps to mitigate against flood risk*”. Furthermore, some participants in this study called for higher regulation that would include mandatory flood insurance. Additionally, Alzahrani, Boussabaine and Almarri (2017) also revealed that many of the financial risks associated with climate change, such as increasing insurance excess and additional expense in insuring buildings in flood zones, are expected to emerge within the next 5–10 years. As properties with cheap and easy excess to insurance are more desirable (Lamond & Bhattacharya-Mis, 2015), it is likely that properties without flood insurance will be assigned with high vulnerability of value. Academic research on the residential property market suggests, for market based and hybrid schemes (Lamond & Penning-Rowell, 2014) as well as Bundled systems (Crichton, 2002) for high-risk flood areas to diversify risk and create more flexibility. Market based insurances are provided by insurers in the insurance market who are normally for-profit companies and will only insure if it is profitable for them. As the climate change poses a lot of uncertainty it may cause these insurers to withdraw or not renew when risks are too high (Lamond & Penning-Rowell, 2014). Hybrid systems will act better in these cases as market and state both back up for providing the insurance such as in New Zealand where insurance for flooding is taken care by the Earthquake commission with state guarantee (CCS, 2008). Bundled system on the other hand provides flood insurance under general property insurance policy referred to a bundle. These possibilities may be important for the commercial property market as well, as the risk of flooding will increase quite substantially due to climate change and global warming.

Many commercial properties will require further insurance on flooding (International climate change risk analysts XDI, 2021), and if the risk of flooding is not shared by the state, private insurers will not be able to offer insurances to businesses which could create wide economic losses. To increase the demand for these type of insurance coverages for commercial property market private insurers will require support from urban and local governments (Lamond et al., 2019).

In terms of market value impacts, though valuers from the UK recognised that it was part of their due diligence obligation to check for flood risk and that a difference between market values should exist between a property that has flooded and one that has not, discount in market value for flood is inconsistent. The reasons for this inconsistency are lack of awareness, low perception of flood risk, lack of guidelines or common practices that allow for valuers to factor flood risk in property value (Lamond et al., 2019). Additionally, difficulties to understand how to interpret the risk information to determine the flood discounts by valuers and lack of consistency in valuation of properties at risk of flood were also reported (Lamond et al., 2019). Additionally, another study by Bhattacharya-Mis and Lamond (2015) reported that the perception of risk from flood might be affected by memories of repeated incidents of flooding. Though flood risk was not perceived to be a major economic impactor, those with memories of repeated incidents of flooding viewed the risk slightly differently.

Another factor within these attributes is the adaptability and flexibility of a building. Adaptability and flexibility in buildings not only help during natural disasters but can also address the socio-economic changes. They can also increase the lifespan of use and reduce the need for demolition and rebuilding (WGBC, 2021). They reflect the potential of a building to the changing requirements of the existing user or a new user or a different type of a user. Offices as well as retail properties are quite significantly affected by changing occupier requirements (Ellison & Sayce, 2007). An example of future rental income being protected through upgrading properties to be resilient to climate change is Grosvenor, a global investor in the property market (UKGBC, 2018). Lorenz and Lutkendorf (2008) identified that sustainable buildings can provide higher financial gains for investors and one of the benefits through which this could be achieved was greater adaptability. Evidence that adaptability can help future-proof assets is present within the literature; Jackson and Orr (2018) found the evidence for this. Additionally, rents were reportedly much higher for flexible properties compared to few years ago.

The Michl et al. (2016) study found evidence that the valuers collect data on flood risk and adaptability or building flexibility, however the majority do not use it for analysis. Also, in terms

of impact on market value, adaptability and building flexibility was deemed most significant compared to other sustainability attributes. However, the data used in this research is from 2012. Since then, the risk of flood has changed quite significantly as identified by the XDI (2021) report in the UK. Hence, there is a need for further research to investigate how commercial property valuers perceive the risks associated with adaptability and resilience to climate change.

2.3 Market pricing and sustainability

The introduction of several certifications led to some academic research that examined for evidence for any pricing or rental premiums for the presence of such certifications. Evidence of various levels of rental or pricing premiums has also become apparent in different markets around the globe such as the USA (Eichholtz, Kok & Quigley, 2010; Wiley, Benefield & Johnson, 2010; Fuerst & McAllister, 2009; 2011a, 2011b; Das & Wiley, 2014; Holtermans & Kok, 2019), Australia (Newell, MacFarlane & Kok, 2011), Netherlands (Kok & Jennen, 2012) and Singapore (Deng, Li & Quigley, 2012; Deng and Wu, 2014). More recent quantitative meta-analysis studies to identify pricing differentials were undertaken by Dalton and Fuerst (2018) and Leskinen, Vimpari and Junnila (2020) and their findings suggest the presence of premiums for certified properties. A recent comparative study compares premiums identified in three countries, Finland, Greece and Germany and found a 19% premium for certified properties over non-certified properties (Porumb, Maier & Anghel, 2020). A detailed list of findings and methods used within these studies is provided in Table 2.1.

In the UK, several studies were also undertaken to examine the pricing or rental premiums for certifications such as EPC and BREEAM. However, the results were not very conclusive. The first study on EPC ratings was conducted by Fuerst and McAllister (2011c) using hedonic models. The study used data from the IPD for commercial properties (a combination of offices, retail and industrial) from all over the UK. The data was for the period 2000–2009 for a small sample of 708 commercial properties. As no significant premiums were found, the conclusion was that energy labelling was not yet having any impact on rents or pricing because cost savings associated with EPC ratings were still not fully reflected in capital or rental values. Additionally, a larger sample was needed for more robust estimation. Furthermore, Fuerst, van de Wetering and Wyatt (2012) investigated the relationship between achieved rent and EPC rating for a sample of 448 offices in the UK using hedonic regression procedures. The data was collected from CoStar for a period of 2008–2009. This study found that compared to A-rated properties, D- to F-rated properties had statistically significant discounts. As EPC rating decreases, discount tends to increase. No more research on EPC for commercial properties could be found in the UK. Though there are residential

studies on the impacts of EPC, this is not covered here as this research focuses on the commercial property market.

Two studies could be found on BREEAM certification that found premiums in the UK. The first one, Chegut, Eichholtz and Kok (2013), found a rental premium of 21% and a pricing premium of 26% for BREEAM-certified properties. This study looked into office properties from London for the period 2000–2009 and the data was collected from CoStar. The total sample size for this research was 2023 properties with 70 BREEAM buildings. Though premiums were found, authors also listed some features that could moderate the premium such as third-party controls for building quality, rental contract features i.e. lease term and rent-free period, market signals (days on market) and increasing supply of BREEAM certified properties within micro-location could decrease the premiums. The authors suggested future studies to incorporate these features. Additionally, this study focuses only on London.

The second study that investigated the impact of BREEAM rating using hedonic model was the Fuerst and van de Wetering (2015) study. It looked into rental premiums for office properties from all over the UK. This research used the biggest sample among all three, 19,509 lease transactions. The data was collected from CoStar for the period of 2006–2010. They found a rental premium of 23–26%. This premium was considered high compared to other studies. It was also identified that lease details, such as type of lease and lease length, were not available for this research and future research should consider including these.

The economic rationale for the existence of premiums was discussed by Fuerst and McAllister (2011b). According to them, green and non-green properties are considered as almost perfect substitutes, therefore an increase in demand for green properties will decrease the demand for non-green properties. Because of the inelastic supply of green properties, price will increase which will result in a premium for green properties. However, as supply catches up, premiums should dissolve over time. To investigate this potential premium, the pricing studies generally use hedonic models developed by Rosen (1974) *“based on the premise that the value of goods or service can be decomposed into specific benefits or features”* (Aroul & Hansz, 2012, p. 31). However, it is difficult to include all the variables that may have impact on the value of a good, in this case a property. Major variables used in these studies are rental prices or sales prices for the dependent variable and building characteristics, location, lease and other relevant economic variables and green or sustainable certification variables. The premiums found in these studies have been criticised for

omitted variables such as condition, design, internal specification etc. A list was produced by McAllister (2012) for the earlier pricing studies.

However, it has not been researched to a great extent as to whether commercial property valuers are aware of these studies and if they use the findings of these studies to update themselves regarding the impacts of certification on market pricing.

Author and Year	Country	Database Used	Model used	Certification Program	Variables	Premiums (%)
(Miller, Spivey & Florance, 2008)	US	Costar	Hedonic Model	LEED & Energy Star	Sales price/Sq ft, Age, Energy star, LEED, Size, Year, CBD, City dummy.	LEED–10%, Energy Star-5.76%
(Wiley, Benefield, & Johnson, 2008)	US	Costar	Hedonic OLS and Two stage least square approach using Instrumental variables.	LEED and Energy Star	Rent, functional attributes, efficient design attributes, locational attributes, operating expenses, lease terms, occupancy level	Rental premium of 7.3–8.6% for Energy Star and 15.2–17.3% for LEED.
(Fuerst & McAllister, 2009)	US	Costar	Hedonic	Energy Star	Rent, building characteristics, location, dummy for certification.	Premium of 12.50% on capital value.
(Eichholtz et al., 2010)	US	Costar	Hedonic model	LEED and Energy Star	Rent, building characteristics, location, dummy for certification.	Rental premium 7% and selling price premium 16%
(Brounen & Kok, 2011)	Netherlands		Hedonic OLS	EPC	Rent, dummy variable for certification, age, last refurbishment, number of stories, rentable area, lot size, building class, control for submarket and control for economic factor.	Rating A 10%, B 5.5% and C 2.5%

(Das, Tidwell, & Ziobrowski, 2011)	US	Costar	Panel Data	LEED	Rent, functional attributes, efficient design attributes, locational attributes, operating expenses, lease terms, occupancy level	No significant premium
(Fuerst & McAllister, 2011c)	UK	Costar	Hedonic	EPC	Rent, dummy variable for certification, age, last refurbishment, no of stories, rentable area, lot size, building class, control for submarket and control for economic factor.	No significant premiums
(Fuerst & McAllister, 2011a)	US	Costar	Hedonic model	LEED and Energy Star	Rent, location, age, number of stories, lot size, dummy variable for net lease, controls for building class and submarket, dummy for certification.	Rental premium 3–5% and sales premium 18–25% for Energy Star and LEED. 28–29% for dual certification.
(Fuerst & McAllister, 2011b)	US	Costar	Hedonic model	LEED and Energy Star	Rent, location, age, number of stories, lot size, dummy variable for net lease, controls for building class and submarket, dummy for certification.	Rental premium 4–5% and sales premium 26% for Energy star. 25% for LEED
(Newell et al., 2011)	Australia		Hedonic	NABERS	Gross rent, vacancy, incentives, outgoings and yields	No indication of statistical significance, NABERS rated building

						rental premium 0.3%–1.9% Found discount in value for offices with NABERS rating of 2.5 stars or less
(Deng, Li, & Quigley, 2012)	Singapore		Hedonic OLS and GLS	Green Mark (GM)	Sales price, Building characteristics, location, green dummy	GM premium – 4–6%
(Reichardt, Fuerst, Rottke, & Zietz, 2012)	US	Costar	Difference in Difference (DID), Fixed effects models	LEED and Energy star	Rent, dummy variable for certification, age, last refurbishment, number of stories, rentable area, lot size, building class, control for submarket and control for economic factor.	Rent premium 2.5% Energy Star and 2.9% for LEED
(Hyland, Lyons, & Lyons, 2013)	Ireland	Property Listing dataset of Ireland	Hedonic models	A building energy rating (BER)	Price, building characteristics, location characteristics, energy rating.	Sales premium 9% and rental premium 2%
(Chegut et al., 2013)	UK	Costar	Hedonic model	BREEAM	Achieved rent/Sales price, Building quality characteristics, contract features, market competition and gentrification, Investor type, location	19.8% rental premium and 14.7% sales premium

(Deng & Wu, 2014)	Singapore	Residential Housing market, Singapore	Hedonic Model	Green Mark (GM)	Transaction price, Green mark indicator, Building characteristics, purchaser type, transaction type, number of units.	Presale premium 4.1% and resale premium 9.9%
(Kahn & Kok, 2014)	US	USGBC, Local Energy Star, Build it Green	Hedonic model	LEED and Green Point	Sales price, Building characteristics, location, green dummy.	5%
(Eichholtz et al., 2015)	USA	Costar	Hedonic model	LEED and Energy Star	Rent, building characteristics, location and dummy variable for certification	Rent premium 3% and sales premium 13%
(Fuerst & van de Wetering, 2015)	UK	Costar	Hedonic	BREEAM	Rent, dummy for certification, location, building characteristic, economic characteristic.	Rent premium 23–26%

Table 2.1: Premium studies from all over the world

Source: Made by the author

Though the above pricing or premium studies show some premiums for energy efficiency/sustainable stock or green buildings, results vary significantly across and within national markets and therefore cannot be applicable for other markets or locations. Certain reasons for these premiums to be not relevant to valuation professionals are discussed below.

1. Pricing or premium studies mostly use hedonic models for calculating premiums. Most of these hedonic models can be susceptible to the omitted variable problem (Fuerst & McAllister, 2011c). To reduce any bias caused by these problems, researchers try to include as many variables as possible, however there is still a chance that certain variables are missing that can be part of the cause for the discovered premiums and not the presence of certification or sustainability attributes. Some of these variables are listed by McAllister (2012) such as condition, design, internal specifications and lease details.

2. A second possible reason for these premiums not being relevant can be explained as the novelty effect. As the supply of the certified buildings was relatively scarce and only limited observations were available, the premium is vulnerable to the novelty effect. Under this assumption higher premiums are observed in a product's infancy and later on supply responds to demand and the subsequent premium vanishes with time (Fuerst & McAllister, 2011c; Das and Wiley, 2014). Therefore, there is a need for a revisit to these premium studies with current data to further investigate if these premiums are still present. A very recent UK study (Jones et al., 2018) suggests the existence of green premium in the UK to be elusive, hence similar may be true for other markets.

3. As explained above Fuerst and McAllister's (2011b) theory of green premium occurs because of increasing demand for green buildings and the inelastic supply of the property market. A mandatory green building programme can drastically change the market demand for green properties and as the existing supply will be insufficient for the extra demand, an immediate upward pricing might be observed (Aroul & Hansz, 2012). However, in the long run, supply will catch up and a new standard will be set through mandatory programme reducing the price.

Recent studies suggest investors who are eco-champions are searching in a very limited supply of certified stock to match their requirements which eventually is resulting in over-pricing or 'green winner's curse' (Fuerst et al., 2017). As the supply of green properties or certified properties is still limited, eco-investors are forced to search properties within that small pool of assets. The increasing demand among these investors resulted in additional premiums for these properties which were described as the green winner's curse.

4. Pricing studies widely use certified buildings (BREEAM, LEED or other voluntary or mandatory certificates) as the proxy for sustainable buildings and compare the rents or prices of these buildings with non-certified buildings. However, lack of certification does not mean that these buildings are not sustainable. The absence or presence of an environmental certificate is not really an absolute measure that the building is sustainable. It merely provides a reference point. In addition, properties used in such studies are generally larger, taller, newer and of superior quality compared to non-certified properties (Leskinen et al., 2020)

5. Certified buildings are certified based on these buildings' ability to perform, however, in reality the actual performance can be far less or more than the rating based on the behaviour of the occupants (see for example, Dronkelaar et al., 2016; Kucharska-Stasiak & Olbińska, 2018; Ponterosso, Gaterell & Williams, 2018). Similarly, a non-certified building can perform similarly or even better than a certified building if occupants are knowledgeable about sustainability usage and co-operative (Kucharska-Stasiak & Olbińska, 2018). However, the actual performance of these buildings is rarely a subject of discussion in these pricing studies. Additionally, several studies have reported on mismatches between theoretical energy consumption that is indicated by certifications such as EPC or BREEAM and actual energy use (Majcen et al., 2013a, b; Newsham, Mancini & Birt, 2009). For example, a study undertaken by JLL on some London buildings showed that the EPC ratings can be misleading. A comparison between a B- and an E-rated building showed that although the B-rated building was supposed to be more energy efficient, in reality, the E rated building was 66% more efficient in terms of actual energy consumption. While calculating EPC rating, actual energy consumptions are not considered; rather it focuses on design intent or theoretical energy efficiency (JLL, 2012). Therefore, even though there are potential possibilities of pricing or rental premiums for certified buildings, the actual performance of these buildings is not exactly known, and research is scant on this topic.

6. The hedonic studies use aggregated data to compare between certified and non-certified properties. However, valuers value a single asset at a time. Hence, the use of aggregated study results (rent or price premiums) may be of limited use while valuing a single asset.

Though certifications may or may not bring in rental or pricing premiums, the extent to which commercial property valuers consider various certifications during a valuation and if and how that might be impacting on market or investment value has not been studied in the UK. The only research that could be found was Sayce and Hossain (2020) who report on EPC being part of the

due diligence process; however, value impacts were reported to be limited. No research could be found on the extent to which valuers consider other certifications, such as, BREEAM, DEC or WELL.

2.4 Value for sustainable buildings

It is argued in this section that the value creation of sustainable buildings is appearing from two sources of the social and economic context: increase in demand and legislative pressure. The increase in demand increases the willingness to pay (WTP) whereas, legislative pressure creates risks for investors, owner-occupiers and lenders that forces them to consider sustainability attributes.

2.4.1 A demand drive for sustainable buildings

Earlier research on sustainability of buildings contributed to theoretical research on sustainability attributes and its relation to property value. Sayce and Ellison (2003a) investigated the traditional cash flow approach to assess the appraisal of properties while sustainability attributes were incorporated. The objective was to develop a system for investors and occupiers to reflect sustainability within the appraisal method. Through value indicators such as rental growth, depreciation, cash flow, duration to sale and duration to let, sustainability was linked to appraisal or worth. On the other hand, Lutzkendorf and Lorenz (2007; 2008) explored the appropriateness of the traditional valuation methods to value sustainable buildings. The authors explained that it is possible to reflect sustainability issues in property valuation, however, the validity of that depends on valuers' capability and sophistication to explain and justify these assumptions in a valuation report. To be able to justify sustainability pricing premiums or discounts, valuers need evidence from the market. The evidence of sustainability market pricing is present to some extent within the literature discussed above. Additionally, there are reported increases in demand from investors as well as occupiers for sustainable attributes in the built environment.

The demand for sustainable buildings could be divided into two sections: demand from investors that would impact on pricing, and demand from occupiers that would impact on rent. Both demands are discussed in the following section.

It was predicted by earlier researchers that investors will pay more attention to property and increasing demand for environmentally and socially sustainable buildings will likely attain premium values in future. The evidence of such premiums, pricing and rental began to appear in different markets including the UK, as discussed above (Chegut, Eichholtz and Kok, 2013; Fuerst

and van de Wetering, 2015). The reason behind such rental or pricing premiums can be explained through the various benefits of sustainable or green buildings that have been discussed in the literature as well as through the shortage of supply which has been discussed in literature as the novelty effect (Fuerst, 2009; Fuerst & McAllister, 2011a). Benefits from sustainable buildings can be widely categorised as health benefits, cost efficiency, reputational benefits, and higher occupancy rate. The IVSC has also listed financial benefits that are achievable from addressing climate change and other emerging risks related to ESG factors (IVSC, 2021, p. 4). These includes,

- *asset impairment, including goodwill;*
- *changes in the useful life of assets;*
- *changes in the fair valuation of assets;*
- *effects on impairment calculations because of increased costs or reduced demand;*
- *changes in provisions for onerous contracts because of increased costs or reduced demand;*
- *changes in provisions and contingent liabilities arising from fines and penalties; and*
- *changes in expected credit losses for loans and other financial assets.*

The following section discusses the benefits of sustainable buildings.

Health benefits include better air and water quality which could result in greater employee productivity and less absenteeism. Poor air and water quality has been known to reduce customer's demand (Aroul and Hansz, 2012). Occupiers or tenants enjoy most of these health benefits along with cost efficiency through having a more productive workforce. Earlier research (Aroul and Hansz, 2012) assumed that it is difficult to quantify the health and well-being benefits in monetary value, however, recent studies have showed that several companies around the globe are able to quantify these benefits (UKGBC, 2018 & WGBC, 2018).

Several academic research papers have argued operating costs savings as one of the most important benefits of sustainable building occupiers (Aroul & Hansz, 2012; Fuerst, 2009; Fuerst & McAllister, 2011a, 2011b, 2011c; Harrison et al., 2011; Pivo & Fisher, 2009). Reducing operating cost can increase cash flow and therefore increases the WTP that eventually drives the demand for sustainable buildings. The evidence of such cost savings through energy, waste and water efficiency has also appeared in recent publications (UKGBC, 2018 & WGBC, 2018).

Sustainable buildings are also known to have improved occupancy and lower holding periods (Wiley et al., 2010). It also attracts premium tenants such as corporate giants and maintains higher occupancy level (Eichholtz et. al., 2010) even during economic contractions, thus maintaining reduced ownership costs (Fuerst & McAllister, 2011a, 2011b, 2011c; Kok & Jennen, 2012). These buildings can also limit rental concessions and provide more stable cash flows (Das et al., 2011). It is argued that lower operating costs and greater employee productivity are the two most important tangible elements of corporate social responsibility or CSR (Eichholtz et. al., 2010). Improved social reputations and CSR benefits (Eichholtz et al., 2010 & 2015; Fuerst, 2009) are thus enjoyed by the owners and investors of sustainable buildings.

All of these benefits eventually increase the willingness-to-pay or WTP for sustainable buildings that eventually drives demand and creates pressure to increase the supply of sustainable buildings in the market. However, in the majority of these studies, certified buildings are referred to as sustainable or green buildings. Certification such as BREEAM has become the de facto standard of sustainability in the UK market (Fuerst & van de Wetering, 2015). Therefore, all new-built grade A prime properties are likely to have BREEAM rating. This is supported by the literature too – in the market for prime properties certified buildings have reportedly become mainstream (Fuerst et al., 2017) and investors who have sustainability high in their agenda actively seek these properties. However, as it takes quite some time to build a property, catching up with demand is difficult and there is still a shortage of prime buildings compared to its demand (JLL, 2020). Hence, as eco-investors keep seeking these properties and only acquire certified assets, it leads them to pay higher prices. Higher bids by eco-investors are one of the leading determinants for the observed price premium for these types of assets. To buy additional market share, investors are ready to pay higher purchase price, which magnifies the premium for eco-friendly assets, yet also creates a “*winner’s curse*” for eco-friendly investors (Fuerst et al., 2017). Evidence from grey literature could also be presented where BREEAM excellent and outstanding buildings were found to be achieving a rental premium of 6–11% in London compared to BREEAM very good (JLL, 2020). The JLL (2020) report suggested the following:

- BREEAM buildings were reported to have significantly less vacancy rate.
- Demand for such sustainable or green buildings has been reported to be increasing rapidly in London.
- Investors as well as owner-occupiers are seeking more such buildings to meet their net zero targets, however supply has not caught up, which creates a gap in between demand and supply of sustainable office space in London.

Academic research by Jackson and Orr undertaken in 2007 and 2016 showed that sustainability rating (BREEAM) rose to the 3rd most important attribute from the 7th most important attribute by real estate fund managers during 2016. Additionally, rental premium of 12.3% was reported in London for BREEAM office properties (Ormond, 2021). Therefore, the rise in demand for sustainability attributes in buildings was reported from both investors and occupiers mainly for the prime properties in London.

Though in the UK commercial property market the evidence of premium is mainly concentrated for prime office properties (BREEAM rated), academic as well as grey literature suggest a clear rise in demand for sustainability attributes in buildings, especially in the prime category (Fuerst et al., 2017, Jackson & Orr, 2018, JLL, 2020, WGBC, 2013). However, to what extent valuers are reflecting these demands needs investigating.

2.4.2 Legislative pressure or transition risk

As the risks of climate change are proving to be more critical, it is becoming clear that unsustainable patterns of human behaviours are the most likely cause for that (IPCC, 2023). Hence it is likely that large-scale changes to everyday life across all sectors of society will be required to address it (Hargreaves, 2011). In the UK attempts have been made to promote pro-environmental behaviour and sustainable consumption in policy changes (SCR, 2006). Debates are present whether structural changes within the society is required to bring about these much-needed changes (Hargreaves, 2011). Various scientific and government bodies have suggested for policy reforms throughout the world to decrease carbon emission from all aspects of life. This includes reports from IPCC (2023), CCC (2023), the HM Government (2022) and many more. The IPCC (2023) report suggested though policies and laws around the world have been addressing global warming for some time, there are still gaps in these policies which will need addressing immediately. Similar contentions were reported in the HM government report (2022) that conveyed government policies must adapt to climate change issues in policies in a much more holistic way. CCC (2023) on the other hand provided a list of 27 priority recommendation and related policy recommendations to the UK government that are related to transport, energy supply, aviation, buildings, waste, agricultural and land, businesses, governance and public engagement. Policy reforms around all sectors of life therefore can be expected in near future. Transition risk refers to the risk associated with the legislative changes to decarbonize the economy to achieve zero carbon. Currently, the UK government's target for zero carbon is by 2050. To achieve this target and build a more energy efficient built environment, the Minimum Energy Efficiency Standards (MEES) was introduced

and enacted in the Energy Act (2011). Regulation related to MEES was issued in 2015, following industry consultation. It came into force in April 2018.

The MEES is tied to the certification EPC which is discussed above (see section Certification). The MEES sets out targets for minimum energy rating for rented properties. Though EPC is mandatory to have for sale as well as for letting, the MEES addresses rented properties specifically. Following is the trajectory provided that will be strengthened over time:

- MEES came into force from April 2020 for new lettings, with a minimum standard set at EPC E.
- Existing lettings will be in scope from April 2023 for non-domestic properties.
- The proposed target from the UK Government is to set a minimum standard of EPC B from the year 2030 for privately rented non-domestic buildings, which gained widespread support. As a result of that, the Energy White Paper (2020) confirmed that the future trajectory will be EPC B by 2030 (Energy White Paper, 2020).
- A phased implementation is proposed to reach EPC B by 2030, which includes EPC C by 2027. This will be based on a two-year compliance window, the first being EPC C from 2025–2027 and the second being EPC B from 2028–2030.

The government estimates that the recent trajectory of a minimum EPC of B by 2030 will cover around 85% of rented commercial properties, which is approximately 1,000,000 buildings across England and Wales (Simmons & Simmons, 2021). In the UK, more than 65% of the buildings are reported to have a rating of D or less and only about 5% of buildings have B rating (BPIE, 2017). This means it will affect about 95% of the buildings that have lower than B rating. Setting the minimum standard to B means that without upgrading below EPC B properties' landlords will not be allowed to let properties. Failure to do so could result in penalties up to £150,000. As MEES and EPC certifications can have direct or indirect value impacts, the RICS currently advises valuers to have a *working knowledge* of sustainability and ESG factors that includes transition risks related to policy and legislative changes (RICS, 2021c). Sayce and Hossain (2020) reported that according to valuers, to bring a property up to a standard of E from F or G does not require too much capital expenditure (capex). It is considered too easy as it could be met by changing a few light bulbs to LED or by using some "*cheap compliance tricks*" (Sayce & Hossain, 2020, p. 438). However, when the minimum requirement becomes B, it will require a lot more capex to upgrade a property from E to B. Additionally, there are reported lack of enforcements which could lead to large-scale non-compliance as people will no longer take it seriously (Sayce & Hossain, 2020).

In the Sayce and Hossain (2020) study, valuers also reported that checking for EPC has become part of their due diligence process, however, value impacts are still limited. Though value impacts are limited, valuers also reported that moving forward brown discounts are likely to emerge as MEES becomes stronger. It could also lead to low value assets becoming stranded as CAPEX requirements become too much for the landlords to bear. This was predicted by Muldoon-Smith and Greenhalgh (2019) and Booker (2019). Currently, some assets are being marked down in terms of value through adjustment to the capitalisation yield to reflect the risk of the future letability or to reflect capex to ensure compliance (Sayce & Hossain, 2020) as anticipated by French and Antil (2018). It was also found that valuers' knowledge around MEES exemptions and penalties was not constant and often limited (Sayce & Hossain, 2020).

The newest changes to the MEES trajectory were confirmed after the pilot study by Sayce and Hossain (2020) was undertaken, the impact of which on valuation practices is unknown. Additionally, though limited value impacts were reported by this study, to what extent that has changed in terms of market or investment value after the trajectory was altered needs to be researched.

2.5 Property valuation and the valuers' role:

“A “valuer” is an individual, group of individuals or a firm who possesses the necessary qualifications, ability and experience to execute a valuation in an objective, unbiased and competent manner.” (IVS, 2020, Paragraph 20.17)

The need for valuation emerges as expert and specialised advice is required on the capital or rental values of commercial properties. In real estate, prices are not available in open markets other than when some buildings are auctioned, and by nature the product is heterogeneous, which means professional interpretation is needed of how price signals from transactions apply to the valuation of properties that have not recently sold. Valuers are the assessors and advisors who are to be consulted for their opinions, judgement and assumptions about the implications of this evidence for market value (Warren-Myers, 2012).

Valuations are used and relied upon in every market for various purposes, including inclusion in financial statements, regulatory compliance, support secured lending (Wilkinson et al., 2018). The type of property a valuer is asked to value and the purpose for which the valuation is required, will determine the nature of the valuation, techniques involved and bases of valuation (Wyatt, 2013;

RICS, 2020a). A list of reasons for valuing commercial property can be found on page 63 of Wyatt (2013), and these can include:

1. development appraisal
2. transfer of ownership
3. monitoring the value of property assets held by companies or individuals
4. loan security
5. tax matters: property taxes, capital gains tax and inheritance tax
6. insurance risk assessment.

Valuers in the UK and globally are regulated by the Royal Institution of Chartered Surveyors (RICS). The RICS Valuation – Global Standard, also known as the Red Book, is their guide for valuation, which is mandatory to follow along with the International Valuation Standards (IVS) and International Ethics Standards (IES).

The most common bases of values calculated by valuers are the market value and investment value. The following are the definitions of market and investment value accepted by IVS (2020) which are also adopted by the RICS in the Red Book (2020a, 2022):

Market Value:

“Market Value is the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm’s length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.” (IVS, 2020, Paragraph 30.1; IVS 2022, Paragraph 20.14)

Investment Value:

“Investment Value is the value of an asset to a particular owner or prospective owner for individual investment or operational objectives.”
(IVS, 2020, Paragraph 60.1; IVS 2022, Paragraph 20.11)

Market value should primarily be accurate or close to the selling price whereas, investment value should primarily be rational and include a combination of objectively measured market variables along with an owner’s subjective estimates (Baum & Crosby, 2008, pp. 5–6). It is also important to show the difference between market value and investment value with price and hence, a definition of price is as follows:

Price:

Price is the amount asked, offered or paid for an asset. Because of the financial capabilities, motivations or special interests of a given buyer or seller, the price paid may be different from the value which might be ascribed to the asset by others.

(International Valuation Standard Council, 2013: 6)

Therefore, the concepts of market value, investment value and price are different. Price is the actual amount that has been offered or paid for an asset, whereas market value is the hypothetical selling price that is estimated on a valuation date in between a willing buyer and a willing seller. Therefore, the actual price paid can be different to the market value. Investment value, on the other hand, is calculated keeping in mind a particular owner or prospective owner's individual or operational objectives, which means the investment value calculated for a specific investor is not applicable for anyone else.

Market value is calculated for a specific date and does have a shelf life. How long a market value will remain valid depends upon the market. If it is an inflationary market where prices are changing quite quickly, market value may be valid only for a short period of time (Blackledge, 2017, p. 6). It is normally calculated based on historical data. Given thin trading in real estate markets that prevents contemporaneous signals of value from being easily observed, and it is a process of interpretation of evidence and judgements that are often based on valuers' heuristics and mental short cuts. On the contrary, investment value is the process of looking forward and finding factors that can affect projected cash flows (Sayce, 2018). In the language of economics used by Kinnard, market value can be considered as the "*value in exchange*", whereas investment value can be considered as the "*value in use*" (French, 2004, p.83).

Earlier research was undertaken by several researchers to identify how sustainability might be incorporated in valuation and how sustainability attributes might be affecting market and investment value (Sayce & Ellison, 2003a & b; Sayce et al., 2004a & b; Lorenz & Lutzendorf, 2008; Lorenz et al., 2006). Sayce and Ellison primarily focused on how sustainability attributes might be incorporated through the calculation of investment value or worth through five key variables: rental growth, depreciation, cash flow, duration to let and duration to sale. Several sustainability attributes and how these might be incorporated within the calculation of worth through the five variables have both been discussed (Ellison & Sayce, 2006). The Sustainability Appraisal Project allowed investors to analyse and interrogate the implications of sustainability on property investment performance explicitly. The hope was that over time these sorts of analysis

will drive demand for sustainable property as these assets will be expected to perform better. However, the parameters of this project were presented as work in progress, not definitive answers, as better understanding of sustainability was required to establish more accurate parameters. On the other hand, Lorenz and Lutkendorf discussed how sustainable design, features and benefits might be impacting on several valuation parameters such as capitalisation or discount rate, operating cost, market rent and rental projection, which are applicable mainly for market value calculation. It has been suggested in the literature that the identification of the value of sustainability will occur when the market evidence shows differential on valuation elements in the assessment process (Boyd, 2006). Though these studies are decades old, not much exploration has been undertaken to the extent commercial property valuers are linking sustainability attributes to market and investment value or worth in the UK. The only research is the Michl et al. (2016) study that reports on the online survey led by the RICS to explore the extent to which valuers have adapted the sustainability guidance published by the RICS (RICS, 2009). The results from the online survey conducted in 2012 suggested limited but variable impact on valuation practices due to the lack of knowledge of the guidance, non-requirements from commissioning clients and paucity of data. Additionally, impacts on market and investment value were also found to be limited, however, sustainability factors were found to be more likely to impact on investment value than market value. No other research has been undertaken since then to investigate the impact on market and/or investment value perceived by the commercial property valuers in the UK.

Though research in the UK is slim in this topic a lot of research have been undertaken in Australia. Warren-Myers (2009) completed a thesis on valuers' perception of sustainability in Australia and the major findings were reported in Warren-Myers (2011, page 492). The findings included that valuers were not well adept or equipped to identify relationships between sustainability and market value because of the following reasons:

- *Limited knowledge of sustainability and it's role within the property market;*
- *Analysis of evidence and historical trends is restricted due to limited knowledge of sustainability and sustainability assessment;*
- *Valuers' disparate observation and interpretation of the role of sustainability in the commercial property market is preventing accurate heuristics being formed.*
- *There is a lack of current heuristics in valuation practice pertaining to sustainability; and*
- *Inadequate development of strategic intuition to create new heuristics in order to incorporate sustainability in valuation practice*

Later, the same data (survey data) used for the thesis (Warren-Myers, 2009) was reanalysed to investigate if there were any significant differences in terms of knowledge and understanding of

sustainability among senior and young valuers (Warren-Myers, 2011). The reanalysis of the survey data which was presented in Warren-Myers (2011) showed significant knowledge difference between senior (more than 5-year experience) and young valuers (less than 5-year experience). Senior valuers were found slightly more likely to value properties with sustainability attributes though it was deemed insignificant. In terms of examining sustainability in commercial property, valuers with less than 5 years of experience mostly used design rating tools to evaluate properties whereas valuers with more than 5 years of experience used design rating along with performance rating, operating expenses, analysis of attributes and inspection more. Relying only on the design ratings were considered flawed by Warren-Myers (2009) as the rating had many identifiable problems at the time, such as only available for new build properties, inconsistencies were present across versions of this ratings and points and certifications can be achieved in various ways. The reason for younger valuers to not investigate the performance ratings was their lack of knowledge (Warren-Myers, 2011). It was found senior valuers were significantly more knowledgeable on industry rating tools compared to younger valuers (Warren-Myers, 2011). Additionally, questions on market dynamics were also asked (valuers' perception on whether owners and occupiers were willing to pay more for sustainability) and it was found both senior and young valuers lacked knowledge on sustainability, assessment techniques and market dynamics, however, senior valuers appeared to have better understanding of the market dynamics than younger valuers (Warren-Myers, 2011). Though younger valuers were expected to be more knowledgeable on sustainability factors due to their generational experience and for being taught about sustainability at university, their knowledge on sustainability were found to be significantly less than the senior valuers (Warren-Myers, 2011). Later research on the same topic using literature review found, the quantitative studies available at the time provided statistical data on sustainable properties, however, they lack the reliability in the data and assessment method that is required for valuers as evidence for valuation practice (Warren-Myers, 2012). As discussed in section 2.3 the quantitative hedonic pricing studies use aggregated data, whereas valuers value a single property at a time. Therefore, the results from these quantitative studies may not be useful for valuation practice. What valuers need is evidence in terms of comparable properties, that will allow them to reflect sustainability pricing for subject properties (Warren-Myers, 2012). To track valuers' knowledge development on sustainability Warren-Myers later repeated the same survey conducted in 2007/2008 (Warren-Myers, 2009) as part of a longitudinal research. The 2011 survey included 80 valuers from Australia and sustainability was defined through identifying 8 elements which were energy efficiency, water conservation, low emissions, indoor environmental quality, low VOC material, renewable energy, rainwater collection or recycling and management (Warren-Myers, 2013). Additionally, questions were asked on Australian ratings on sustainability which are Green

Star and NABERS (Warren-Myers, 2013). This study found valuers did not commonly report on sustainability in valuation reports unless they were asked about it by clients and the details on sustainability ratings and attributes were kept at minimum (Warren-Myers, 2013). In terms of value impact energy efficiency was found to have the strongest positive impact on value and these value impacts were likely to be reflected through rents, saleability and price. Warren-Myers (2013) also asked some test questions on Green Star and NABERS to check valuers' knowledge on these two rating systems and found around 80% valuers were either incorrect or were not aware of the differences between the two rating tools. Therefore, the conclusion from this study was valuers' inaccurate or misjudged assessments of sustainability in valuations are possibly inhibiting further investment on sustainable properties (Warren-Myers, 2013). As the same survey was repeated in 2015, the expectation was valuers' knowledge on sustainability should have developed as significant growth of sustainability in the property market was visible by then in Australia. However, it was found valuers knowledge and reporting on sustainability did not develop as expected (Warren-Myers, 2016). The survey was conducted again in 2021 (Warren-Myers, 2022b) and it was found valuers' awareness and knowledge on two rating tools (NABERS and Green Star) have improved which could be attributable to the mandatory disclosure legislation in Australia. However, only 41% valuers reported to include sustainability in valuation reports. These 41% valuers, however, reported on providing higher levels of commentary than previous surveys (Warren-Myers, 2022b). Another qualitative (interview based) study was conducted in Melbourne, Australia by Le and Warren-Myers (2018) which reported on valuers' limited knowledge and reluctance to consider sustainability in the valuation process, poor investigation and verification of sustainability factors, lack of client instructions, lack of data and limited tools for detailed analysis as reasons for not incorporating sustainability factors in valuations.

On the other hand, research in Nigeria showed lack of awareness of valuers on economic and environmental features (Babawale & Oyalowo, 2011), research in Poland showed lack of knowledge of valuers on benefits of sustainability as well as lack of evidence that is required to show value impacts (Kucharska-Stasiak & Olbińska, 2018) and research in the UAE showed lack of reliable market data, relevant technical skills and client's disinterest (Lambourne, 2020) on sustainability as reasons for not incorporating sustainability in valuation. The methodologies in these studies are varied, the Nigerian study used a survey like many of the Australian studies, whereas the UAE study used qualitative questionnaire. The Polish study on the other hand attempted a systematic literature review and analysis of a pilot study. The way sustainability has been defined were also various in these studies, the Polish study had compared between certified and non-certified properties, whereas the Nigerian study asked about 39 sustainability features on

market value of a hypothetical property and the UAE study asked general questions about green buildings without specifying sustainability attributes. Though these studies have used various methodologies to collect data such as survey or interviews or review of literature and their way of defining sustainability are also varied, some commonalities of the findings can be observed. These include lack of valuers' knowledge, awareness and technical skills on sustainability, lack of evidence and data on subject and comparable properties on sustainability attributes and lack of clients' instructions to include sustainability factors in valuation reporting. Around the world these common factors have been identified as key barriers to include sustainability in valuation practice. This study will consider how such factors influence the practices of valuers in the UK.

2.6 Valuation guidance and sustainability

The RICS was founded by royal charter in 1868 (RICS, 2017b). The RICS first announced in 2009 that it intends to introduce a regulatory monitoring scheme for its members who are carrying out valuations under the RICS valuation standards. After the financial crisis of 2007, the reputation of valuers worldwide was suffering. Banks, valuers and appraisers as well as the whole financial sector was blamed for the crisis. As a result, a regulatory monitoring scheme was introduced to *"allay any future fears of the users of valuations and indeed, the worries of various governments around the world"* (French, 2011, p. 585). The regulatory scheme was introduced to strengthen trust in the valuation profession, and it had three stated objectives: to improve the quality of valuation, to meet RICS's requirement to self-regulate effectively and to protect and raise the status of the valuation profession (French, 2011).

It is mandatory for the RICS valuers to follow the Red Book, which was first published in 1976 with the latest edition published in 2022 (RICS, 2022). The Red Book contains mandatory rules, best practice guidance and related commentary for all members of the valuation profession. It also includes the International Valuation Standards, which are mandatory to follow for valuers. Other than the Red Book, the RICS publishes numerous other publications on a regular basis to advise, update and maintain good practices among valuers. This includes the RICS practice statement that is mandatory to follow under the Rule of Conduct, the RICS code of practice that is either mandatory or recommended for good practice (specified in the document), the RICS guidance note that is recommended good practice and the RICS information paper that is information and/or explanatory commentary (RICS, 2022).

The RICS has published several guidance notes and information papers on sustainability, and the following figure lists these. The first one on sustainability was published in 2009 for commercial property valuation (RICS, 2009). Subsequently an information paper was published for residential

property in 2011 (RICS, 2011). An update of the commercial property valuation was published in 2013 for sustainability (RICS, 2013). In 2014, the RICS mentioned the sustainability concept in the Red Book for the first time, making it mandatory for valuers to consider (RICS, 2014). Subsequent Red Books (RICS, 2017; 2020; 2022) also kept informing about sustainability. In 2018, an insight paper was published to inform property managers and valuers on the MEES impact (RICS, 2018a). The same year the RICS published a Guidance Note on Environmental Risks on global real estate (RICS, 2018b). The latest information paper on sustainability, which is an update of the RICS (2013) information paper is the Sustainability and ESG in commercial property valuation (RICS, 2021c). However, this information paper was published after the data collection was completed for this study, therefore, the impact of this publication on valuers' due diligence may not be visible in this thesis. Though the RICS provided and updated several of their standards and guidelines on sustainability, it can be argued that they are kept similar over time. Since 2014 the wording for the definition of sustainability has been very much alike (Sayce et al., 2022) other than adding the ESG element in the latest information paper (RICS, 2021c). Reference to climate change has been limited within this definition (Sayce et al., 2022). Moreover, the 2013 information paper provided a sustainability checklist that guided valuers on the type of data that they can collect on sustainability, however, this was not included let alone updated in the latest version (RICS, 2021c). Though sustainability has been included in the Red Books all the advice are kept at an advisory level which makes it valuers' discretion to consider them rather than making it prescriptive and mandatory.

RICS (2009)	RICS information paper no 13 - Sustainability and Commercial Property Valuation
RICS (2011)	RICS information paper - Sustainability and Residential Property Valuation
RICS (2013)	RICS information paper - Sustainability and Commercial Property Valuation (2nd edition)
RICS (2014)	RICS Red Book (2014) – Sustainability was mentioned for the first time in a Red Book
RICS (2018a)	Insight paper – MEES impact on UK property management and valuation
RICS (2018b)	Guidance Note – Environmental Risks and Global Real Estate
RICS (2021c)	Information Paper – Sustainability and ESG in commercial property valuation

Figure 2.2: RICS publication on sustainability inclusion for valuation practices.

Source: Made by the author

Though the latest Red Book was issued in 2022, at the time of this research the Red Book 2017 and 2020 were relevant as data was collected during 2019–2021. In between these two Red Books, the

instructions around sustainability were very similar. The following section provides an outline of the mandatory and advisory level instructions provided by the RICS for its valuers on sustainability.

2.6.1 Data collection

The RICS has specific instructions on sustainability considerations of commercial property in the Red Book (2020; 2022), which is mandatory to follow along with some published guidance notes and information papers on sustainability and how it may be incorporated in valuation. The Red Book (2020, 2022) recognises the fact that sustainability factors are gaining growing relevance and becoming an important market influence. Thus, valuers are advised to have proper regard for sustainability factors while undertaking individual valuation assignments. They are *strongly advised to collect and record appropriate and sufficient sustainability data, as and when it becomes available, for future comparability, even if it does not currently impact on value* (Red Book, 2020, p. 42). Additionally, they are required to be aware of sustainability features and their implications these could have on property values in the short, medium and long term (RICS, 2022). Over time, valuers will be able to make well-informed judgments and provide clients with appropriate information through analysing these data. Valuers are basically advised to expand their basic data collection to include a record of sustainability attributes even if they are not impacting value at the moment. By collecting these data, valuers will be able to contribute to the improvement of knowledge to establish an information base on sustainability (RICS, 2013).

The data related to sustainable buildings can be of a wide range as the Red Book explained: *“the range of issues includes, but is not limited to, key environmental risks, such as flooding, energy efficiency and climate, current and historic land use as well as matters of design, configuration, accessibility, legislation, management and fiscal consideration.”* (Red Book, 2020, p. 112) The RICS guidance note on sustainability and commercial property valuation published in 2013 includes a wide-ranging sustainability checklist that could be used as a guide for the data that could be collected on sustainability (RICS, 2013). The checklist includes all six sustainability attributes and their subcategories explained above. Though many of such data may not be available, if available, valuers are strongly advised to seek and collect data on these attributes and as it is mentioned in the Red Book (RICS, 2020; 2022), it is arguably mandatory for valuers to collect data on sustainability. However, this checklist and guidance note was developed in 2013 and at the time of this research, the RICS had published an updated version of the guidance note, however no checklist for data collection was included (RICS, 2021c). Instead, a list of international sustainability/ESG rating, benchmarking and measurement schemes were included in the Appendix to inform valuers about them (RICS, 2021c).

Another guidance note on environmental risks and its impact on the global real estate market was published in 2018 (RICS, 2018b) which provides guidance for chartered surveyors regarding how risks from environmental factors and laws can be addressed in the property market. Though this guidance note is aimed at chartered surveyors, it is relevant for property valuers as well, as it discusses the implications of environmental risks on the property market which will have wider implications on market as well as investment value. This guidance note provides advice on environmental laws and how these could be affecting value of real estate through various sustainability factors such as land quality, air quality, water and waste quality and contamination. It also provides guidance on the availability of data on these factors and how these could be collected and analysed. As valuers are strongly advised by the RICS to collect relevant data on sustainability factors, valuers can benefit from this guidance note to understand what data might be available on sustainability factors and how these might be analysed (RICS, 2018b).

Though the majority of the RICS guidance around sustainability is still under advisory level, data collection on sustainability factors is mandatory as this is a strong advice mentioned in the Red Book (RICS, 2020; 2022). The following table provides an outline of the data on sustainability that can be collected and observed by valuers while valuing a property. These lists are provided by the RICS in two guidance notes (RICS 2013, 2018b) as well as in the Red Book (2020).

<p>Sustainability and commercial property valuation (RICS, 2013)</p>	<p>Location (transportation, special needs, green or open areas, user-relevant basic services)</p> <p>Site consideration (land use, current or planned site defences against environmental risks, contamination, exposure to sunlight, conditions of oil)</p> <p>Building (energy rating, performance, carbon emissions, energy source, renewables, age and efficiency, water, waste, adaptability, flexibility, accessibility, resilience to climate change etc.)</p> <p>Documentation (certification, planning documentation etc.)</p> <p>*The full list is available with the guidance note (RICS, 2013)</p>
<p>Environmental risks and global real estate (RICS, 2018b)</p>	<p>Renewables</p> <p>Waste management abuses</p> <p>Asbestos containing material</p> <p>Fly tipping</p> <p>Fuel tanks</p> <p>Other tanks or containers</p> <p>Chemical odours incineration areas</p> <p>Disclosed or smelly water / liquid leaks discharges</p> <p>Invasive non-native species</p> <p>Irregular topography</p> <p>Vegetation dieback</p> <p>Utilities</p>
<p>Red Book (2020)</p>	<p>Natural environmental constraints</p> <p>Non-natural constraints (contamination and hazardous substances)</p> <p>Sustainability – assessing the implications of value</p>

Table 2.2: Data collection checklists provided by the RICS on sustainability

Source: Made by the author from RICS publications

Though the above checklists were provided by the RICS, it is not well known to what extent valuers collect data or analyse the above-mentioned factors while valuing property. The research published by Michl et al. (2016) reported limited adaption to the RICS (2011) guidance note. No recent research has been undertaken in the UK to determine the level of data collection, analysis and reporting by valuers on sustainability factors.

2.6.2 Analysis, value impacts and reporting

If sustainability attributes are identified and recognised to have an impact on value, they should be embedded into the calculations of value. For detailed advice on value, valuers can include the likelihood of sustainability issues gaining importance over time (RICS, 2013). However, direct influence on value should be reported only when market evidence is present or “*in the valuer’s judgment*” sustainability factors are expressly being reflected in market participants’ bids (Red Book, 2020, p. 113). Additionally, they are advised to “*continuously seek to enhance their knowledge*” to assess value impacts of sustainability factors (Red Book, 2020, p. 112). Where they lack the necessary skills, they should consult specialist consultants such as for cost advice or on specialist environmental risk assessment (RICS, 2013; 2021c). They are also advised to reflect their limitations in the terms of engagement or as part of the terms agreed to get specialist advice (RICS, 2021c). Getting expert advice on sustainability factors means extra work for the valuers as well as cost to get expert opinions which could be problematic if commissioning clients are not ready to pay.

The commercial property market is specifically mentioned to have become more sensitive to sustainability factors and therefore, “*may begin to complement traditional value drivers, both in terms of occupier preferences and in terms of purchaser behaviours*” (Red Book, 2020, p. 112). The awareness of different sustainability attributes is becoming essential among owner-occupiers and the investment community. Building obsolescence in relation to climate change, energy shortages and price volatility, occupier demand, their occupation costs and corporate social responsibility objectives are driving the awareness (RICS, 2013). Valuers are expected to be cautious as the definition of sustainability is still not a universally accepted one (RICS, 2020). Thus, valuers are asked to be cautious in identifying such changes in preferences and behaviours of market participants to reflect those in valuation.

Valuers are also advised to consider if any sustainability factors that affect the valuation are likely to have altered. The Red Book also states, if appropriate, the significance of sustainability factors should form an integral part of the valuation approach and reasoning supporting the reported figure. Valuers undertaking valuations for the purpose of secured lending should have proper regard to sustainability factors and comment on “*maintainability of income over the life of the loan*” (Red Book, 2020, p. 73). They should also investigate any risks associated to the maintainability of the income (Red Book, 2020). These risks could be related to lease breaks or determination and anticipated market trends or legislative changes that could impact on the income of a property.

When valuers are asked for providing additional comments or strategic advice, the Red Book suggests it might be appropriate to consult the commissioning client to understand the use and applicability of sustainability factors that might be applicable in a specific case. As an example, investment value could be mentioned, which could be influenced by specific sustainability factors such as energy efficiency or waste or water management and could be incorporated for investment decision-making for a specific client even though it is not evidenced through the market transaction (Red Book, 2020). Therefore, certain factors not affecting market value may influence investment value and should be considered if they are relevant over the proposed holding period (RICS, 2013).

To ensure best practice in reporting, where appropriate valuers are also advised to assess the extent to which the subject property meets sustainability factors compared to market standing and to assess the likelihood of those factors impacting on value. They are also recommended to describe the sustainability factors of the property and data that may have been collected, which may include items not directly reflected in the final value. They should provide their opinion on the relationship between such factors and valuation. The opinion should include potential impact on benefits and/or risks to the property values over time (Red Book, 2020).

All valuation reports prepared under the Red Book should consider the actual or potential implications of sustainability attributes, however RICS recognises the fact that in many markets and submarkets sustainability is not feeding through to pricing. However, valuers are advised to consider the possibility and actively seek to collect appropriate evidence and analyse it as part of their methodology (RICS, 2013). Collection of appropriate evidence or even seeking to collect evidence of sustainability can have a larger impact. Though valuers generally do not see themselves as ‘market shapers’, but rather reflectors of the market, simply asking questions about sustainability factors can make a difference. For example, asking for an EPC can influence the market towards creating a demand for EPC documentation. Therefore, changing valuers’ due diligence process to seek sustainability data collection can be the start of creating a change in the property market (Michel et. al., 2016). Also, any valuation is dependent upon comparable data, thus the active collection of data on sustainability is essential even though value impacts are not yet visible. These data can be used in future for comparability.

To guide valuers, asset managers and their clients, the RICS published an insight paper on MEES and its impacts on property management and valuation (RICS, 2018a). This insight paper cautioned valuers that energy efficiency is affecting the behaviours of market participants and thus should be reflected accordingly. Valuers should mandatorily consider MEES and its impact within their due

diligence process in terms of inspection, analysis and reporting. As EPCs have become a source of risk, certificates must be obtained by valuers where available and considered carefully. If something is outside of valuers' competence, such as the cost of bringing a substandard property up to a compliant level, valuers are required to take expert opinions. Valuers are also advised to take expert opinion from the EPC register if an EPC is not present for a property or consult the Exemption Register for any possible exemptions.

In terms of value impacts of MEES, valuers are to remember that “*MEES only directly affects properties that are let or are to be let*” (RICS, 2018a, p. 16). For an estimate of market value of an income producing property, it is generally calculated by capitalising the existing and future rental income using yield from recent transactions of similar properties. Therefore, valuers are advised to collect EPC not only of the subject property but also comparable properties. On the contrary, for the calculation of worth, MEES is likely to impact on the cash flows either through discounting the future expected income at an appropriate rate of return or estimating the cost of compliance explicitly in cash flow and considering any required void for the compliance works. For exempted properties, valuers are advised to consider the impact on rental and capital values. Even if value impacts are not clearly evidenced, valuers are required to consider any risks posed by MEES according to the Red Book (2020). Valuers are also asked to consider the extent to which market rent, yield and rental growth might be affected because of MEES. They are also cautioned against poorly specified properties with low energy efficiency that may have reduced value in future even if currently compliant. To figure out the required works and costs associated with an upgrade, valuers are advised to work with energy experts and/or building surveyors (RICS, 2018a).

As discussed above, there are mandatory and advisory level instructions provided by the RICS to valuers on how sustainability factors might be incorporated in value. However, certain wordings in the Red Book as well as the guidance notes are open for interpretation and not very prescriptive. For example, valuers were asked to have “proper regard” for sustainability and collect “appropriate and sufficient” data, however it is not very clearly defined what proper regards means or what data they are supposed to collect or how much data would be appropriate and sufficient. Collecting data on sustainability is regarded as important because these data could be analysed and observed by valuers over time so that they can understand the value impacts gradually. However, within the Red Book there is no checklist provided for sustainability data collection. The RICS guidance notes published in 2013 and 2018 provided checklists on sustainability data collection and observation (mentioned in the above table) that valuers could follow, however it was not mandatory but rather at advisory level. Therefore, though valuers are supposed to identify and recognise sustainability

factors and their impact on value and embed this within the calculation of value, it is up to the valuers' discretion as to what extent they would incorporate these instructions. The majority of these instructions from the RICS are open to interpretation. Therefore, the instructions are equivocal, which could lead to variations in data collection, analysis and reporting. Additionally, not all data may be available to collect. These could lead to inconsistent practices among valuers.

During 2021, the RICS started updating its guidance note on sustainability and published an updated version during December 2021 (RICS, 2021c). Though no new checklist for data collection was provided with this guidance note, some additional factors were added such as carbon emission and ESG. Additionally, valuers were also asked to make efforts to collect data on comparable properties, consider upgrade cost or capex requirements and seek specialist advice where required. Moreover, it was also added that sustainability factors may be embedded into value through rental growth, depreciation, risk premiums, exit yield, duration to sell or let or other incentives such as rent-free period while using the income approach. Other valuation approaches were also discussed. Additionally, some risks related to sustainability considerations were also discussed such as carbon emissions, net zero and energy efficiency, capital expenditure, environmental, physical and transition risks, property quality, fiscal and legislative risks, certifications, social and well-being considerations, social value and governance. However, as mentioned above, no new checklist for data collection on sustainability was produced and the instructions remain at advisory level. This update was published after the data collection for this research was completed.

2.7 Background of Valuers

2.7.1 Education and training

To become a valuer there are several routes one may take. The first route is to take a degree or professional qualification approved by the RICS. Relevant degrees include real estate management, property development and valuation, building surveying and quantity surveying and commercial management. If one has a non-accredited degree, an accredited post-graduation qualification in surveying could be undertaken. Another route can be to become an apprentice under a chartered surveyor degree apprenticeship which has a property valuing option. The last route is open to young school leavers through the Chartered Surveyors Training Trust (CSTT). This is an organisation that helps by offering apprenticeship schemes (National Career, 2021). Going through any of the routes, a prospective valuer will have to appear for an Assessment of Professional Competence (APC). After someone passes the APC and all the other membership criteria have been completed, one can apply for the valuer registration. A certificate is issued once someone is registered on the scheme as a registered valuer (RICS, 2021b). Even after being a registered valuer, Continuing Professional

Development (CPD) is a commitment that needs to be upheld by any RICS members to continuously update their skills and knowledge to remain professionally competent. Members are required to take at least 20 hours of CPD every calendar year, within which 10 hours needs to be formal CPD. Formal CPD should be something that has a structured learning with clear learning objectives and outcomes. And informal CPD can be any self-managed learning that may be relevant to a member's professional role (RICS, 2021a). In terms of sustainability, there is no mandatory rule that valuers have to undertake CPDs on sustainability on a regular basis though the RICS suggests valuers to enhance their knowledge and be well informed on sustainability issues (RICS, 2020). Valuers are also reviewed and audited by the RICS as frequently as deemed appropriate by the RICS.

There are three membership grades according to the qualification and registration status: Associate, MRICS and FRICS. Associates are not chartered surveyors. To become a registered valuer, one needs to complete level 3 valuation competency. A wide range of pathways covering many different areas of practice are available to choose from. The RICS assessment's objective is to make the chartered surveyors competent so that they can carry out valuation. It is dependent not only on skills and ability to perform but also attitudes and behaviours. Each competency is described in three levels, level 1, 2 and 3 where, level 1 is the knowledge and understanding, level 2 is the application of that knowledge and level 3 is the reasoned advice, depth and synthesis of technical knowledge and its implementation. There are mandatory, technical core and technical optional competencies. Mandatory competencies are essential for all candidates, technical core are the primary skills valuers can choose to select a pathway and technical optional are additional skills for a certain pathway which can be chosen from a list of competencies. To become a chartered surveyor, a valuer needs to have level 3 competency. There are specialist valuers who cover a wide range of assets including commercial properties. Some valuers may focus on one asset class exclusively whereas others may choose to value a wide range of assets (RICS, 2018c).

All registered valuers are expected to maintain three levels of standards (RICS, 2020a) which are:

- (a) Professional standards – centred on ethics and conduct, underpinned by knowledge and competence
- (b) Technical standards – centred on common definitions and conventions, underpinned by consistent application through recognised approaches
- (c) Performance or delivery standards – centred on rigour in analysis and objectivity of judgment, backed by appropriate documentation and clarity when reporting.

To achieve the desired technical standards, valuers need to have knowledge of the following:

- 1. Inspection:** Examples of required knowledge are construction technologies, building design, location factors, common environmental factors affecting property, common sustainability features and the ability to investigate and report on matters arising from inspection.
- 2. Legal/Regulatory compliance:** Examples of required knowledge are awareness of legal principles, existing legal and regulatory provisions related to property valuation and ownership/occupation/transaction/development of property.
- 3. Measurement of land and property:** Examples of required knowledge are accurate measurement and basis, techniques and equipment used in measurement, key standards, mapping products, and limitations of different instruments.
- 4. Property records/information systems:** Examples of required knowledge are property information tools, paper or electronic records system in use, legal documentations, deeds and registered titles, supporting maps and plans, index maps.
- 5. Valuation:** Examples of required knowledge are understanding main drivers of value, principles and application of Red Book, principles of professional indemnity insurance, the underlying principles of law, planning etc., purposes of valuations, principles of various methods, importance of independence and objectivity, client requirements.
- 6. Plus, either Analysis and appraisal,** which is about reporting qualitative and quantitative advice to support valuation and value related advice, or **Building pathology** which is about defects analysis and likely defects arising from building fabrics etc.

Eight mandatory competencies are client care, communication and negotiations, conduct rules, ethics and professional ethics, conflict avoidance, management and dispute resolution procedure, data management, health and safety, sustainability and teamwork. 48 hours of CPD is also a requirement, examples of which can be attending in-house workshops and demonstrating follow-up self-learning with practical exercises, attending RICS training and conference courses covering valuation methodology and Red Book issues (RICS, 2020a).

The valuation pathway is for surveyors working in commercial, residential, local/national government, rural real estate or in machinery and business assets. The emphasis of this pathway is on competency in valuation practice and valuation standards along with a broad base of experience in property. For level 1 accounting, business planning, conflict avoidance, resolution, data management, diversity, environments and sustainability are mandatory competencies. For level 2

client care, communication and health and safety are additional mandatory competencies and for level 3 ethics, rule of conduct and professionalism. From the core competencies, level 2 is measurement and level 3 competencies are inspection and valuation. For optional competencies, there are a wide range of subjects to choose from (RICS, 2018c). As mentioned earlier, to become a registered valuer, level 3 competency is required.

RICS recognises the “*growing relevance of sustainability factors as a market influence*” (RICS, 2020a). Hence, sustainability is included as one of the mandatory competencies under the level 1 (RICS, 2018c). However, it is optional at levels 2 and 3. Three core elements of sustainability are social, economic and environmental. Emerging issues that affect the sustainability on property performance, worth and value along with the tools and techniques to embed the concept of sustainability into valuation are required for this competency at different levels.

Though valuers mandatorily learn about sustainability at level 1, level 2 and 3 competencies could also be achieved. The examples of likely knowledge, skills and experience at each level is as follows:

Level 1	Level 2	Level 3
Demonstrate knowledge and understanding of why and how sustainability seeks to balance economic, environmental and social objectives at global, national and local levels, in the context of land, property and the built environment.	Provide evidence of practical application of sustainability appropriate to your area of practice, and the circumstances in which specialist advice is necessary.	Provide evidence of reasoned advice given to clients and others on the policy, law and best practice of sustainability, in your area of practice.
Examples of knowledge comprised within this level are: <ul style="list-style-type: none"> • Historical background/context – Brundtland, Earth Summits, climate change 	Examples of activities and knowledge comprised within this level are: <ul style="list-style-type: none"> • Using and interpreting reports produced with the main sustainability related tools – such as BREEAM, 	Examples of activities and knowledge comprised within this level are: <ul style="list-style-type: none"> • Providing reasoned advice/qualitative comment to clients or other stakeholders on the potential financial

<ul style="list-style-type: none"> • The relevant legal and policy framework • How sustainability relates to property – (energy efficiency, accessibility, flexibility, etc.), including an appreciation of the key threats to sustainable property use and performance • How property occupiers and investors are affected by economic, social and environmental sustainability concerns • Current research being undertaken on sustainability • The aims of triple bottom line (TBL) analysis and be able to explain how the technique may be adapted to various scenarios within your own area of professional property practice. 	<p>Green Guide to specification, etc.</p> <ul style="list-style-type: none"> • Producing energy performance certificates • Analysing energy efficiency measures through cost benefit analysis • Inspection and valuation of sustainable property features in line with RICS guidance. 	<p>impact of sustainability on a property/project</p> <ul style="list-style-type: none"> • Providing reasoned comment to clients or other stakeholders on the impact of sustainability legislation/policy • Strategic advice on long-term sustainability objectives. NB: Sustainability advice may be given in the course of providing conventional property advice to clients or other stakeholders (such as valuation, investment or property/asset management advice).
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Table 2.3: Examples of likely knowledge, skills and experience on sustainability of valuers at each competency level

Source: made by the author from the RICS (2018c)

As shown in Table 2.3, the level 1 mandatory requirements will cover the basics of sustainability including history, relevant legal and policy framework, how sustainability is relevant for property, occupiers, investors, the current research on sustainability and the aims of TBL. However, to provide more specialised services to clients on sustainability, level 2 and 3 competencies are required. At these two levels, practical applications and evidence-based advice provided to clients are covered in more detail. For example, at level 2, valuers will be expected to interpret reports produced by BREEAM or produce EPCs themselves. Additionally, they are also expected to analyse energy efficiency measures through cost benefit analysis at level 2. Whereas at level 3

valuers will be expected to provide advice on potential financial and legislative impacts of sustainability and provide long-term strategic advice on sustainability objectives.

As explained above, the Red Book published by the RICS is mandatory for valuers to follow. Along with that, the RICS publishes the RICS practice statement (mandatory), the RICS code of practice (either mandatory or recommended for good practice), the RICS guidance note (recommended good practice) and the RICS information paper (information or explanatory commentary). Several of the publications by the RICS are on sustainability (explained above in section 2.6). However, currently all of these are advisory to maintain good practices and not mandatory to follow.

Though the RICS is responsible for ensuring the quality of valuation and reputation of the valuation profession, there is a concern in the literature about whether that is enough to understand sustainability and if valuers are doing enough to include it in the valuation framework (Dixon et al., 2008; Warren-Myers, 2012). Since these publications, the RICS has changed its advice around sustainability data collection and analysis. However, it still remains at an advisory level as explained above. Demand for commercial real estate properties appears to have changed and is reflected in prices as found in several pricing studies (discussed in section 2.3) for sustainable or green buildings. Investors are actively pursuing properties with sustainable credentials and appear willing to pay a green premium in certain markets (Fuerst et al., 2017) or are ignoring those properties that are inefficient in terms of sustainable attributes (explained in section 2.4.1). However, the question remains if current education and training regimes offer enough opportunities for valuers to understand sustainability or if these are working as a barrier for the inclusion of sustainability into the valuation framework. Though there has been a wide range of literature produced in the area of sustainable buildings, the knowledge base of valuers related to sustainability and how they understand it is a relatively untouched area. A study by Dixon et al. (2008) attempts to investigate the context of engagement by RICS registered members with the sustainability agenda after the first guideline of sustainability was published by the RICS. The survey was conducted on all the RICS members and results suggested sustainability as being highly relevant to them. However, lack of knowledge and expertise was considered as the major barrier to make sustainability tools and other information become more effective. However, the Dixon et al. (2008) study predates all of the current legislation and regulations on sustainability as well as the advice from the RICS on sustainability (RICS, 2013; 2018a; 2018b; 2020a). The same can be said about the study undertaken by Michl et al. (2016), which is based on a data collected by the RICS in 2012.

Warren-Myers (2009) found valuers in Australia were not well adept or equipped to identify the relationships between sustainability and market value. The reasons behind this were listed in Warren-Myers (2011) which included valuers limited knowledge on sustainability, lack of analysis of evidence and historical trend due to the lack of knowledge, lack of heuristics of valuers pertaining to sustainability and inadequate development of strategic intuition. It was presumed that as markets develop to a more matured understanding of sustainable buildings, valuers' knowledge will equally grow on sustainability (Warren-Myers, 2009). Warren-Myers (2013) study on Australian valuers identified that the value relationship between sustainability and market value is recognised by the valuers, however, they had "*inaccurate or misjudged*" assessments of sustainability into valuation. Valuers in this study were not even aware of the basics of rating tools such as how many categories a rating system has. The author concluded the paper by probing whether this is happening only in Australia or whether it is a global problem related to valuations of real properties. Later studies in Australia found, even though significant market growth in sustainability had occurred, a lack of knowledge of valuers were still apparent (Le and Warren-Myers, 2018; Warren-Myers, 2016; 2022b). In terms of climate change physical risks, Warren-Myers and Craddock (2021) found though valuers could easily identify physical risks there is a lack of understanding of climate change risks. Similar issues were reported in other countries as well such as in Poland (Kucharska-Stasiak & Olbińska, 2018), Nigeria (Babawale & Oyalowo, 2011) and the UAE (Lambourne, 2020). In the UAE lack of relevant technical skills of valuers have been mentioned as one of the major barriers to include sustainability in valuations (Lambourne, 2020). Whereas in Nigeria, researchers recommended valuers to develop their knowledge of sustainability to effectively incorporate all features of sustainability in valuation (Babawale and Oyalowo, 2011). On the other hand, in Poland researchers concluded valuers know the least on sustainable buildings and needs to develop it further (Kucharska-Stasiak & Olbińska, 2018). A more recent and relevant project for the UK is the RenoValue which is a two-year funded project by the Intelligent Energy Europe Programme of the European Union. The project developed a tool kit to help valuation professionals factor energy efficiency, renewable energy and other sustainability aspects into valuation practices (RenoValue, 2016). The project acknowledged the fact that valuation professionals may not have the required knowledge to assess the sustainability attributes, naming energy efficiency, renewables or others. These issues are mainly dealt with by building specialists such as architects, building controllers, building surveyors and/or facility managers. Therefore, the objective of this project was to analyse and assess the need of the valuation community to integrate sustainability and its attributes into valuation and then design training materials accordingly (RenoValue, 2016). As many studies around the globe has found valuers knowledge to be insufficient to account for sustainability factors, it is required to investigate

if this is true in the UK too. Within the UK the last study by Michl et al. (2016) also identified lack of knowledge of valuers as one of the barriers to incorporate sustainability in valuations. This study will seek to address this point.

To review and ensure that the surveyors remain “*relevant and trusted*”, the RICS launched an investigation in 2020 with the focus on valuation for financial reporting, changing public expectations over the independence of professionals as well as environmental sustainability (Horti, 2020). The consultation on this was published in 2020 (RICS, 2020b). It is being acknowledged that to continue to provide leadership in the 21st century, the RICS needs to be innovative and ready to adapt and to lead to respond to change.

“As a global professional body, we need to respond to this change if we are going to ensure our members deliver confidence in the years ahead.” (RICS, 2020b, p. 5)

One such change of this century is the sustainability agenda in the built environment and how that could be used to reduce emissions from our climate. To ensure better and more informed decision making on sustainable properties, data plays an important role. Studies in UAE (Lambourne, 2020), Poland (Kucharska-Stasiak & Olbińska, 2018) and earlier studies in Australia (Warren-Myers, 2013; 2016) and the UK (Michl et al., 2016) have found lack of data on sustainability factors to be a major challenge in terms of sustainability inclusion in valuations. Similarly, Warren-Myers and Craddock (2021) reported on lack of information on physical risks of climate change available to valuers. Valuers would need compelling evidence regarding how sustainability might be affecting property sales and leasing transactions (Warren-Myers, 2022b). Throughout a building’s lifecycle, the end users as well as the landlords are exposed to a significant amount of data, most of which gets discarded (RICS, 2020b). However, the collection and analysis of these data can lead to better decision making. The RICS thus suggests collecting data on sustainability attributes when it becomes available even if value impacts are not yet visible (RICS, 2013 & 2020a). However, without a prescriptive measure of which data is to be collected and how this can be stored and shared, there is a risk of lack of consistency among valuers’ due diligence practices. The Global Alliance for Buildings and Construction is therefore, leading a project to develop a “building passport” that will store all building-related data from design to demolition. This project can help financing institutions, investors, insurers, policymakers, owners and operators as well as valuers to gain access to any data relevant to a building (RICS, 2020b).

Though the RICS is acknowledging the changes that have been taking place because of the increase in demand and legislative and regulative pressure of sustainability, most of the research that was undertaken in the UK to investigate the extent to which valuers understand and incorporate sustainability attributes (Dixon et al., 2008; Michl et al., 2016) predates current regulation and legislation both by the Government as well as the advice from the RICS. The Dixon et al. (2008) study was undertaken even before the valuation registration scheme was introduced. The Michl et al. (2016) study was undertaken by the RICS in 2012. However, the current RICS advice on sustainability was published after 2012 (RICS, 2013, 2018a, 2018b, 2020, 2021c). No recent study has been undertaken in the UK to investigate valuers' take from this advice by the RICS. Therefore, there is a clear gap that has been identified and needs filling.

2.7.2 A matter of professionalism

A professional is a person “*connected with a job that needs special training or skill, especially one that needs a high level of education*” (Oxford Learner's Dictionary, 2021). A professional is required to have professional qualifications or skills to undertake his/her job. There are also professional standards and practices that he/she needs to abide by. In some cases, professionals are part of a professional body such as the RICS which is the professional regulatory body for the valuers. Valuers are therefore required to abide by the standards and practices set by the RICS. As valuers are registered members of the RICS, they are responsible for representing the RICS through their practices. The RICS promises to develop and enforce leading international standards to protect their consumers and businesses by ensuring the utmost level of professionalism across the built and natural environment (RICS, 2020c). Additionally, valuers are required to follow the RICS Rules of Conduct which hold them responsible for certain professional and social responsibilities. Among these Rules of Conduct two of the most important ones are to take responsibility for their own actions and to not cause any harm (RICS, 2021c).

The RICS registered valuers are also required to follow the International Ethics Standards (IES) that have created a universal set of ethics principles for real estate and other professionals. The objective of this global alliance is to create a high level of standards and principles which will be implemented by its members and provide greater consistency for users of professional services. As the real estate sector is integral to any society and its economy, and it represents a significantly high proportion of global wealth, it is the duty of the real estate professionals to uphold the highest standards throughout the world (IES, 2020). Valuers, being fundamentally professionals, are required to follow professional ethical conduct which requires them to behave in a certain way. To achieve the highest standards and to provide a consistent professional advice to clients, valuers'

education and training does provide an important role, although that is not enough. With changing economic and societal contexts, valuers are required to keep themselves updated to keep up with the latest technological as well as any other challenges that may have impacts on real estate market including sustainability matters (RICS, 2020). Not only the valuation profession but globally many professions such as accounting, law are facing endless changes and disruptions because of the technological advancement that can replace previously provided professional services (Hughes & Hughes, 2013; Susskind & Susskind, 2015). A constant transformation of professionals is therefore underway to respond to the market and economic ideologies that promote different roles for governments within many sectors as well as increasing the tasks and complexities of technological advancements (Dent et al., 2016, p. 1). Professionals, therefore, need to be resilient to cope with these changes and it is a requirement and the individual responsibility of a professional to continually update personal skills and knowledge (Peel, 2010).

Professionals can be of two kinds, one being self-serving, demanding public recognition of professional status and fixing market for their services, and the other providing advice and services to clients that can create the foundation for protecting against unscrupulous, unfair and short-term practices (Hill & Lorenz, 2011). It is, however, needless to say that the second one is more desirable. As Hill and Lorenz (2011, p. 315) describe:

“The role of any profession is embedded in some ideals, professional values, autonomy of practice and independence of opinion, particularly from other (often destructive and damaging) forces in society that would otherwise either permit or compel the practitioner to do whatever is expedient”.

Therefore, professionals of any kind are required to be independent and autonomous. They are required to abide by the ethical conducts set by their respective professional bodies who would *“ascribe a guardianship or stewardship role for the society and the built (natural environment)”* (Hill & Lorenz, 2011). This guardian-like role arguably provides them with the right as well as a sense of duty to not only provide sound and empirical advice but also to challenge and question what the client as well as the market want (Hill & Lorenz, 2011).

To integrate sustainability within the built environment’s professional advice, several researchers have suggested *“shared cross-professional identity”* (Hartenbeger, Lorenz & Lutzkendorf, 2013) or creation of *“new professionalism”* that transcends existing division among building professionals (Bresnen, 2013). However, the RICS suggest valuers to *“continuously seek to*

enhance their knowledge” (RICS, 2020a, p. 112) to respond to the market changes caused by sustainability or its factors causing direct or indirect value impacts. The RICS recognises all three dimensions of sustainability, environmental, economic and social factors (RICS, 2021c), therefore valuers are required to be aware of all three factors and consider any possible value impact of these factors. Arguably, “cause no harm” is an important promise professional valuers make (RICS, 2021c) and not being able to understand or incorporate sustainability factors can potentially break that promise. Conversely reporting value for sustainability where there is no hard evidence can also be considered as a breach of that promise. The Red Book (RICS, 2020a) clearly states that the valuers are supposed to follow the market and not lead it. Hence, in the absence of hard evidence on sustainability factors for properties, valuers may be unable to reflect sustainability. However it is the valuers’ responsibility to be aware of the sustainability factors and their implications on value in the short, medium and longer terms. This advice from the RICS provides indications that to continue good professional practices valuers have an important role to play to help the market move in the direction of sustainability. Valuers are indeed professionals and based on their professional advice, decisions are undertaken that can have wider economic, societal and environmental impacts.

Therefore, valuers have a duty not only towards their immediate clients, but to the wider public and society (RICS, 2021c) to inform them about current or future market conditions or challenges. It can be argued that sustainability falls under this category of notable professional advice, where some valuers may choose to disregard it as it isn’t impacting on value yet, however, the more professionally and ethically equipped valuers are expected to identify the importance of these factors towards society, culture and wider community and inform the clients as well as the market regarding the possible future value implications. Therefore, these valuers can take up the role of re-shaping the market towards a more sustainable market. Moreover, to mitigate against environmental issues, behavioural changes are required from every individual from all over the world (Tam and Chan, 2017) including valuers. Though studies show the world’s population is aware of the environmental problems and are widely supportive of environmental protection (Milfont & Schultz, 2016), these concerns may not translate into the required behavioural changes among individuals and professionals (Tam and Chan, 2017). To change behaviour and undertake environmentally responsible actions, understanding environmental issues and their potential solutions are vital (Levy & Marans, 2011). Studies have indicated individuals are likely to act in more environmentally responsible ways when they are aware of them (Hines et al., 1987) and when they feel competent to successfully undertake actions (De young, 2000). Hence, to change valuers’ behaviours towards a more sustainable way, awareness, education and training on sustainability

factors and their implications can play major roles to build the confidence among professionals. On the other hand, to sustain such behaviours individuals may need reminders to behave in responsible manner (Levy & Marans, 2011). Other powerful motivators for changing behaviour can be perceived social norms (Levy & Marans, 2011). To what extent valuers have adopted their behaviour to account for sustainability issues is one of the focal points of this research.

2.7.3 Valuers' behaviour

Real estate valuers are required to have variety of education, training as well as sufficient current local, national and international knowledge of the particular market they work in and the necessary skills and understanding to undertake valuation competently (RICS, 2020a; Amidu et al., 2019). Because the nature of the property market is complex, dynamic, heterogeneous and imperfect, valuers are faced with uncertainties (Crosby et al., 2018). As a result, valuers need sufficient information and knowledge that will allow them to most effectively use their judgements and knowledge to get the best output for their clients. The RICS in the UK is very active in providing rules and guidelines to develop and maintain professional standards among valuers (Amidu et al., 2019). However, along with education, training and professional guidelines from the RICS, valuers develop heuristics or mental short cuts over time that allow them to use the market information most effectively and in a timely manner to provide their judgements on valuation. The valuation practice is known as both 'an Art and a Science', science because of the use of economic theories, mathematical calculations and structured approaches, and art because of valuers' decisions and judgements. The decision and judgment of valuers are essentially built from their experience and knowledge of the property market, and it is predominantly the use of heuristics (Warren-Myers, 2016). The accuracy of the valuation process, especially the market valuation which is based on comparison method (RICS, 2019b), is highly dependent on the accurate market comparison on the reliability, verifiability, availability, completeness, accuracy and timeliness of comparable transactions (Pagourtzi et al., 2003). Comparative method is a vital component for any valuation assessment (RICS, 2019b) and therefore it is significant for valuation practice. However, the comparative method is not a science, rather it requires the valuers to use their judgment and expert analysis (French & Gabrielli, 2004). Valuers' experience, opinion and knowledge of the market and its factors, therefore, becomes an important requirement for this approach (Warren-Myers, 2016).

2.7.3.1 Heuristics

Behavioural research has found a substantial amount of variance in valuations because of the use of heuristics or mental short cuts. For example, Bretton and Wyatt (2000) found individual valuer's

behavioural influences to be the main reason for such variance and many of these behavioural factors relate to heuristics. Therefore, the following section is dedicated to discussing the development and use of heuristics in real estate professionals.

The heuristics literature related to the valuation profession was originally developed from human problem solving or how decision-makers operate in complex environments where the outcome is uncertain. Modern theories of human decision making were developed by Newell and Simon (1972) and Simon (1957, 1978). An important finding of these researchers was to identify, human beings have limited processing capacity, which can have multiple consequences in terms of how decisions are made. Human beings need to go through the process of information reduction, which can be a problem. To process information in a highly selective manner and to make it more effective, some form of heuristics process is carried out (Evans, 1990). Heuristics or mental short cuts are defined as rules or patterns which help reducing the complexity of decision making (Wofford, 1985). Humans facing complex decision making are often found to have resorted to heuristics (Tubbs et al., 1990). When properly applied, it can reduce a substantial amount of time to search information and complete the task (Hardin, 1997). It can be argued that the ability to use heuristics can be an indication of intelligence (Newell & Simon, 1972).

Though heuristics and judgments in valuation professionals is a normal process that develops with time and experience and helps valuers achieve more effective decision making, behavioural theory suggests decision making using heuristics is not always fully rational and is subject to biases. Property literature suggests cognitive short cuts or heuristics can affect value judgement (Levy & Frethey-Bentham, 2010). Behavioural property studies show certain glitches related to property valuation and valuers' behavioural patterns, among which are valuers' appraisal bias, anchoring, valuation judgement based on emotion rather than calculation of risks and benefits and the tendency to focus on recent events. These heuristics or judgements are formed through gathering, analysing and interpreting various kinds of information over time. Other factors such as valuers' cultural differences and thought patterns may also play a vital role in forming these judgements (Bellman & Ohman, 2016).

The four main heuristics, the first three identified by Tversky and Kahnemann (1974) and the fourth added by Evans (1989), are:

1. the availability heuristics
2. the representative heuristics
3. the anchoring and adjustment heuristic

4. the positivity heuristic.

The availability heuristics include an experienced decision maker making decisions based on his/her experience with a similar type of problem or situation. Successful problem solving of a certain type will mean that the behaviour has been learned and it can be hard to alter. The representative heuristic, on the other hand, is similar to stereotyping where the decision maker identifies a problem with another event that he/she is familiar with, and assumptions are made that the problem is similar to the event seen previously. For the anchoring and adjustment heuristic, decision makers tend to arrive at an initial estimate of what the solution might be and then adjust the solution as more information is gathered based on the initial anchor. Finally, the positivity heuristic has been identified as people trying to find more information related to their initial beliefs and avoiding collecting information that can distort that belief (Amidu et al., 2019).

Valuation judgment and problem solving has been researched and found to be inconsistent compared to normative valuation process and this provides proof that valuers mainly use anchoring and adjustment heuristics (Tversky & Kahneman, 1974) which might be the reason that the majority of the real estate heuristics literature is directed towards examining anchoring and adjustment heuristics. Black and Diaz (1996), Diaz (1997), Diaz and Hansz (1997), and Diaz and Wolverson (1998) have studied different aspects of anchoring and the majority of the studies found evidence of anchoring. It is found to be stronger for commercial properties in unfamiliar markets (Hansz & Diaz, 2001) as well as in experimental situations (Gallimore, 1994). Also, when valuers expect weak market information, their initial anchoring is less likely to be changed (Salzman & Zwinkels, 2017). Anchoring is argued to be rational by Quan and Quigley (1991) in the context of uncertainty where there is a limited pool of recent pricing information available. Geltner (1993), on the other hand, identified two sets of factors explaining the smoothness and lagging associated with appraisal-based indices: one set on the production of individual appraisals and how appraisers behave, and the other on concerns on how appraisals aggregate to form an index. It is argued that appraisers anchor on past appraisals or pricing evidence rather than using contemporaneous information to estimate value (Crosby & Devaney, 2019). On the contrary, Bond et al. (2012) suggested smoothing in individual appraisals is not as great as found from analysis of index level data. The researchers suggested previous papers used too simple a model. Additionally, it is also suggested by Geltner et al. (2003) that anchoring on past appraisals is greater where transactional activities are less (less liquid markets). However, during an economic boom, the gap between appraisals and prices increases when transaction activities is often greater, which suggests it takes time to incorporate new information into appraisals (Crosby & Devaney, 2019).

A study by Harvard (1999) in the UK on commercial property valuers found valuers to reach an opinion very early in the valuation. Valuers are found to provide greatest credence to the most recently considered information and anchor their valuation on various reference points such as third-party value estimates, pending sales or mortgage amounts and recent transaction prices (Tversky & Kahneman, 1974). Northcroft and Neale (1987) found evidence of confirmation bias, which is to start from an initial opinion of value and adjust this value to find the final answer. Valuers are also found to use the last valuation figure as assistance for determining the results of the next one (Levy, 1997). Diaz (1997) also finds similar results in terms of irrational influence by previous valuations because of the presence of heuristics and concludes valuation to be a more reflective than evaluated exercise. Furthermore, Clayton et al. (2001) found that anchoring could be greater when a property is being appraised by the same appraiser. In the UK, appraisers have been sued or threatened with court proceedings by banks for appraisals during previous boom markets, which could be a reason why they might be expected to err towards under- rather than over-valuation (Crosby, 2000; Crosby & Devaney, 2019).

Knowledge of the property transaction price could also bias the collection or selection of comparable evidence and it can have a significant impact on the final value (Wolverton, 1996; Gallimore & Wolverton, 1997). Pending sales price and asking price knowledge can also cause significant bias (Black & Diaz, 1996; Wolverton & Diaz, 1996).

The use of heuristic-related behaviours was found to be more prominent for unfamiliar markets in these studies. Working in unfamiliar markets, a problem solver may rely on backward reasoning that allows him/her to start with a known result and then inspect the data to find the reason of the problem, which is also known as the deductive process (Holyoak & Nisbett, 1987). On the other hand, Simon and Simon (1978) describe the inductive process of problem solving by experienced professionals which involves forward reasoning that starts with data and builds into a hypothesis to identify the solution in a familiar setting. Both reasoning strategies are heuristics which allow a problem solver to search for a solution. To apply forward reasoning, a vast knowledge base is required along with short-term memory that allows for more efficient and accurate problem solutions. Arocha et al. (2005) observed forward reasoning used only in expert clinicians when novices rely mostly on backward reasoning. On the contrary, Gobet et al. (2004) found both experts and novices to mostly use forward reasoning and to use backward reasoning very rarely.

As indicated above, when applied properly heuristics may play a major role to “*reduce search time by providing for proper task definition and problem space generation*” (Hardin, 1999). There is a wide range of information available, however, to perform or function more effectively, the problem solver must quickly identify which data are relevant and what relationships are plausible (Newell & Simon, 1981). Based on this framework, Evans (1989) proposed that experience and training will help a problem solver to quickly identify task relevant information and their relationships. An expert has the ability to incorporate this knowledge into decision making. A certain level of expertise is required for the effective use of heuristics or else the existence and effect of heuristics can only be explained as general decision making (Hardin, 1999). Heuristics are known to create biases as explained above such as anchoring, confirmation bias, however, experience and feedback should mitigate most of the bias (Hogarth, 1981). Baron (1985) also concludes that heuristics biasing can be offset through experience, training and education. In the real estate valuation profession, too, use of heuristics is affected by training received by valuers and experience gathered over time.

The development of heuristics is considered as an important factor in valuation practice. A valuer normally practices under a senior colleague for several years, who assists in providing and guiding him to develop his knowledge and heuristics. However, as the market changes towards something new, for instance, the introduction of sustainability, valuers need to be able to develop new knowledge and be aware of market changes and the response and reflect it in practices (Warren-Myers, 2016). To do that, valuers need to acknowledge the change and turn off the traditional expert intuition to allow themselves to identify the effects of these changes so that they can build new concepts, expert opinions and strategic knowledge. This will help form new heuristics and reflect change within the valuation practices. However, valuers have been known to be slow to respond to market changes (Wyatt, 2013). Valuers’ experience of various properties and the market, the standards and guidance provided by the RICS as well as the CPD training that valuer are supposed to receive regularly should help them develop new heuristics to understand and reflect the changes.

Warren-Myers (2009) provided a model showing how the concept of sustainability can be built in a market evolution model interfaced with valuers’ knowledge. It explained that, with time, valuers will develop their knowledge and experience of sustainable buildings. As the concept of sustainable building evolves over time, it will allow valuers how to develop the necessary intuition and heuristics regarding sustainability. However, though several studies suggest that the market transformation is happening, and sustainability is becoming mainstream at least in some markets (Fuerst et al., 2017), the question remains as to what extent valuers are currently building their

knowledge based on their experience of sustainable buildings in the UK. Another study in Australia (Warren-Myers, 2011) tested whether younger valuers are more knowledgeable on sustainability issues than senior valuers, as younger valuers are being actively educated on these. However, the results suggested the opposite. Senior valuers were found to be more knowledgeable on sustainability, sustainability rating tools as well as market dynamics (Warren-Myers, 2011), suggesting that real world experience plays a more significant role in heuristics development than education alone.

Though certain sustainability factors are the same as traditional building attributes, for example, locational attributes, the term sustainability was arguably introduced to valuers in 2011 with the publication of the Guidance note (GN) (RICS, 2011), however the GNs are not mandatory to follow. The first-time sustainability was mentioned in a Red Book was in 2014. Since then, valuers have been advised to collect data on sustainability and comment on sustainability factors when appropriate, but the RICS also cautioned valuers regarding the use of the term “sustainability” as no universal definition could be found. Though the concept of sustainable buildings is not new, it is still not considered a norm other than the prime commercial property market. Therefore, it can be argued that the inclusion of sustainability in the valuation process is still new and to some extent unfamiliar to valuers. Hence, valuers are arguably still developing their experience, knowledge and heuristics on sustainability and its factors. As explained above, literature suggests valuers are most likely to use their heuristics in unfamiliar situation such as this (Gallimore, 1994). Using the heuristics to identify sustainability attributes and their effect on value can be arguably more effective for the more experienced valuers as literature suggests experience has an important role to play in developing heuristics.

2.7.3.2 Other factors

Aside from the factors that have already been considered, other reasons have been identified in literature for variation in professional valuations. Bretton and Wyatt (2000) listed the reasons behind valuation variance, one of the major reasons being client influence. Several academic researchers suggested valuers’ advice is not always independent of clients’ attachment (Klamer et al., 2017). Several studies, such as Levy and Schuck (1998), Kinnard et al. (1997), Harvard (1999), Crosby et al. (2018), Klamer et al. (2019) have found evidence of client influence. Kinnard et al. (1997) found valuers can be under significant client pressure, especially from clients like mortgage brokers and bankers. A significant relation between clients’ size and likelihood of valuers revising valuation could be found in this study. Clients were also found to threaten to employ other valuers if valuers are not ready to provide the required value (Levy & Schuck, 1998). For more important

valuation, where a transaction may be dependent on valuation, clients may exercise more pressure. Financially stronger clients are more likely to attain their desired valuation than clients in poor financial condition (Levy & Schuck, 1998). Harvard (1999) suggests inappropriate instructions from clients to be another reason for these variances. Klamer et al. (2019), on the other hand, found evidence of less information verification among highly ranked valuers compared to lower ranked valuers because of personal connections. Crosby et al. (2018) also found evidence of client influence (institutional clients) during the financial crisis of 2007.

Another reason for valuation variance includes the valuation methodology and the type of property being valued. A complex property valuation such as a multi-let property with different sorts of leases provides more opportunities to use various techniques. At the same time, the purpose of valuation will have an impact. A valuer valuing an asset for sale purposes might be motivated to provide a higher figure than if it were for a purchase of the same property (Bretten & Wyatt, 2000). The impact on valuation methodology is therefore dependent on the type of property being valued as well as the purpose of valuation. Even if the correct valuation method has been adopted, valuation variance can still occur if the basis of data collection is flawed (Taylor, 1995).

2.8 Literature gap

The literature review discusses two strands of literature, the first being the changes to the market because of the introduction of sustainable building and its attributes, and the second being the valuation process and valuers' behaviours and uncertainties surrounding valuation processes. From these two strands of literature the following evidence as well as gaps in literature could be identified which will be addressed in this research:

Literature topic	Evidence from literature	Gap in the literature
Strand 1		
Increase in demand	Evidence of increase in demand for sustainable attributes in buildings: Fuerst et al. (2017); Jackson & Orr (2018a, 2018b & 2021); JLL (2020); WGBC (2013)	No recent study could be found that investigated if commercial valuers in UK are adapting their practices to changing demand and, if so, how. The only UK study that addresses this gap is Sayce (2018). This is a book chapter which drew empirical evidence from a previous paper, Michl et al. (2016).
Regulative and legislative pressure	MEES Energy Act 2011 Climate Change Act 2008	The only evidence is Sayce and Hossain (2020), which investigates the initial impacts of MEES on valuation and investment practices in the UK. However, it does not look into the effects of all environmental legislation or associated risks on commercial property value and how valuers are adopting their practices to acknowledge that risk.
Strand 2		
Pressure from professional regulation by the RICS	RICS Red Book (2020a) RICS (2011) RICS (2018a) RICS (2018b)	The only evidence is the Michl et al. (2016) study that uses the data collected from 2012. Since then, a lot of professional and legal regulations have changed, of which the impact on valuation practices has not been researched.

Inclusion of sustainability attributes in market value and investment value reporting	Theoretical research suggests a relationship between sustainability attributes and market and investment value: Sayce & Ellison (2003a & 2003b); Sayce et al. (2004a & 2004b); Lorenz et al. (2006); Lorenz & Lutkendorf (2008), IVSC (2021)	The only known research in the UK is Michl et al. (2016), which suggested limited market and investment value impacts. Since then, no other research has been undertaken to investigate if valuers are making those connections and reflecting on market and investment value.
Valuers' behaviour and valuation uncertainty	Evidence of valuers being influenced by clients	The extent to which valuers' behaviours to consider sustainability in valuation is being influenced by clients' instructions, purposes of valuation or any other factors is not researched.

Table 2.4: List of gaps in the literature

Source: Made by the author

2.9 Chapter conclusion

This chapter discussed two strands of relevant literature, the first on sustainable buildings and its attributes. Within this strand, the market pricing of sustainability, demand for sustainable properties and legislative implications are also discussed. The second strand of literature discussed valuers' role, the background and heuristics and how that can play a role in valuation practice. The next chapter, research framework and methodology, discusses the research questions that are drawn from the above table along with the conceptual frameworks and the methodology for the thesis.

Chapter 3: Research Framework and Methodology

3.1 Introduction

This chapter starts with the research questions that were pulled from the literature gap presented at the end of chapter 2, literature review. It then moves on to explain two models that were derived from various studies on sustainability, such as pricing studies, risks and benefits related to sustainability as well as legislative, regulatory and physical risks of climate change and heuristics literature around valuation practices. The first model explains a theoretical effect of demand drive, legislative and physical risk of climate change and sustainability that will impact on market pricing of properties which will eventually inform valuers. Additionally, the RICS standards and guidance can also have an impact on valuation reporting.

The second model, on the other hand, discusses the implications of experience in valuers and how that can help develop heuristics over time. The development of heuristics is a normal process for valuation professionals that help them build mental short cuts. It is argued that more experienced valuers will be able to identify the importance of sustainability and its impact on value faster than novice valuers because of their strong connection to heuristics.

The chapter then moves on to discuss the research philosophy of this thesis. Following that, it discusses the rationale for using a mixed methodology that combines one quantitative method (online survey) and one qualitative method (semi-structured interviews). A transformative research design has been used to triangulate the results from two methods. Each of the methods are then discussed in detail explaining the questionnaires, pilot study, sample selection process and data analysis. Finally, the chapter ends with key limitations of the methods and ethical considerations.

3.2 Research questions

Based on the gaps that have been identified in Table 2.4, the following research questions are drawn.

Research questions:

1. To what extent do commercial property valuers see sustainability as influencing the value drivers' spectrum, which they reflect in valuation processes?
 - (a) Are sustainability attributes affecting market value implicitly or explicitly?
 - (b) Are sustainability attributes affecting investment value implicitly or explicitly?

2. How are commercial property valuers adapting to the changing requirements of the commercial property market in the UK as a result of increasing demand, legislative and regulative pressure for sustainability?
 - (a) Is there validity in the perception that there is a gap between what UK commercial property valuers are reporting in terms of linkages between sustainability certification/characteristics and the price differentials revealed by pricing studies?
 - i. Are valuers aware of pricing studies?
 - ii. Do they think there are premiums/discounts present because of present/absence of certification?
 - iii. Are there any other value impacts of certification such as low void period, tenant covenant etc?
 - iv. Do they conduct any value adjustments for the absence/presence of certifications?
 - (b) How are valuers interpreting and implementing RICS requirements in their day-to-day practice and changing their role accordingly?
 - i. To what extent do valuers use RICS publications on sustainability and valuation? What is the role of standards vs. guidance?
 - ii. How much data do they routinely collect related to sustainability as advised by the RICS? Are there inconsistencies in collecting data between valuers?
 - iii. What is the source of these data?
 - iv. How far would they go to actively collect data?
 - v. Has sustainability data collection become a part of the due diligence process?
3. How do valuation factors (clients' influence, purpose of valuation) affect sustainability consideration?
 - (a) Does the purpose of commercial property valuation matter in sustainability considerations?
 - (b) Do commissioners of valuers play a major role in sustainability consideration into valuation?
 - (c) What is the role of valuers' experience in sustainability consideration?

3.3 Model 1: Sustainable buildings' value creation

Strauss and Corbin (1990) identified the two main differences between a theory and descriptions. Firstly, theory uses concepts, then using these concepts similar data can be grouped and given conceptual labels, which helps interpret the data. Secondly, concepts are supposed to be related to relationships within the theory which can help organize the data according to themes. In other words, qualitative studies aim to describe and explain the patterns in relationships that can only be achieved by setting conceptually specified categories (Mishler, 1990). Many academic studies develop conceptual frameworks for explanatory studies through a literature review (for example, see Jabareen, 2008 and Mohamed, Olfa & Faouzi, 2014). Similarly, for this research two conceptual models, model 1 and model 2 have been developed from the literature review and these are discussed below. These models are then used as the basic framework for coding the qualitative components of the data (Chapter 4 and 5). Models are then revisited again in Chapter 6.

Before the models are discussed, the theory of 'Smart Regulation' is introduced in this section as this is relevant to the discussion of the conceptual framework of model 1. Gunningham, Grabosky and Sinclair (1998) were the first to advocate the concept of Smart Regulation which was later refined by various publications by Gunningham and Sinclair (1999a, 1999b, 2002). The theory refers to a regulatory pluralism that adapts "*flexible, imaginative and innovative forms of social control*" (Gunningham and Sinclair, 2017, p. 133). In other words, it not only harnesses the power of government but also welcomes contributions from businesses as well as third parties through self-regulation and co-regulation. Under this theory the assumption is to use multiple rather than single policy instruments with a broader range of regulatory actors who can provide a more effective and efficient form of control. Therefore, rather than having a conventional regulation where government acts as the regulator and businesses as regulated entities, more complementary combinations of instruments and participants are adapted to meet the essentials of specific environmental issues (Gunningham and Sinclair, 2017, p. 133). Empirical research on regulation provides evidence that many actors can influence the behaviour of regulated groups (Rees, 1988, p. 7) and therefore, informal social control of self-regulation can be more effective than formal regulations. Hence, Smart Regulation suggests, it is important for the government to understand the motivations of these various actors whom they seek to control and use these broader regulatory influences and interactions as part of the regulation (Gunningham and Sinclair, 2017). These actors can range from commercial institutions and financial markets to industry associations, internal environmental management systems, culture and civil society in many different forms.

The rationale to use this theory in the context of this research are several. This research has a focus on climate change and sustainability issues and the theory of Smart Regulation has been known to specifically address environmental issues (Gunningham and Sinclair, 2017, p. 133). Moreover, it embraces the use of informal social control as well as formal regulations and therefore, shows that the combination of both can be used more effectively to address and control social issues. The theory also explains how formal regulations as well as industry self-regulation can be best implemented which is applicable in the discussion around mandatory vs. voluntary sustainability certifications.

To further discuss how these new forms of regulation work a three-sided *Enforcement Pyramid* is used. It argues regulation may also be enforced through second and third parties who can act as surrogate regulators. The three faces of the pyramid are therefore the three parties, the government and the second and third parties, who can escalate or de-escalate their intervention depending on the industry's response to control. The second and third parties can effectively use the form of self-regulation or various actions within an industry to regulate and change behaviour of the participants of the industry (Gunningham and Sinclair, 2017). For example, the UK government is known to use nudge tactics to stimulate demand through the requirement of voluntary certification (BREEAM) for building sustainability (Hossain, Van de Wetering, Devaney and Sayce, 2023) through third parties.

The following pyramid (figure 3.1) is an adaptation of the original Enforcement Pyramid that shows several stages of Smart Regulation involving several parties. At the base level, voluntary compliance such as BREEAM is used to stimulate demand for sustainable attributes in buildings. At the second level self-regulation within the industry can be enforced. For example, for prime properties in the UK literature suggest having BREEAM certification has become an industry norm (Fuerst et al., 2017). Therefore, the industry is setting its own standards to improve and control building quality as well as sustainability. At the third level, co-regulation between various parties and the government can be expected. The introduction of MEES can be mentioned as an example. Before each trajectory of MEES has been set and announced the UK government has consulted industry experts and based on their suggestions, trajectories of MEES were set (Sayce and Hossain, 2020). In upper levels of the pyramid strengthening of regulation and penalties can be expected as industry fails to comply at the earlier levels. As such, not being compliant with MEES can result in penalties and over time it is expected, that the government will strengthen the MEES.

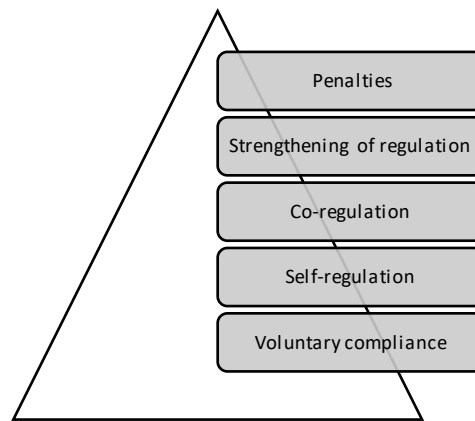


Figure 3.1: Enforcement Pyramid for environmental regulation using Smart Regulatory framework

Source: Author’s adaptation of the Enforcement Pyramid depicted in Gunningham and Sinclair (2017, p. 136)

The debate on mandatory vs. voluntary certification is therefore relevant here. Voluntary certification and self-regulation can create a demand for and tendency towards environmental supervision (Gabe, 2016) and can be seen as encouragement (Bloggs, 2013), whereas mandatory certification which are used at the upper levels of the pyramid may be considered as punishment by market participants (Bloggs, 2013). On the contrary, mandatory certification help create accountability that cannot be achieved through voluntary certification (Arnold, 2022) whereas the problem with voluntary certification is that it covers behaviours that are discretionary (Hughes and Crosby, 2012). Boddewyn (1985) argued each industry has a sense of rules on behaviour that are accepted and enforced. Self-regulation can implement them without any hostile response from legal solutions (Hughes and Crosby, 2012). Within the UK, the mandatory certification now is the EPC for the built environment that is tied to MEES. However, EPCs have been criticised by practitioners for not being appropriately addressing carbon emissions (Sayce and Hossain, 2020). The RICS has thus recommended for EPC reforms (RICS, 2022b). On the other hand, EPC only impacts on investment properties not owner-occupied properties which needs to be addressed to decarbonise the built environment. The CCC (2023) has therefore recommended the UK government to develop new policies to decarbonise owner-occupied properties. To add to the debate between mandatory vs. voluntary certification, usually mandatory certification focuses on only one issue, for example, in the UK through EPC the government is focused on reducing carbon emission and making properties energy efficient. On the contrary, voluntary certifications focuses on multiple sustainability factors. For example, BREEAM in the UK tackles several issues related to sustainability in buildings such as energy, health and well-being, innovation, land use and ecology,

materials, management, pollution, transport, waste and water (BREEAM, 2018). Hence the scope of self-regulation can be wider to attempt to address multiple aspects of the market (Hughes and Crosby, 2012). Therefore, it is important for the policy makers to understand which form of certification should be used and will be seen as appropriate. Governments have been criticised for their lack of interest to ascend the Enforcement Pyramid for fear of offending businesses (Gunningham and Sinclair, 2017). Within the UK, the government has been known to encourage the property industry to develop systems of self-regulations rather than legislating them (Hughes and Crosby, 2012). An example of arguably unsuccessful self-regulation in the UK was reported by Hughes and Crosby (2012) for commercial leases where it was suggested that the first Code of Practice for commercial leases was poorly disseminated without any impact on the operations of the property market whereas though the second and third codes were disseminated better, they were not directly impacting on lease practices (Hughes and Crosby, 2012). For MEES too lack of enforcement was found by Sayce and Hossain (2020) which could lead to large scale non-compliance. Therefore, without ascending the Enforcement Pyramid the full potential of the Smart Regulation cannot be achieved, that is to design complementary policy mixes to harness third parties as co-regulators and combining public and private enforcement.

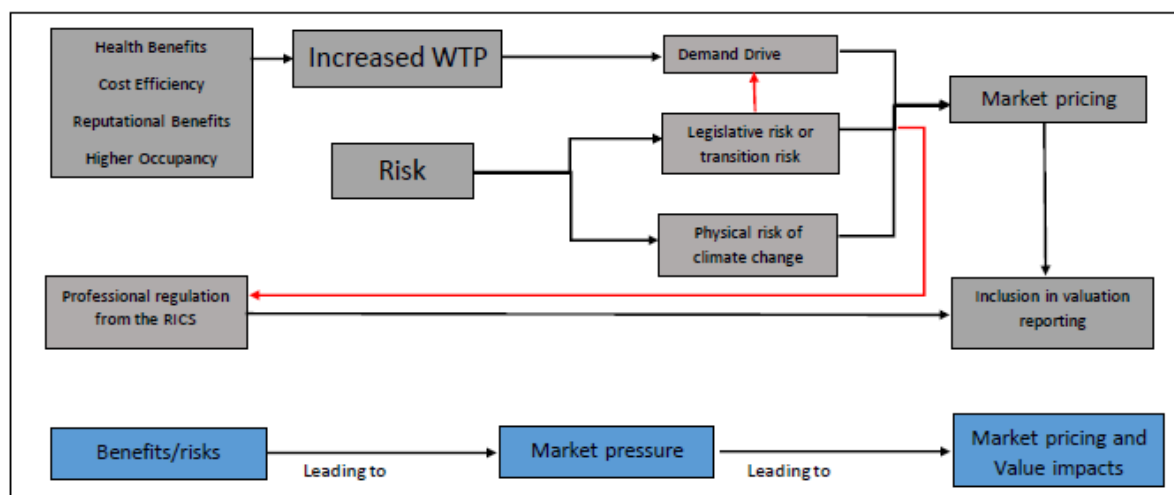


Figure 3.2: Model 1: Combined effect of demand drive, legislative and physical risk of climate change and regulative pressure from the RICS on market pricing and property value.

Source: Created by Author from literature review

The above figure is drawn from the literature review discussed in the previous chapter. Sustainable buildings provide certain benefits as found in the literature that can create increased WTP. The

increased WTP is expected to increase demand for these sorts of properties which should impact on market pricing. Some evidence of increasing demand (Fuerst et al., 2017; Jackson & Orr, 2018a, 2018b; JLL 2020; WGBC, 2013) and market pricing are already evidenced in the literature (Fuerst, van de Wetering & Wyatt, 2012; Chegut, Eichholtz and Kok, 2013; Fuerst and van de Wetering, 2015).

Additionally, climate change possesses two types of risks. The first one, legislative or transition risks (Clayton et al., 2021), is associated with changing legislation (such as MEES) to address reduction in carbon emissions. And physical risk (Clayton et al., 2021) is associated with increasing natural disasters and harming properties physically because of climate change such as floods, wildfires and other climate change related natural disasters. Because of physical risk it is likely that high risk properties will face difficulties to secure insurance (International climate change risk analysts XDI, 2021; Kenney et al., 2006; Lamond et al., 2019). On the other hand, transition risk or legislative risk such as MEES can impact on a property's let ability. As MEES becomes stronger over the coming years, there is a chance that some properties will become stranded or face brown discount (Muldoon-Smith & Greenhalgh 2019; Booker, 2019; Sayce & Hossain, 2020) if they are not upgraded to the minimum standard.

The combined effect of increasing demand and various risks should impact on the market pricing. Some evidence of market pricing could be found in the UK market (Fuerst, van de Wetering & Wyatt, 2012; Chegut, Eichholtz and Kok, 2013; Fuerst & van de Wetering, 2015). The market pricing, either in the form of rent or capital pricing, should act as evidence for the valuers which they can reflect and include in valuation reporting.

Furthermore, the professional regulations from the RICS provides a strong recommendation for valuers to collect data on sustainability (RICS 2013, 2018a, 2018b, 2020a, 2022). As a result of that, valuers' due diligence in terms of collecting data on sustainability may have been impacted on. This can again have an impact on valuation reporting.

To explain the model through the theories of Smart Regulation and the Enforcement Pyramid explained above, other parties such as the RICS and the industry itself can act as the second and third parties of the pyramid to ensure the effectiveness of the regulation, MEES (transition risk). It can be argued that the UK government used the first two bases of the pyramid already within the last decade or so to increase demand for sustainability attributes within buildings through voluntary certification and self-regulation. However, as the climate change impacts are becoming more

apparent and scientific studies are urging for more drastic actions (IPCC, 2023), the later stages of the pyramid is now applied through the introduction and further strengthening of MEES. Still the voluntary certifications like BREEAM will continue to be relevant as it covers wider sustainability issues whereas MEES through EPC covers only energy performance. As regulation like MEES is introduced from the government, behavioural responses from regulatory bodies such as RICS as well as industry partners such as investors, owner-occupiers and tenants are expected. Investors are expected to improve their properties to the MEES standard to avoid penalties and the risk of not being able to let. Recent pilot study on MEES impact showed vanguard investors are already taking actions to address MEES (Sayce and Hossain, 2020). Additionally, the RICS is expected to advise their members to learn and actively gather knowledge on MEES and implement it in their day-to-day due diligence. An insight paper on MEES was therefore published by the RICS to advise valuers to collect data, analyse and report them (RICS, 2018a) though it is up to the valuers to consider to what extent they will consider EPC as these are advice not standards. As an example of changing behaviour among valuers, Australia can be mentioned where Warren-Myers (2022b) found an increase in valuers' knowledge development and perception among assessment process and value relationship after mandatory rating system (NABERS) was implemented. Therefore, the most important component of the above model is expected to be the transition risk which not only impacts on pricing and value but also informs and modifies the behaviour of other parties in the industry and enables them to become enforcer themselves through changing behaviour. This is shown through the red lines in the model which indicate how demand may be informed and altered as well as potentially strengthening the professional regulation on sustainability from the RICS. These changes are expected to trigger a response from professional valuers to reflect sustainability in valuation reporting.

To what extent each of the items in the above model was found to have an impact on valuation reporting is shown in chapter 6 (discussion). The discussion chapter combines the data from two methods – online survey and semi-structured interviews – to triangulate the results to show impacts on valuation reporting.

3.4 Model 2: Relationship between heuristics, experience and sustainability factors identification

The literature on heuristics suggests heuristics and judgments in valuation professionals is a normal process that develops with time and experience and helps valuers for more effective decision making (Levy & Frethey-Bentham, 2010). Valuers can take either forward (Simon & Simon, 1978) or backward reasoning (Holyoak & Nisbett, 1987) to solve a problem. However, as explained

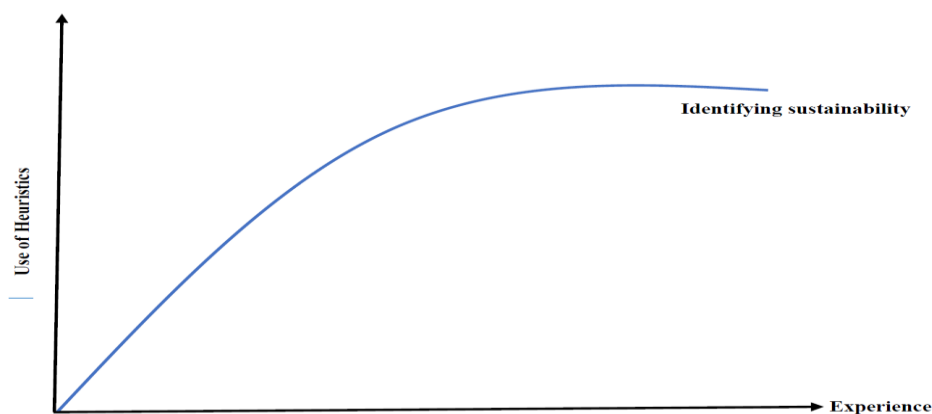
above, to use forward reasoning a vast knowledge base is required along with short-term memory that will allow for more efficient and accurate problem solving (Simon & Simon, 1978). More experienced valuers are more likely to have that capability to apply forward reasoning that includes collecting data and building that into hypotheses to identify the solution in a familiar setting (Arocha et al., 2005). To function effectively, a problem solver needs to identify quickly which data might be important and the relationships that might be plausible in between these data (Newell & Simon, 1981). Experience and training can provide the assistance to do that (Evans, 1989). More experienced valuers are more likely to handle various properties and value under different circumstances and markets which would train their mind to develop the expertise to identify relevant data fast and the relationship between the data.

Additionally, it is also suggested in the literature that heuristics are mostly used in unfamiliar markets by experienced professionals to solve problems (Holyoak & Nisbett, 1987). On the other hand, the use of heuristics also opens up the possibility for biases such as anchoring, adjustments, confirmation biases (for example, Black and Diaz, 1996; Diaz, 1997; Diaz & Hansz, 1997; and Diaz & Wolverton, 1998 etc.). However, Hogarth (1981) and Baron (1985) concluded that these biases can be offset through experience, training and education.

The inclusion of sustainability in the property market is not a new issue, though, yet it is not known if valuers are treating the inclusion of sustainability attributes as something familiar or unfamiliar. Though pricing and premium studies reviewed in section (Section 2.3) suggested the presence of sustainability pricing occurring in the commercial property market at least for certified buildings (Chegut et al., 2013; Fuerst & van de Wetering, 2012 & 2015 etc.), it is not known if valuers consider these factors in their valuation, they are heavily criticised in literature for not doing enough (Sayce, 2018). Therefore, it is argued that valuers may treat sustainability attributes and their impact on value as an unfamiliar market condition.

As the literature suggests, in an unfamiliar market more experienced professionals are better equipped to use heuristics and make effective decisions (Holyoak & Nisbett, 1987). Experienced professionals are likely to undergo various problems while working under different circumstances which allows them to develop the heuristics over time. For example, a valuer with 20 years of experience is more likely to have undertaken varieties of valuation services for various properties and markets than a valuer with only five years of experience. These experiences from different markets and properties will allow an experienced valuer to develop his/her heuristics on the market movements over time. Warren-Myers (2011) found evidence of this in the Australian market, where

due to the complexities present in sustainable properties, experienced valuers are more likely to undertake valuations for such buildings. Within the same study it was also found senior valuers with more than 5 years of experience had better knowledge on sustainability, sustainability assessments as well as market dynamics of commercial properties than younger valuers with less than 5 years of experience. The experience of valuers develops their knowledge on markets, its dynamics and nuances that can provide the heuristic basis of valuers that they can use to assess value (Warren-Myers, 2011). Warren-Myers' (2009) model predicted market maturity for sustainable buildings will help increase and develop valuers' heuristics on sustainability. However, later studies in Australia found that even though significant development of sustainability in the property market can be seen, valuers' knowledge has not developed to the same extent (Warren-Myers, 2016). Rather, introduction of mandatory disclosure legislation using the rating NABERS in Australia was found to be more effective in developing valuers' knowledge on sustainability certification tool (Warren-Myers, 2022b). Therefore, to develop heuristics on sustainability several factors may be at play, experience can be an important factor to develop heuristics as previous studies have found as well as mandatory legislation, education and training. As the market shifts towards a more sustainable future, an experienced valuer is more likely to identify that and use that knowledge for future valuations. Therefore, it is suggested in the following model that there is a relationship between the use of heuristics effectively to identify sustainability attributes and its impact on value with the level of experience of valuers. Valuers with more experience will be able to identify sustainability attributes and their impacts on value more effectively, whereas valuers with less experience may not. With increasing experience, valuers are expected to develop their heuristics and use them more effectively to identify sustainability attributes and their impacts on value.



Figure' 3.3: Model 2: Relationship between heuristics and experience to identify sustainability attributes and their impacts on value.

Source: Created by author from literature review

The above model shows that as the experience of a valuer increases and he/she is exposed to various types of valuations, markets and circumstances it will help develop heuristics over time. The experience, therefore, can be useful to identify sustainability attributes and their impacts on value. However, use of heuristics can be susceptible to various kinds of biases such as anchoring, confirmation bias as discussed above. This thesis is an attempt to investigate if more experienced valuers are able to identify sustainability factors better than less experienced valuers. Additionally, it is also investigated if they are exposed to the biases mentioned above while using their heuristics. The findings are reported in chapters 4 and 5. The model is revisited again in chapter 6 (discussion) to incorporate and triangulate findings from both methods (online survey and semi-structured interviews) along with the literature.

3.5 Research philosophy

Philosophical worldviews are basic sets of beliefs that guide action (Guba, 1990). Others have explained them as paradigms (Lincoln, Lynham, & Guba, 2011; Mertens, 2010), as epistemology and ontologies or as research methodologies. According to Creswell (2014), worldviews are general philosophical orientations that are used as the nature of research. Worldviews help researchers to choose from quantitative, qualitative or mixed methods based on the approaches in their research. According to Creswell (2014), there are four widely discussed worldviews in literature: Postpositivism, Constructivism, Transformative and Pragmatism.

Postpositivism is the traditional form of research where a more quantitative than qualitative approach is used. It is also known as a scientific method or research where empirical observations and measurements are performed to test a theory. Knowledge is conjectural, so finding absolute truth is difficult, therefore, researchers seek to indicate a failure to reject the hypothesis (Creswell, 2014).

Constructivism, also known as social constructivism, is typically used as an approach for qualitative research. It is believed that people seek to understand the world they live and work in. They try to find meanings of their experiences and researchers try to understand the complexities of different meanings. Open-ended questions are mostly used to better understand life settings of respondents. It also addresses social, historical, cultural norms, because that influences people's lives (Creswell, 2014).

Transformative viewpoints emerged during the 1980s and 1990s from individuals who felt the postpositivist approach did not include marginalised individuals in our society, for example, feminists, racial and ethnic minorities, people with disabilities, indigenous and postcolonial people. The research includes politics and political change agendas to challenge social domination. Therefore, the research contains an action agenda to bring in changes to the lives of the respondents. Other specific issues are also addressed, for instance, empowerment, inequality, oppression, domination, suppression and alienation (Creswell, 2014).

The **pragmatic** worldview was introduced by pragmatists. It arises from actions, situations and consequences rather than antecedent conditions in postpositivism. Research with this approach is an effort to investigate what works and to find the solutions to problems. Researchers using this method focus on the research problems and use all sorts of available methods to understand the problem, both qualitative and quantitative. Using mixed methods, it focuses on the research problem and gathers knowledge about the problem (Creswell, 2014).

To understand valuers' work in the commercial real estate sector in the UK and their knowledge base of sustainability, a pragmatic approach is believed to be most suitable. Though valuers use mathematical skills to value a property, the process of valuation is not only a science but also an art. Valuers frequently use their judgements and heuristics to value properties. Thus, the process of valuation cannot be studied using only a quantitative method. Additionally, though social and cultural norms play a vital part in valuation, a complete qualitative approach is also not suitable for this study. Previous studies used quantitative survey methods to investigate these issues (for example, Michl et al., 2016; Warren-Myers 2011, 2013, 2016) as well as qualitative methods (for example, Le & Warren-Myers, 2018). Additionally, there are other academic studies that were undertaken to study various aspects of valuers' work and the valuation process which was undertaken using the qualitative approach (such as Levy & Schuck, 1999, 2005; Amidu & Boyd, 2018; Amidu et al, 2019) and the quantitative survey approach (such as Gallimore, 1994; Kinnard et al., 1997; Worzala et al., 1997; Gallimore & Wolverton, 2000). Therefore, a mixed method with a pragmatic view that combines quantitative and qualitative methods will allow the researcher to approach a problem and use all available methods to find solutions. In this case, the research problem is to understand valuers' perception of sustainability and how they use that understanding to reflect it within the valuation methodology and adapt to the market changes and transformations related to sustainability. A quantitative survey will allow the researcher to identify the general practices within the UK, whereas qualitative semi-structured interviews will provide deep understanding of the research problem.

3.6 Mixed methodology research design

“.....mixed methods resided in the idea that all methods had biases and weaknesses, and the collection of both quantitative and qualitative data neutralized the weakness of each form of data.” – (Creswell & Creswell, 2018, p. 14)

Therefore, mixed method research involves collecting both quantitative and qualitative data to triangulate findings and address the research questions. It is a systematic integration of both quantitative and qualitative data (Green, Caracelli & Graham, 1989; Creswell & Creswell, 2018).

As this research will use a combination of quantitative and qualitative methods to collect and analyse data, it will be considered as mixed methods research. The research is carried out in multiple phases and is a combination of several methods to provide a triangulated picture. Specific research methods allow us to understand and explain from a specific perspective. However, combining several methods can broaden the dimensions and show a more complete picture and assist to better understand and achieve our research goals. (Tashakkori & Teddlie, 2003)

The first phase of this research was to conduct an online survey. This survey had quantitative questions, but also some open-ended (qualitative) questions. The reason for conducting the online survey was to understand the general practices related to sustainability in the UK commercial property market. The last similar study was conducted by the RICS in 2012 and reported by Michl et al. (2016), where not much impact could be found in terms of sustainability data collection, analysis, or reporting. However, the introduction of new rules and regulations (such as MEES in 2018) and new guidelines by the RICS (RICS 2013, 2018a, 2018b, 2020a, 2022) along with investors' increasing interest (Jackson & Orr, 2018a, 2018b) in sustainability may have now changed the situation.

The second phase was to conduct several in-depth interviews to gather deep understanding of the research questions and answer any additional questions that may have arisen from phase 1. Valuers are often influenced by their clients (Crosby et al. 2010, 2018), and clients' demand can be a substantial value driver. Therefore, this stage will include not only valuers, but also commissioners of valuers to understand the current demand of the market and how valuers are reflecting it. Three commissioning clients' groups were interviewed: investors, lenders and owner-occupiers.

Creswell et al. (2003) summarized the range of classifications for mixed methods in Tashakkori and Teddlie (2003) and it was later updated by Creswell and Plano Clark (2011). Several authors have identified ways to classify mixed methods; the most appropriate one for this research is the **transformative design** explained by Creswell and Plano Clark (2011). It is a combination of both quantitative and qualitative methods where data is collected in phases. In the first phase, quantitative data is collected, in this case the online survey. And in the second phase, qualitative data is collected, in this case the semi-structured interviews with valuers and commissioning clients.

Figure 3.3 below shows the transformative design for this research.

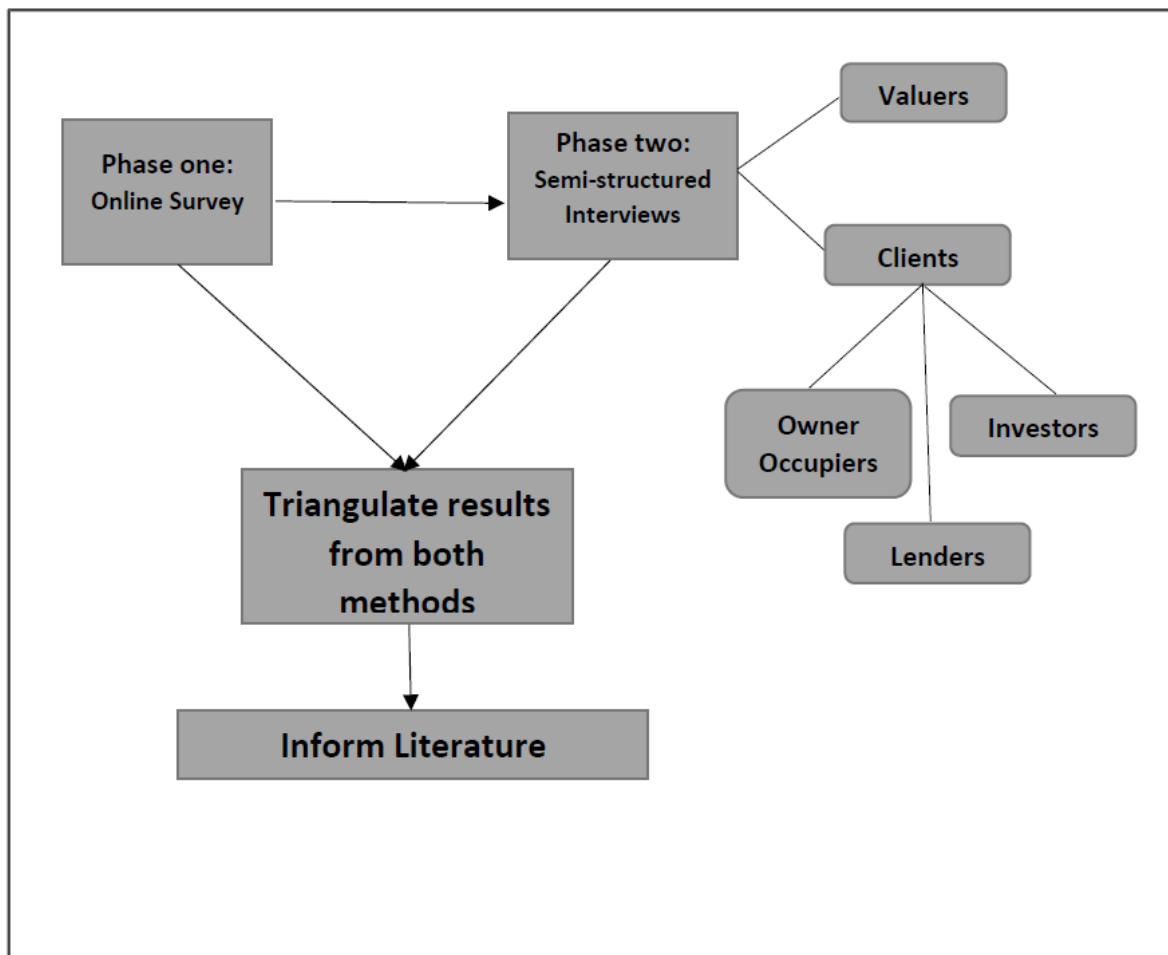


Figure 3.4: Transformative research design

Source: Produced by the author

The first phase includes an online survey to understand the general practices of the valuation professionals in terms of sustainability data collection, analysis, reporting, awareness of the RICS guidelines on sustainability and the importance of sustainability attributes to clients. After the first

phase is completed, results are carefully analysed to determine interview questions. Through interviews certain factors are emphasized that were not possible to address through the online survey. For example, data collection related to sustainability attributes will be addressed through survey but the extent to which valuers are willing to actively collect data will be identified through interviews. Several research sub-questions, which are not possible to address in an online survey, are also addressed during the semi-structured interviews.

Table 3.1 has a detailed list of research questions and research sub-questions and the way these were addressed through different method.

Research Questions	Survey	Interview
1. To what extent do commercial property valuers see sustainability as influencing the value drivers' spectrum, which they reflect in valuation processes?		
<ul style="list-style-type: none"> • Are sustainability attributes influencing market value implicitly or explicitly? 	×	×
<ul style="list-style-type: none"> • Are sustainability attributes influencing investment value implicitly or explicitly? 	×	×
2. How are commercial property valuers adapting to the changing requirements of the commercial property market in the UK as a result of increasing demand, legislative and regulative pressure for sustainability?	×	×
a. Is there validity in the perception that there is a gap between what UK commercial property valuers are reporting in terms of linkages between sustainability certification/characteristics and the price differentials revealed by pricing studies?		×
i. Are valuers aware of pricing studies?		×
ii. Do they think there are premiums/discounts present because of the presence/absence of certification?		×
iii. Are there any other value impacts of certification such as low void period, tenant covenant etc?		
iv. Do they conduct any value adjustments for the presence/absence of certifications?		×
b. How are valuers interpreting and implementing the RICS requirements in their day-to-day practice and changing their role accordingly?		
i. To what extent do valuers use the RICS publications on sustainability and valuation?	×	
ii. How much data do they routinely collect related to sustainability as advised by the RICS?	×	×
iii. Are there inconsistencies in collecting data?		×
iv. What is the source of these data?		×
v. How far would they go to actively collect data?		×
vi. Has sustainability data collection become a part of the due diligence?		×

3. How do valuation factors (clients' influence, purpose of valuation) affect sustainability consideration?		
<ul style="list-style-type: none"> Does the purpose of commercial property valuation matter in sustainability considerations? 	×	×
<ul style="list-style-type: none"> Do commissioners of valuers play a major role in sustainability consideration into valuation? 		×
<ul style="list-style-type: none"> What is the role of financiers? Do they care about a building's life, risk and other sustainability attributes? Has it changed how they evaluate the underlying asset's risk when lending? 		×

Table 3.1: Research questions and the way they are addressed through different methods

Source: Produced by the author

3.7 Rationale for mixed method

There are several reasons to choose mixed methodology for this research. They are explained as follows:

1. **Triangulation:** All methods have inherent biases and limitations, however using several methods can strengthen the validity of results. It is the use of several methods that offsets the biases of each method while investigating the same phenomenon. It acts as the core principle for triangulation (Greene et al., 1989). It is also described as *multiplism* by Cook (1985) and Mark and Shotland (1987).
2. **Expansion:** Another reason for selecting mixed method is expansion, which is extending the breadth and range of inquiry by using multiple methods. (Mark and Shotland, 1987; Greene et al., 1989).

As there are not many research studies regarding how valuers are incorporating sustainability in commercial property valuation, using mixed methods allows the researcher to approach the research problem from different angles and triangulate the findings. The online survey allows the researcher to understand the general practices undertaken by valuers in the UK commercial property market. However, the researcher also needs a deep understanding of valuers' and commissioning clients' perspectives. To get in-depth knowledge of valuers' work and thinking process the qualitative interviews are conducted that will help expand the quantitative survey results.

3.8 Phase 1: Online survey

As for the first phase of data collection, an online survey was deemed appropriate for this research. According to the Oxford Dictionary, a survey is "*an investigation of the opinions, behaviours etc. of a particular group of people, which is usually done by asking them questions*" (Oxford Learner's Dictionary, 2021). An online survey is conducted electronically, in this case through emails and the use of social media (LinkedIn). Online survey allows the researcher to reach a wide range of respondents within a short span of time and with a low cost. The challenges include sampling, low response rate, non-respondent characteristics, maintenance of confidentiality and ethical issues (Nayak & Narayan, 2019). Despite the weaknesses, the online survey allows the researcher to identify the general practices in terms of sustainability data collection, analysis and reporting undertaken by the commercial property valuers in the UK based on their responses. The weaknesses of this method are also offset by the fact that the results are later triangulated with the use of one more method of data collection, semi-structured interviews.

3.8.1 Online survey questionnaire

The questionnaire for the online survey was developed over a period of two months. Several iterations were undertaken. After each iteration the supervisors and the researcher sat together to determine the best way to ask questions that will address the research questions. After several iterations, the following questions were selected for the online survey questionnaire. A sample questionnaire is attached with this thesis, which can be found in Appendix 1.

Research Questions	Questions for online survey
<p>1. To what extent do commercial property valuers see sustainability as influencing the value drivers’ spectrum, which they reflect into valuation processes?</p> <p>(a) Are sustainability attributes affecting market value implicitly or explicitly?</p> <p>(b) Are sustainability attributes affecting investment value implicitly or explicitly?</p>	<ul style="list-style-type: none"> • Do you routinely report on the sustainability data you collect? • We have asked whether sustainability data are collected and reported by you as a valuer. Here we wish to establish whether and how you build in such data when calculating investment value or worth. (Seven sustainability attributes were provided: certification, energy and carbon, waste management, water management, quality of external environment, health and well-being and adaptability and resilience to climate change. Valuers were asked to identify value indicators through which these attributes may impact on value, the value indicators being: adjustment of rental evidence, estimate of rental growth, discount rate, rate of obsolescence, exit yield, none.) • Do you build in the following factors while calculating market value and, if so, how? (Seven sustainability attributes were provided: certification, energy and carbon, waste management, water management, quality of external environment, health and well-being and adaptability and resilience to climate change. Valuers were asked to identify

	<p>value indicators through which these attributes may impact on value, the value indicators being: adjustment of rental evidence, likelihood of voids, capitalisation rate, none.)</p>
<p>2 (b) How are valuers interpreting and implementing RICS requirements in their day-to-day practice and changing their role accordingly?</p> <ul style="list-style-type: none"> i. To what extent do valuers use RICS publications on sustainability and valuation? ii. How much data do they routinely collect related to sustainability as advised by RICS? iii. What is the source of these data? 	<ul style="list-style-type: none"> • How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? (Sustainability and commercial property valuation, RICS 2013; Sustainability in the RICS valuation global standards, RICS 2017a; Environmental risks and global real estate: an RICS guidance note, RICS 2018b; RICS insight paper: MEES: Impact on UK property management and valuation: Insight paper, RICS 2018a) • The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainability where applicable or available. We wish to know how often you seek to collect the following type of data (see full list in Table 3). • Do you collect any other data related to sustainability not listed above? Please list below.
<p>3. How do valuation factors (clients' influence, purpose of valuation) affect sustainability considerations?</p> <ul style="list-style-type: none"> ▪ Does the purpose of commercial property valuation matter in sustainability considerations? ▪ Do commissioners of valuers play a major role in sustainability considerations in valuation? ▪ What is the role of financiers? Do they care about a building's life, risk and 	<ul style="list-style-type: none"> • How important do you consider the following issues are to commercial real estate investors, lenders and owner-occupiers? (Issues being: certification, energy and carbon, waste management, water management, quality of external environment, health and well-being, adaptability and resilience to climate change on a scale of 1 to 5, 1 being of no importance to 5 being very important)

other sustainability attributes? Has it changed how they evaluate the underlying asset's risk when lending?	Please note these research questions are also addressed through semi-structured interviews (see Table 4).
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Table 3.2: Questionnaire for online survey

Source: Produced by the author

To develop the list of sustainability attributes, the RICS instructions (RICS, 2013) were first followed carefully along with relevant literature that provided details of various sustainability attributes and their possible relation to market and investment value. A complete list that has been used to develop the list of seven sustainability attributes and a total of 23 sustainability characteristics is provided in Table 3.3.

Sustainability Attributes	List of literature
1. Certification	RICS, 2013; Michl et al., 2016; Chegut, Eichholtz & Kok, 2013; Fuerst & van de Wetering, 2015
EPC	
BREEAM	
LEED	
WELL	
2. Energy and Carbon	RICS, 2013; Ellison & Sayce, 2006; Ellison & Sayce, 2007; Lorenz & Lutzkendorf, 2011; Lutzkendorf & Lorenz, 2011; Lorenz & Lutzkendorf, 2008; Michl et al., 2016
Energy consumption data	
Carbon emissions data	
Energy source used	
Renewables for heating and cooling	
3. Waste Management	RICS, 2013; Ellison and Sayce, 2006; Ellison and Sayce, 2007; Lorenz and Lutzkendorf, 2011; Michl et al., 2016
Waste management facilities (e.g. sorting, compaction etc.)	
Waste management data (e.g. records, materials to landfill etc.)	
4. Water Management	RICS, 2013; Ellison & Sayce, 2006; Ellison & Sayce, 2007; Lorenz & Lutzkendorf, 2011; Lorenz & Lutzkendorf, 2008; Michl et al., 2016
Water conservation installation (e.g. sprinkler taps, leakage detection etc.)	
Grey water system	
Water consumption data	

5. Quality of External Environment	
Proximity to open and green spaces	
Any pollution in areas contiguous to the property environment	RICS, 2013; Ellison & Sayce, 2006; Ellison & Sayce, 2007, Lutzkendorf & Lorenz, 2011; Michl et al., 2016
Proximity of public transport	
6. Health and Well-being	RICS, 2013; Ellison & Sayce, 2006; Ellison & Sayce, 2007; Lorenz & Lutzkendorf, 2011; Lutzkendorf & Lorenz, 2011; Lorenz & Lutzkendorf, 2008; Michl et al., 2016
Occupiers' satisfaction data	
Internal environment (e.g., indoor air quality data; levels of natural light)	
7. Adaptability and Resilience to Climate Change	
Flexibility of internal layout	
Building component design for reuse (e.g., readily demountable/reusable partitions)	
Site flood risk	RICS, 2013; Ellison & Sayce, 2006; Ellison & Sayce, 2007; Lorenz & Lutzkendorf, 2011; Lutzkendorf & Lorenz, 2011; Lorenz & Lutzkendorf, 2008; Michl et al., 2016
Resilience to extreme weather (e.g., roof design, good heating/cooling)	
Use of renewable/recyclable construction materials	

Table 3.3: List of sustainability attributes and relevant literature

Source: Produced by the author

3.8.2 Pilot study

A pilot study refers to a trial run before the actual online survey is online, to test for ambiguities, feasibilities and avoid technical difficulties. Testing for the feasibilities prior to the actual run can be very beneficial. It is normally conducted on a smaller scale than the full-scale study. It can also increase the researcher's experience with study method (In, 2017).

A pilot study was conducted within the department of Real Estate and Planning, Henley Business School, University of Reading during May 2019. Several PhD colleagues and staff members were randomly selected and invited to participate. A total of eight responses were received. Based on the responses it was decided that some of the questions needed to be dropped and kept for the second phase (semi-structured interviews) as the online questionnaire was becoming too lengthy. Some minor mistakes related to the spelling and language of the questionnaire were also addressed. After all these were addressed, the main survey was conducted during July-September 2019.

3.8.3 Sample selection

While choosing a sample, random sampling process was chosen. Random sampling can be probabilistic where each individual of the population has a known chance of being selected. It can also be non-probabilistic where individuals are chosen based on availability (Creswell & Plano Clark, 2011). For the online survey, non-probabilistic random sampling was used to find valuers who were available via email or the social networking site LinkedIn and willing to participate.

The following table provides an outline of the population of the RICS registered valuers regionally in the UK for commercial properties and compares that data with the online survey respondents from various regions. The RICS does not publish any data in the form of number of valuers in each region. In the absence of such data, the researcher used the page ‘Find a surveyor’ of the RICS to manually calculate the number of firms in each county. For each region, the number of firms from all counties was found and added to get the total number of firms. As seen in Table 3.4, the highest number of firms is in the Southeast region, which is also true for the survey data. Though the Midlands has the second highest concentration of valuation firms, 8.65% of the participants in the survey was from this area. London, on the other hand, has the second highest representation in the survey. The least represented regions are the East of England, Scotland and Wales. Though the East of England has 13% of the total number of valuation firms in the UK, the survey unfortunately did not attract anyone from there. Scotland and Wales, on the other hand, have lowest number of valuation firms. The survey also had the least number of valuers responding from these two regions.

Regions	No. of firms undertaking commercial property valuation	Percentage of total	Response count and Percentage of respondents in online survey
London	1248	10.73%	18.72% (19)
Southeast	2701	23.24%	19.23% (20)
Southwest	1117	9.61%	12.50% (13)
Northeast, Yorkshire and Humberside	1056	9.09%	8.65% (9)
Northwest	999	8.60%	10.58% (11)
Midlands (East + West)	2250	19.36%	8.65% (9)

East of England	1511	13%	0 (0)
Scotland	457	3.93%	2.88% (3)
Wales	284	2.44%	3.85% (4)
National	-	-	15.38% (16)
Total	11623	100%	100%

Table 3.4: Population vs. sample

Source: Produced by the author

Note: Response count for each region is shown in brackets.

Additionally, to select a representative sample from the UK, the following steps were undertaken:

1. The first step was to contact the RICS through the researcher's second supervisor and post the link of the survey in valuers' groups on social media for responses.
2. The researcher extensively searched the website, 'Find a Surveyor' (<https://www.ricsfirms.com>) and found a list of valuers in various locations around the UK. The researcher connected with these valuers through email or LinkedIn and requested them to participate.
3. The researcher also used her personal LinkedIn account to find commercial property valuers in the UK to connect with. After connection requests were accepted, valuers were requested to participate in the survey and the link of the survey was sent.
4. A total of 550 valuers were contacted and requested to participate and a total 53 responses were received, which makes the response rate 9.63%

A previous study in the UK with a similar focus did not report on how the sample represented the overall population as this data (total no of valuers in the UK) is not available or published (Michl et al, 2016)⁴ by the RICS. One of the limitations of this study is that despite all efforts a small sample of 53 participants responded to the survey and it is not known how representative this sample is of the overall population. The results from the second phase semi-structured interviews data collection were used to triangulate the results. Though additional time could have been spent to collect more data, the researcher and supervisors decided that all the necessary steps had been taken to ensure maximum response and therefore the survey was closed during the end of September 2019 after being live for three months.

⁴ Michl et al (2016) study reported 132 participants from the UK, but there was no indication to how that represents the overall population in the UK.

3.8.4 Data analysis

The data from the online survey is presented in the forms of tables and charts in chapter 5. The data analysis from each table and chart is also presented. Some crosstabs are also presented to show possible relationships between variables.

3.9 Phase 2: Semi-structured interviews

For the interviews, a semi-structured format was deemed appropriate because it allows the researcher to ask some set questions along with the flexibility to change according to the direction of the interviews. The process is not rigid and allows replication but is less controlled.

Semi-structured interviews are conducted in two groups as indicated in Figure 7: valuers and commissioning clients. Commissioning clients again have three groups: investors, lenders and owner-occupiers. These three groups of clients need valuation advice for several purposes. Lenders need advice on secured lending purposes as well as for financial reporting (both market value). Similarly, investors need regular valuation advice for their existing portfolio for financial reporting purposes (market value). Additionally, if investors are acquiring a new property, they may require valuation advice for acquisition (investment value) or secured lending (if financed through debt from lenders, market value). They may also need advice for strategic review. Finally, owner-occupiers need regular valuation advice for financial reporting (market value) as well as when they are commissioning their own building (investment or market value).

3.9.1 Semi-structured interview questions

Interview questions were primarily selected after the online survey was conducted and some data analysis had been done. As such, the questions not only addressed areas that the survey did not cover, but also some issues emerging from the first phase of the research. The questions in Table 3.5 were selected for semi-structured interviews with valuers. A full set of questions for interviews is presented in Appendix 2 for both valuers and commissioning clients' groups.

Research Questions	Interview questions
1. To what extent do commercial property valuers see sustainability as influencing the value drivers' spectrum, which they reflect in valuation processes?	Interview questions for valuers: <ul style="list-style-type: none">• How do you use/analyse sustainability-related data in your valuation computations?

<p>a. Are sustainability attributes affecting market value implicitly or explicitly?</p> <p>b. Are sustainability attributes affecting investment value implicitly or explicitly?</p>	<ul style="list-style-type: none"> • Is there any value impact for any of the attributes? Do you use these for analysis of comparables?
<p>2(a) Is there a validity in the perception that there is a gap between what UK commercial property valuers are reporting in terms of linkages between sustainability certification/ characteristics and the price differentials revealed by pricing studies?</p> <p>i. Are valuers aware of pricing studies?</p> <p>ii. Do they think there are premiums/discounts present because of present/absence of certification?</p> <p>iii. Are there any other value impacts of certification such as low void, tenant covenant etc?</p> <p>iv. Do they conduct any value adjustments for the absence/presence of certifications?</p>	<p>Interview questions for valuers:</p> <ul style="list-style-type: none"> • Are you aware of any pricing or premium studies? • Any evidence of premium or discount for certifications? • Any value adjustments for the presence/absence of any certifications?
<p>2(b) How are valuers interpreting and implementing the RICS requirements in their day-to-day practice and changing their role accordingly?</p> <p>i. To what extent do valuers use RICS publications on sustainability and valuation?</p> <p>ii. How much data do they routinely collect related to sustainability as advised by the RICS?</p> <p>iii. What is the source of these data?</p> <p>iv. How far would they go to actively collect data?</p>	<p>Interview questions for valuers:</p> <ul style="list-style-type: none"> • When new information comes to the market, for example, the rise of the sustainability agenda and the recognition of a climate emergency, how do you absorb that to adjust your assumptions? • What data do you routinely collect related to sustainability? Is data availability an issue and do you collect them even if you think it will not impact value? • What are the sources of this data? Do you verify if collected from clients?

<p>v. Has sustainability data collection become part of the due diligence?</p>	<ul style="list-style-type: none"> • Do you ever call in experts, for example, environmental specialists, energy experts, to understand a particular building’s sustainability position? Does that depend on the purpose of the valuation or type of property? • For data that you collect, do you store it for future use as part of a comparable database? • The RICS Red Book (2017a) is recommending valuers to collect data even if value impacts are not visible. How has this impacted on the due diligence process? (How far is it possible for valuers to do so? What challenges have arisen for the valuation profession?)
<p>3. How do valuation factors (clients’ influence, purpose of valuation) affect sustainability considerations?</p> <p>a. Does the purpose of commercial property valuation matter in sustainability considerations?</p> <p>b. Do commissioners of valuers play a major role in sustainability considerations in valuation?</p> <p>c. What is the role of financiers? Do they care about a building’s life, risk and other sustainability attributes? Has it changed how they evaluate the underlying asset’s risk when lending?</p>	<p>Interview questions for valuers:</p> <ul style="list-style-type: none"> • When you take instructions, what factors do you regard as particularly important to bottom out with clients? Do you raise the subject of sustainability and their requirements in respect of this at that stage? • Do any of your clients ask for any sustainability data? (If yes, which ones and why?) • How have client instructions changed over the years? • With the rise in prominence of issues like climate change and sustainable development, has there been an effect on clients’ considerations according to you? • How has sustainability mattered in terms of purposes of valuation? Type of property? Lot size?

Table 3.5 Questionnaire for valuers for semi-structured interviews

Source: Produced by the author

Additionally, three types of commissioning clients were also interviewed, lenders, investors and owner-occupiers to address research question 3 and to include contrasting perspectives. The interview questions for these three commission clients are in the following table:

Research Questions	Interview questions
<ul style="list-style-type: none"> • How do valuation factors (clients’ influence, purpose of valuation) affect sustainability considerations? • Does the purpose of commercial property valuation matter in sustainability considerations? • Do commissioners of valuers play a major role in sustainability considerations in valuation? • What is the role of financiers? Do they care about a building’s life, risk and other sustainability attributes? Has it changed how they evaluate the underlying asset’s risk when lending? 	<p>Interview questions for investors:</p> <ul style="list-style-type: none"> • What building attributes are critical to you when making investment decisions? • How has it changed over the years? • Has it been affected by the rise in prominence of the climate change agenda or sustainable development issues? • Do you have ESG policies? How does it manifest in your investment policies? • What is driving your investment strategy and how is sustainability affecting it? • What are the critical investment risks that you currently consider in choosing property? How have they changed over the years? (Can you please tell us where sustainability concerns rank alongside other investment risks that you consider in choosing property?) • How has the rise of the issue sustainable development impacted on your decision-making strategy? (Can any of the sustainability issues be connected to risk or return of your investment?) • How do you choose your valuers? How do you instruct them to value an asset? (Who instructs valuers and based on what requirements? How does it reflect

your ESG policies? Do you specify them to consider any of the sustainability issues?)

Interview questions for owner-occupiers:

- If you were commissioning your own building, to what extent would you consider sustainability attributes? (To what extent are the labels important like BREEAM, EPC? Are you happy to pay extra for superior ratings?)
- To what extent are cost control/efficiency important in terms of sustainability issues?
- Managing a property, do you consider any of the sustainability issues? (How do you think it may affect the valuation for accounting purposes?)
- As you manage your property, what sort of data do you collect related to sustainability attributes (water, waste, air quality, staff sickness, energy, pollution)? Do you pass it on to your valuers? How do your valuers use this data?
- When you commission valuers, do you check if they have an ESG or sustainability policy? (How do you choose your valuers? Who in the organisation instructs valuers? How important are the RICS sustainability requirements in these instructions? Do you specify them to consider any of the sustainability issues or ESG policies?)
- Has the rise of sustainability issues had any impact on your decision-making strategy?

	<p>Interview questions for lenders:</p> <ul style="list-style-type: none"> • To what extent are building attributes critical for lending decisions? (Are you interested in the value only or do you look for other attributes?) • How is the riskiness of a lending decision affected by whether a borrower has ESG or sustainability policies? • Is climate change or sustainability affecting your overall lending strategy in any way? (How important are the RICS sustainability requirements in these instructions? Do you have any specific plans to deal with these issues? If no, how are you planning to build it in?) • Do you always instruct RICS registered valuers and commission valuers to value according to Red Book (2017a)? • Do you have any standard pro-forma for valuation? (Does your pro-forma include sustainability issues? If not, do you plan to include any?) • How far do you think the valuations provided for lending decisions are future-proofed? To what extent are you interested about them being future-proofed? (If a lending decision is for 10 years, is the value sustained until then?)
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Table 3.6 Questionnaire for commissioning clients for semi-structured interviews

Source: Produced by the author

3.9.2 Sample size

The sample selection and the optimal number of participants needed for interviews to ensure validity and quality in qualitative research is a difficult topic to address. Data saturation is applicable for all types of qualitative research, which suggests bringing new participants continuously until the

dataset is complete. Complete means having replication or redundancy, or in other words, a point when no new information is being added (Bryan et al., 2013). However, there are no published guidelines for estimating a sample size, which will ensure saturation (Morse, 1995). For most qualitative studies, the sample size is dependent on the *'purpose of inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources'* (Patton, 2002, pp. 242–243). Though qualitative methodologies do not always agree on the exact sample size, they generally agree on certain factors that affect the number of interviews needed to achieve saturation (Bryan et al., 2013). Bryan et al. (2013) explains three ways to explain saturation in a qualitative study, first by citing recommendations by qualitative methodologies, second by citing sample size in studies with similar research problems and designs, and third through internal justification demonstrating saturation statistically.

Guest, Bunce and Johnson (2006) showed in their study of phenomenological social desirability and self-reported sexual behaviour that 73% of their codes were identified from the first six interviews and 92% were identified within the next six interviews. By calculating Cronbach's alpha, they concluded that data saturation occurred during the first 12 interviews when the population is homogenous. For grounded theory methodologists, a rough midpoint for data saturation is 30 interviews, however, for single case study the number can be within 15 to 30 interviews (Bryan et al., 2013). Francis et al. (2010) and Marshall (1996) reported 13 to 15 interviews to reach saturation. Kuzel (1992) recommends 6–8 participants for homogenous groups and 12–20 for heterogeneous groups. Saunders (2012) reports 4–12 participants for homogenous populations and 12–30 participants for heterogeneous populations. The actual number of interviews will depend on the research purpose, the salience of data and the researcher's epistemological and ontological positions (Saunders & Townsend, 2016).

Another way to justify the sample size is to cite similar studies with similar research problems and designs. However, valuers' perception of sustainability is a research problem that has not been widely studied. In the UK, the only study is Michl et al. (2016) which uses only online survey. Le and Warren-Myers (2018) conducted a similar study on Australian valuers using interviews. With only 10 interviews, they reported a high level of saturation. Additionally, other academic research on valuation practice could be mentioned here. For example, Levy and Schuck (1999) achieved saturation with only five interviews, Levy and Schuck (2005) with seven, Amidu and Boyd (2018) with six and Amidu, Boyd and Agboola (2019) with 11 interviews.

For this thesis, two groups of people were interviewed: commercial property valuers and their commissioning clients. Within the commissioning client's group there are again three groups: investors, owner-occupiers and lenders. From the above discussion on the appropriate sample size for interviews, it can be concluded that, for each group of interviewees, around 6–12 interviews will be required to reach saturation point. As this research aims to understand the valuers' work primarily, it was decided that 20 interviews will be sufficient to ensure saturation point, and another 10 interviews were targeted for the commissioning client's group. At the end, a total of 32 interviews were conducted, which consisted of 21 valuers and 11 commissioning clients' interviews.

At the end of each interview a total number of new codes were identified to calculate the saturation point. A total 33 codes were identified which were later placed under 6 broader themes (See Appendix 5.2). The saturation point was calculated after 15 interviews were completed and it was identified within the first 6 interviews 84% of the codes were found. 100% of the codes were found after the 12th interview. This is consistent with many previous studies of similar nature which are discussed above (Amidu & Boyd, 2018; Amidu, Boyd & Agboola, 2019; Le & Warren-Myers, 2018; Levy & Schuck, 1999; Levy & Schuck, 2005;)

3.9.3 Sample selection

The sample for semi-structured interviews was again selected based on non-probabilistic random sampling (Creswell & Plano Clark, 2011). However, every effort was made to ensure that there is at least one valuer from each of the major regions of the UK. Additionally, valuers from various age groups and experience were targeted to have a more representative sample. To select the sample for interviews, the following steps were undertaken:

1. At the end of the online survey respondents were invited to give their email addresses if they were interested to participate in the second phase, semi-structured interviews. A total of eight respondents gave their email addresses. After contacting these eight people, the researcher was able to confirm four valuers for the second phase.
2. The researcher searched extensively for commercial property valuers through her social networking site, LinkedIn, and with time was able to contact with around 500 valuers who were all approached for interviews. However, a majority of such valuers only value residential or leisure- or hospital-related properties, therefore, these valuers could not be interviewed. A total of 17 commercial property valuers agreed through LinkedIn who either

value offices or retail or both. A total of 21 commercial valuers were interviewed for the second phase.

3. It was more challenging to find commissioning clients. Again, the researcher started her search in LinkedIn. Ideally the researcher was looking for someone within the client's organisation who is instructing valuers. However, it was difficult to understand checking someone's LinkedIn profile if that person is actually the one instructing valuers on behalf of his organisation. After numerous tries, six commissioning clients agreed to interviews who were a combination of lenders, owner-occupiers and investors.
4. Through a supervisor's connection, another five commissioning clients were contacted, and five more interviews were conducted. A total of 11 commissioning clients were interviewed which makes a total of 32 interviews.

Table 3.7 provides some brief information about the interviewees.

No.	Pseudonym	Description
1	Valuer 1	A valuer for commercial property with five years of experience from London, works for one of the top valuation firms in UK. Region of practice: London.
2	Valuer 2	Partner at one of the top valuation firms' Manchester offices. Has more than 40 years of experience in valuation. Regions of practice: Northeast and Yorkshire.
3	Valuer 3	Director at one of UK's top valuation firms' London offices. Has more than 20 years of experience. Region of practice: London.
4	Valuer 4	Director at one of UK's top valuation firms' London offices. Works as a fund valuer. Has more than 15 years of experience. Region of practice: London.
5	Valuer 5	Runs his own valuation company in Bath, UK. Has more than 40 years of experience. Region of practice: Southwest.
6	Valuer 6	Director at one of UK's top valuation firms' Bristol offices. Has more than 15 years of experience. Regions of practice: Southwest, Wales and Scotland.
7	Valuer 7	Head of valuation at one of the top UK valuation firms' London offices. Has more than 20 years of experience. Region of practice: London.
8	Valuer 8	Director at one of the top UK firms' Birmingham offices. Has more than 10 years of experience. Region of practice: Midlands.

9	Valuer 9	A valuer with 40 years of experience, has also worked with the RICS in the past. Currently working at a small firm in East Anglia. Region of practice: Eastern England.
10	Valuer 10	A provincial valuer with more than 10 years of experience. Client base is usually small and independent owner-occupiers of small or medium retail units. Regions of practice: London and Southeast.
11	Valuer 11	A provincial valuer working with a small team with an experience of more than 15 years with various types of clients. Regions of practice: Northeast and Yorkshire.
12	Valuer 12	A provincial valuer with more than 15 years of experience. Working with a small team of valuers and deals with various types of clients. Regions of practice: Northeast and Yorkshire.
13	Valuer 13	A provincial valuer with more than 20 years of experience. Majority of clients include either banks or individual clients. Working with a small team of valuers. Region of practice: Southwest.
14	Valuer 14	Works as a valuer in one of the district councils with more than five years of experience. Valuations undertaken for the council for investment or accounts purposes. Regions of practice: Southeast, Southwest, Midlands and Wales.
15	Valuer 15	With seven years of experience, works in the public sector and provides valuation advice for public and government bodies for a whole range of purposes including market valuation and asset valuations. Regions of practice: London and Southeast.
16	Valuer 16	With more than 20 years of experience, runs his own firm in West Sussex. Region of practice: Southeast.
17	Valuer 17	Started a career as a valuer, however, currently runs his own firm as an environmental specialist. Has more than 20 years of experience. Regions of practice: all over UK
18	Valuer 18	Senior surveyor at one of the top valuation firms' London offices. Has less than five years of experience. Region of practice: London

19	Valuer 19	A provincial valuer, currently a senior valuer, with five years of experience. Region of practice: Midlands.
20	Valuer 20	Works as a surveyor at one of the lending bodies, with less than five years of experience. Regions of practice: Northeast and Yorkshire.
21	Valuer 21	Partner at one of the top valuation firms' Worcester offices. Has more than 20 years of experience. Region of practice: Midlands.
22	Investor 1	Works at one of the real estate investment companies, heavily invested in retail industry.
23	Investor 2	Works at one of the real estate investment companies with a portfolio of commercial assets, including, retail parts, industrial and offices.
24	Investor 3	Works at one of the global real estate investment companies with a portfolio of commercial assets.
25	Lender 1	Works at one of the major commercial lending banks.
26	Lender 2	Works at one of the major global lending banks.
27	Lender 3	Works at one of the major UK commercial lending banks.
28	Lender 4	Works at one of the major UK commercial lending banks.
29	Owner-occupier 1	Works at one of the oil and gas companies, the company owns its offices and headquarters and was interviewed as an owner-occupier of commercial property.
30	Owner-occupier 2	Works for one of the city councils which owns a variety of commercial and residential properties in their portfolio.
31	Owner-occupier 3	Works for one of the city councils which owns a variety of commercial and residential properties in their portfolio.
32	Owner-occupier 4	Works for one of the top retailers for furniture and home furnishings. The company owns their retail units.

Table 3.7: Brief description of interviewees

Source: Produced by the author

3.9.4 Data analysis

To analyse the semi-structured interviews, thematic analysis is used.

“Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data” (Braun and Clarke, 2006, p. 79)

Qualitative approaches are incredibly diverse, complex and nuanced as explained by Holloway and Todres (2003). According to Braun and Clarke (2006) thematic analysis is a foundational method that researchers should learn as it provides core skills to undertake many forms of qualitative analysis. Though Boyatzis (1998) describes it as a tool to use across different methods, Braun and Clarke (2006) argued thematic analysis should be considered a method in its own right. One of the major benefits of using the thematic analysis is its flexibility and theoretical freedom that can “*potentially provide a rich and detailed, yet complex, account of data*” (Braun & Clarke, 2006, p. 78).

Braun and Clarke (2006) explain the six phases of thematic analysis which have been adopted for this research. The process starts by familiarizing oneself with the data and then starting to code interesting features of the data in a systematic fashion. Codes then need to be collated in potential themes. The fourth step is to check if these potential themes work in relation to the coded extracts as well as the whole dataset. The researcher then needs to define and name the themes which describe the patterns and meanings within the dataset. The endpoint is to report such patterns and meanings in the data (Braun & Clarke, 2006, p. 87). The identification of themes can start before, during and after the analysis (Ryan & Bernard, 2000). To analyse the data, a constant moving backwards and forward between the dataset and coded extracts is required (Braun & Clarke, 2006). As explained by Braun and Clarke (2006), the interview data were coded by the researcher. From the initial codes, several themes were identified, which are described in chapter 5. Several iterations were undertaken before themes were finalized. Each iteration was shared and discussed with supervisors.

Coding process:

The researcher went through the interview transcripts several times to code them in an initial coding process which is also known as open coding. While coding, several of the initial codes were suggestive either from the research questions or the conceptual frameworks (model 1 and 2). The rest were suggestive from the data itself. Following this, Axial coding was conducted which means that codes were categorised into relevant categories based on the relationships between codes developed during the open coding stage (Corbin and Strauss, 1999). For this thesis, the Axial codes have been named as themes and the open codes as sub-themes. The themes and sub-themes are discussed in chapter 5 as part of the thematic analysis. The following table provides details of the initial codes as well as the broader themes and how they originated either from conceptual frameworks or research questions or the data itself.

Themes and sub-themes	Coding origination
Theme 1: Awareness of sustainability	Origination: Model 2
Theme 2: Sustainability within the valuation process	Research question 1 and 2
a. Changes to clients' instruction	Model 1
b. Data collection on sustainability attributes <ul style="list-style-type: none"> • Certification • Energy and carbon • Waste and water management • Health and well-being • Quality of external environment • Adaptability and resilience of climate change 	Research question 2
c. Data analysis <ul style="list-style-type: none"> • Explicit consideration through CAPEX • Implicit consideration <ol style="list-style-type: none"> 1. Insurance 2. Reduce void or increase let ability or impact on saleability 3. Rental value or yield 4. Comparable property information 	Research question 1 Data driven Data driven
d. Reporting	Model 1
Theme 3: Differences in terms of asset classes	Data driven
Theme 4: Motivation <ul style="list-style-type: none"> a. Demand from clients <ol style="list-style-type: none"> 1. Demand for sustainable attributes Demand from investors Demand from lenders Demand from owner occupiers 2. Evidence in the market 3. Protect clients' image b. Legislative pressure or transition risk 	Model 1 Model 1 Model 1 Model 1 Data driven Model 1

c. Regulatory risk d. Purposes of valuation e. Incidental factors	Model 1 Research question 3 Data driven
Theme 5: Experience a. Understanding of sustainability based on experience b. Big vs. small firm valuers' experience c. Locale experience	Model 2 Model 2 Data driven Data driven
Theme 6: Barriers to include sustainability within the valuation framework 1. Reliance on third parties 2. Lack of data 3. Time, fee, cost and clients' pressure 4. Education and training of valuers 5. Traditional methodology	Data driven Data driven Data driven Research question 3 Data driven Data driven

Table 3.8: The coding process for the semi-structured interviews

Source: Created by author

3.10 Limitations of the methods

While the online survey was conducted, it was difficult to contact valuers directly because of the General Data Protection Regulation (GDPR). Social networking was used to find valuers who undertake commercial property valuations. The researcher contacted these valuers via LinkedIn and sent them connection requests. After valuers were happy to connect with the researcher, they were asked if they would be interested to participate in a survey on sustainability in valuation. Those who were interested received links to the survey. This was a particularly long process and there is a chance that valuers who are generally interested in this topic selected themselves and thus there is a possibility of self-selection bias. Additionally, the same pool of valuers was contacted a second time when the researcher undertook the semi-structured interviews, therefore, the self-selection bias problem is true for the second phase as well.

Furthermore, while the researcher was searching for commissioning clients to interview, it was difficult to find appropriate people. Ideally, the researcher was looking for someone who is involved with the valuers in terms of providing instructions to undertake valuation. However, while searching the social networking site LinkedIn, it was hard to find people who are directly involved in instructing the valuers. The researcher also used her supervisors' contacts to search for

commissioning clients. Even after undertaking all of these measures, the number of commissioning clients interviewed is small, a total of 11, which could be seen as one of the limitations. Additionally, in the investor and owner-occupier categories, the majority of the interviewees invested in either prime or secondary properties. Small investors or owner-occupiers were unfortunately not included. However, there were two councils that were interviewed who have a variety of properties in their portfolio.

Additionally, crosstabs were attempted to check relationships between variables of the survey. For these variables chi square and correlation with significance level (p-values) were conducted for the survey results where possible. It was found that statistical significance could be an issue because of small sample size. Any research that uses primary data requires a sample, however, obtaining a large enough sample is not often possible (Perezgonzalez, 2017). Statistical principle is a minimum sample size of 30 is required to render normal sampling distribution means independently to check whether the sample is normal (Crawley, 2014; Perezgonzalez, 2017). For t-tests the level of significance is checked and reported that serves as a cut-off point by comparing the observed probability of the sample research data against the level of significance. The level of significance is checked through the p-values (e.g., $p < .001$), the smaller the p-value the more confident the researcher can be (Perezgonzalez, 2017). However, there is a lot of debate on the significance level or p-values or whether it signifies scientific or economic significance. McCloskey and Ziliak (2008) argued that statistical significance of 0.05 is necessary and sufficient to proof scientific results whereas, Hoover and Siegler (2008) argued it may not be necessary or sufficient for scientific significance. Researchers need to ask, “how large is large” and “what makes it interestingly different” (Seth, Carlson, Hatfield & Lan, 2009, page. 5) to proof the significance of the test results for a study. The authors argued there is a possibility that statistical significance could be present, but it might not be entirely relevant (Seth, Carlson, Hatfield & Lan, 2009). Within the field of economics, Zellner (2004) and Ziliak and McCloskey (2004) argued statistical significance does not proof economic significance and economists sometimes put too much emphasize on statistical significance. Thompson (2004) also argued that this problem is present in other disciplines such as psychology, medicine, public health, sociology and culture. Additionally, statistical significance can be dependent upon sample size. In a large enough sample microscopic differences can be statistically significant whereas in a small sample statistical insignificant can still be economically important (Seth, Carlson, Hatfield & Lan, 2009). Therefore, even if the p-values are not significant it might be relevant to report them. For example, in the study by Judge, Warren-Myers & Paladino (2019) p values less than 0.001 have been reported as well as higher p-values which were less than .05 and .01. As the sample size of this research is small (only 53) and it gets even smaller when

divided in groups (such as more than 20 years of experience group may be less than 30 which), results did not achieve the required statistical significance in majority of the cases for both chi square and correlation coefficient as well as its significance level. Nevertheless, the findings are presented in chapter 4 including p-values while cautioning the reader that their use should be seen in the context of differences in statistical weighting between various strands of research. An example of a similar area is that of psychology research, where traditionally statistical significance of tests is dependent upon p-values which have been widely criticised in other areas of academic research (see for example, Wetzels et al., 2011), especially for research with small sample sizes (see for example, Perezgonzalez, 2017). Due to low levels of significance, the decision was taken to not present some of the findings within the main thesis, however, examples of different tests are presented in Appendix 3.

3.11 Ethical considerations

For each phase of this research, ethical issues that may arise were considered and appropriate steps were taken. As the research includes collecting data from individuals, valuers and their commissioning clients, the following ethical issues were considered:

- Valuers were asked to provide some personal data such as age, experience for the online survey as well as the interview which needed to be protected by the researcher.
- Valuers also shared information about the firms that they work for. It was expected that the majority of the valuers would not want to share the name of the firm that they work for.
- Valuers were asked about their commissioning clients, therefore, maintaining their clients' confidentiality was paramount.
- The information valuers provided may be of a sensitive nature, therefore it was important to protect the data as well as the provider of the data.
- Additionally, any information that the commissioning clients provided could also be of a sensitive nature that needed protecting.
- It was also expected that the commissioning clients may not want to reveal the firm that they work for. Therefore, that needed to be protected.

As per the University of Reading's rules, an ethical application was submitted and approved by the internal ethical approval committee of the Real Estate and Planning Department, Henley Business School, University of Reading for both online survey and semi-structured interviews. A sample of such an ethical approval is attached with this thesis in Appendix 4. For online survey, a short description of the research was provided at the beginning so that valuers were aware of the objective of the research and responded accordingly. Anonymity was promised to protect the respondents'

identity. For the semi-structured interview, a participant information sheet was produced for the interview participants to help them understand the research. This is also attached with the ethical approval form in the Appendix 4 (Annex 2b) along with a sample consent form. Every single participant was given a chance to read the participant information sheet ahead of the interview and ask questions to the researcher if they had any. After participants were happy with the details provided by the researcher, they were asked to sign a consent form and afterwards the interview was conducted. All participants were promised anonymity. To protect the identity of the participants pseudonyms have been used in this thesis. Additionally, it was also promised that the firm valuers or commissioning clients work for would not be revealed in the thesis or papers that may follow. After conducting the interviews, the researcher made transcripts of the interviews and sent it to the respective respondents to check. Some of the respondents suggested minor changes which were completed before the data analysis was undertaken. Additionally, after each phase was completed, respondents received a summary report of findings from that phase, and they were asked to provide comments if they had any. Respondents were also provided with the option to withdraw from the study at any time if they were not happy with how the research was conducted. However, none of the participants withdrew.

3.12 Chapter conclusion

This chapter explains in detail the theoretical aspects of this thesis along with the methods that were used to collect data. This study uses a mixed method approach to offset the biases and weaknesses of each method through triangulation of results. The two methods used are an online survey and semi-structured interviews. The findings of the online survey are reported in chapter 4 and the findings of the semi-structured interviews are reported in chapter 5. Chapter 6, discussion, then triangulates the results from both methods to address the research questions as well as the theoretical implications. At the end, chapter 7 discusses the concluding remarks of the thesis, limitations, and future research potentials. The next chapter reports on the findings from the online survey.

Chapter 4: Findings from the Online Survey

4.1 Introduction

This chapter reports on the findings of the online survey that was conducted during July–September 2019. The survey questionnaire can be found in Appendix 1. The chapter starts with describing the discrete variables that were collected during the survey. Then it moves on to explain some descriptive statistics. Finally, it reports on the findings from four major questions related to the usage of RICS guidance and standards, data collection on sustainability, impact of sustainability factors on market and investment value and the importance of sustainability factors for commissioning clients. Some crosstabs are also presented to identify the relationship between several variables.

The survey was targeted at UK valuers who undertake valuations for commercial properties (offices and/or retail). Therefore, the first question was to make sure that the respondents are all either valuing offices or retail properties or both in the UK under the RICS Red Book valuation standards (RICS, 2017a) as was appropriate during the time of the survey (July–September 2019) though a new version of Red Book was published in 2020 and then in 2022. 100% (total 53) of the respondents have answered yes to the first question, indicating that they value either retail or offices or both.

4.2 Discrete variables

The online survey included certain questions to collect data on some discrete variables related to the characteristics of the respondents and their organisations. The below table 4.1 shows a list of these variables. The discrete variables were selected keeping in mind that these factors such as age, experience, region of practice, number of valuers in an organisation could impact on sustainability considerations. Based on age and experience, valuers may collect less or more data or could find some attributes more important than others. Additionally, regional practices to incorporate sustainability might be various. For example, in London it is expected that there will be more BREEAM-rated properties. Similarly, based on the type or size of organisation, sustainability considerations may be unique. Valuers' qualifications such as academic, professional, CPDs, RenoValue may have some impacts on their understanding of sustainability which will eventually impact on their treatment of such matters. Furthermore, the purpose of valuation plays an important role, thus it is also included to investigate if sustainability considerations differ for various purposes of valuation. The categories for each variable were initially selected by the researcher and then discussed with the supervisors. During the pilot survey, some suggestions were made that were also

incorporated before the survey was made available. For example, an additional bracket was created for experience (more than 20 years). Additionally, Northeast, Yorkshire and Humberside were considered as one region for the purpose of this survey as the number of firms undertaking commercial property valuation within these regions were less compared to other regions (see Table 3.4). East and West Midlands were also considered as one region.

Name of the Variable	Details
Age	under 30, 30–50 and above 50
Experience	less than 5 years, 5–10 years, 11–20 years and more than 20 years.
Regions of practice (multiple response was allowed)	London, Southeast, Southwest, Northeast and Yorkshire, Northwest, Midlands, East of England, Scotland, Wales and National
Organisation type	Self-employed, public sector, corporate, charity, consultancy and other (text allowed)
Department size	0–5, 6–20, 21–100, more than 100
Organisation size	0–5, 6–20, 21–100, more than 100
Professional qualification	MRICS, FRICS, Other (text allowed)
Academic qualification	A-levels, Bachelor’s degrees, Master’s degrees, Doctorate, Other (text allowed)
Purpose of valuation undertaken (multiple response was allowed)	Market transaction, Secured lending, Investment advice, Company account, Other (text allowed)
Sources of CPD (multiple response was allowed)	In-house training, professional conferences, academic courses, professional journals, academic journals, online training, other (text allowed)
CPD on sustainability and valuation	Dichotomous variable (yes/no)
RenoValue	Dichotomous variable (yes/no)

Table 4.1: List of discrete variables

Source: Author’s own work

4.3 Descriptive statistics

Age: As seen below in Figure 4.1, most of the respondents fell into the age bracket of 30–50 years of age (52.8%). 34% of the respondents were above 50 years of age and 13.2% under 30. This indicates most of the respondents (86.80%) belonged to an age group higher than 30 years of age.

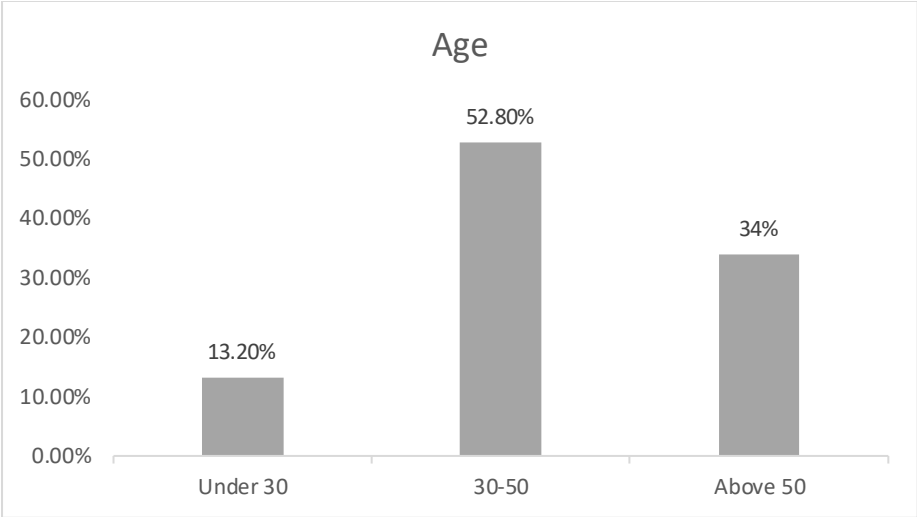


Figure 4.1: Bar chart for the variable age (Total response count 53)

Source: Author’s own work

Experience: Respondents were also asked about the number of years of experience they had of valuing assets. Figure 4.2 below shows more than 45% of the respondents had over 20 years of experience, 13.2% in between 11 and 20 years, 20.8% in between 5 and 10 years and another 20.8% less than 5 years. This indicates the majority of the respondents (79.20%) had at least 5 years of experience. This is consistent with the longitudinal surveys undertaken by Warren-Myers (2022b) in Australia to understand valuers’ perception of sustainability where all four surveys had at least 54% respondents with more than 5 years of experience. This could indicate senior valuers’ interest on the topic sustainability in valuation.

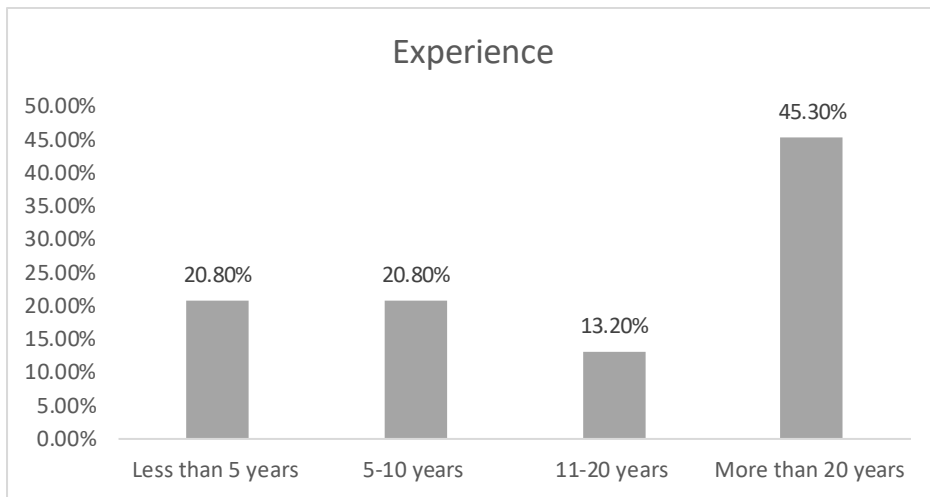


Figure 4.2: Bar chart for the variable experience (Total response count 53)

Source: Author's own work

Type of organisation: Respondents were also asked about the type of organisation that they work for. Figure 4.3 below presents the results for type of organisation. The majority of the respondents worked as consultants (49%) followed by the corporate sector (28%). Self-employed, public sector and Other were all set at 7.55% which is four respondents. In the other categories, respondents mentioned working for lending organisations and private partnerships. There was another category, charity, for which no responses were received.

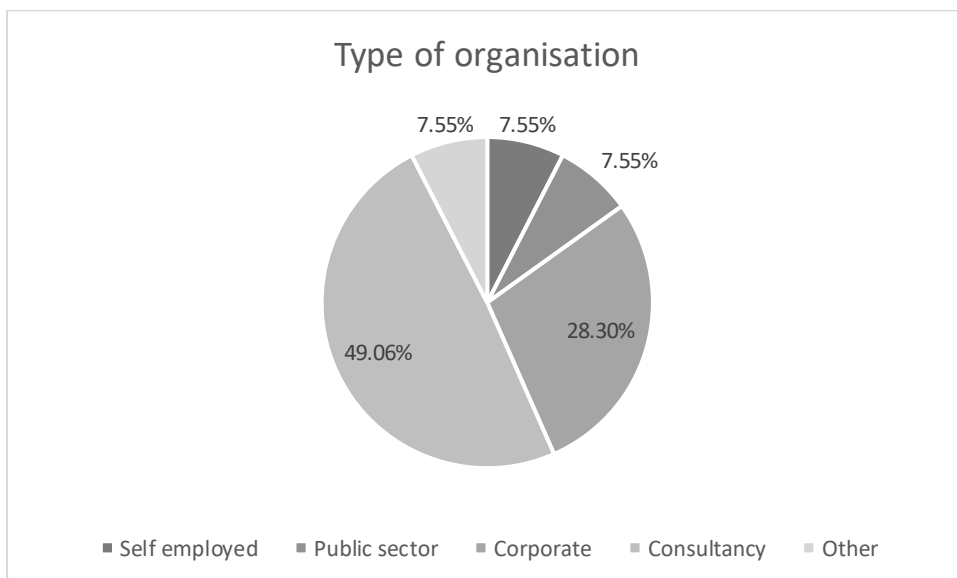


Figure 4.3: Pie chart for the variable type of organisation (Total response count 53)

Source: Author's own work

Number of valuers in department and organisation: To determine if a valuer worked for a small or big organisation, the number of valuers working in the respondent's department as well as within

the organisation was also asked. The pie chart in Figure 4.4 represents the No. of valuers in a respondent’s department and the pie chart in Figure 4.5 represents the No. of valuers in the whole organisation. As seen from the following pie charts, most of the valuers worked in departments with 0–5 valuers (47.17%) followed by 22.64% valuers who had 6–20 valuers in their department. About 11.32% had more than 20 valuers and 18.87% valuers had more than 100 valuers in their department.

In terms of the whole organisation, the pie chart is a bit different. More than 30% of valuers reported having more than 100 valuers in their organisation, whereas 28.30% of valuers reported having less than five valuers in their organisation. About 26% valuers reported having 21–100 valuers in their organisation and 15% reported having 6–20 valuers in their organisation. The data related to number of valuers in department and organisation is an attempt to determine whether a valuer works for a big or a small organisation and if sustainability considerations are various based on that . However, it does not strictly indicate how large each organisation is as a firm can undertake several activities like property management and agency other than valuation services. Therefore, even if an organisation has a large number of valuers, it may not be a large organisation. To investigate this further, a crosstab between number of valuers in organisation and type of organisation is presented below (Table 4.2).

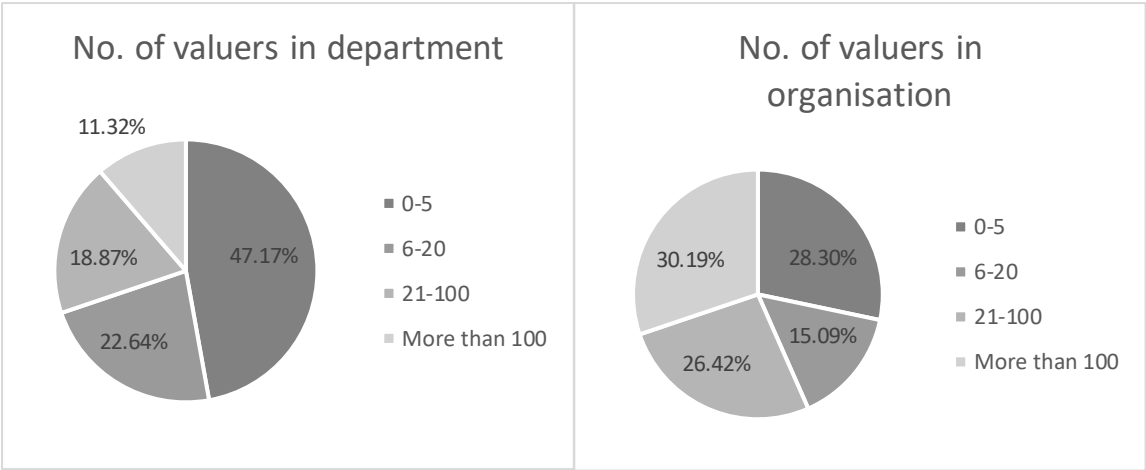


Figure 4.4 and 4.5: Pie charts for No. of valuers in respondent’s department (left) and organisation (right) (Total response count 53)

Source: Author’s own work

Type of organisation	No. of valuers in organisation			
	0–5	6–20	21–100	more than 100
Consultancy	6	4	9	7
Corporate	1	4	3	7
Public sector	2	0	1	1
Self employed	4	0	0	0
Other	2	0	1	1
Total response count	53			
Pearson Chi Square	0.085			
Significance (2-tailed)	0.282			
Correlation	0.150			

Table 4.2: Crosstab between no. of valuers in organisation and type of organisation.

Source: Author's own work

Table 4.2 above shows the majority of the consultancy and corporate organisations had a higher number of valuers either 21–100 or more than 100, which could mean these are larger organisations. Whereas, within the public sector, self-employed, and other segment, the majority of the organisations had 0–5 valuers, which could mean these are smaller organisations.

Regions of practice: Respondents were also asked about the regions they practise in, and multiple responses were allowed for this variable, provided a valuer can practise in several areas in the UK. Figure 4.6 below shows the results. Among 53 respondents, 14 chose multiple regions, 12 national and the rest of the 27 chose one region. Though it was ensured that the data is representative of all of the UK, most of the respondents were practising in either London (18.3%) or the Southeast (19.2%) regions. The third highest representation was the national valuers, which is 15.4%. Southwest, Northeast, Northwest and Midlands had 12.5%, 8.7%, 10.6% and 8.7% respectively. The least represented areas were Wales and Scotland at 3.8% and 2.9% respectively, which is understandable because the samples selected for these areas were less than the other regions as not many valuers could be found in these areas.

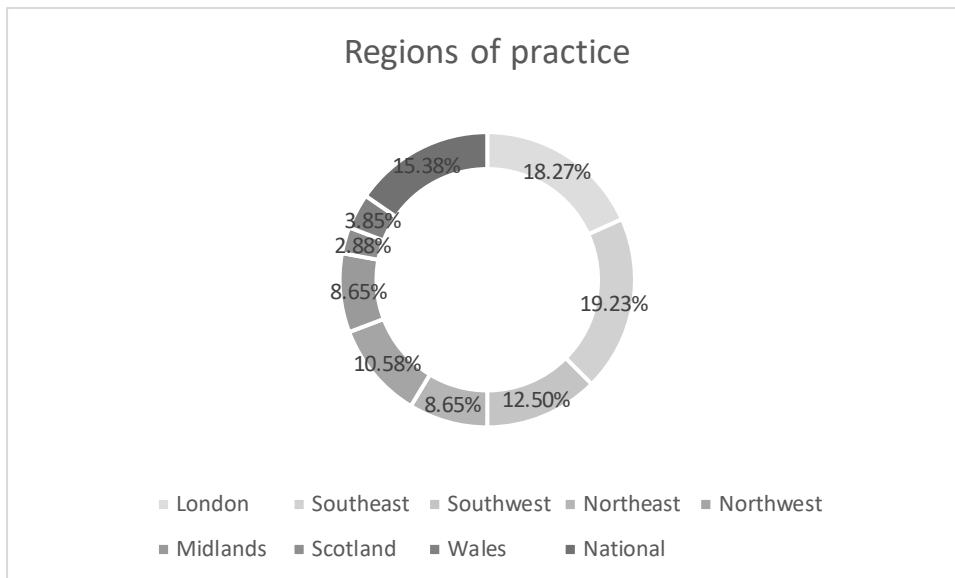


Figure 4.6: Pie chart for the variable regions of practices (Total response count 53)

Source: Author’s own work

A comparison of these sample and the population is presented in chapter 3 (see Table 3.4)

Professional qualifications: Valuers were asked about their professional qualifications; results are presented below in Figure 4.7; about 75.47% of the respondents had a MRICS and only 15.09% had a FRICS qualification. 9.43% respondents mentioned ‘Other’, however did not mention what professional qualification that may include.

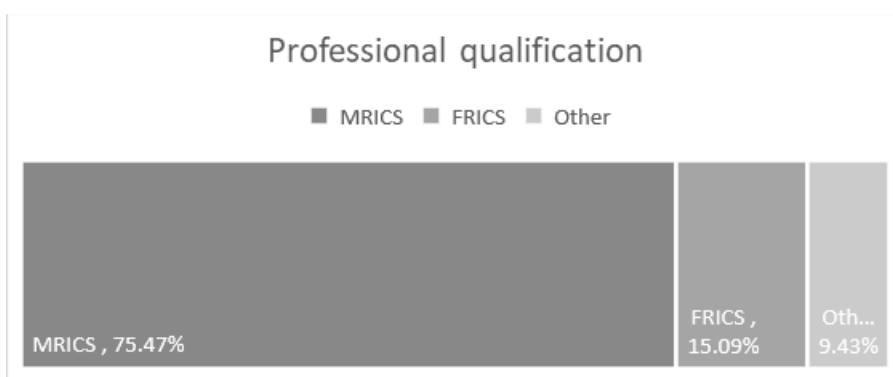


Figure 4.7: Hierarchy chart for professional qualification (Total response count 53)

Source: Author’s own work

Academic qualifications: As presented in Figure 4.8 below most of the respondents had a Bachelor’s degree (59.62%). About 25% had a Master’s degree and 1.92% A-levels. 13.46% mentioned ‘Other’, which includes diplomas in valuation, real estate or surveying. None of the respondents had a doctoral degree.

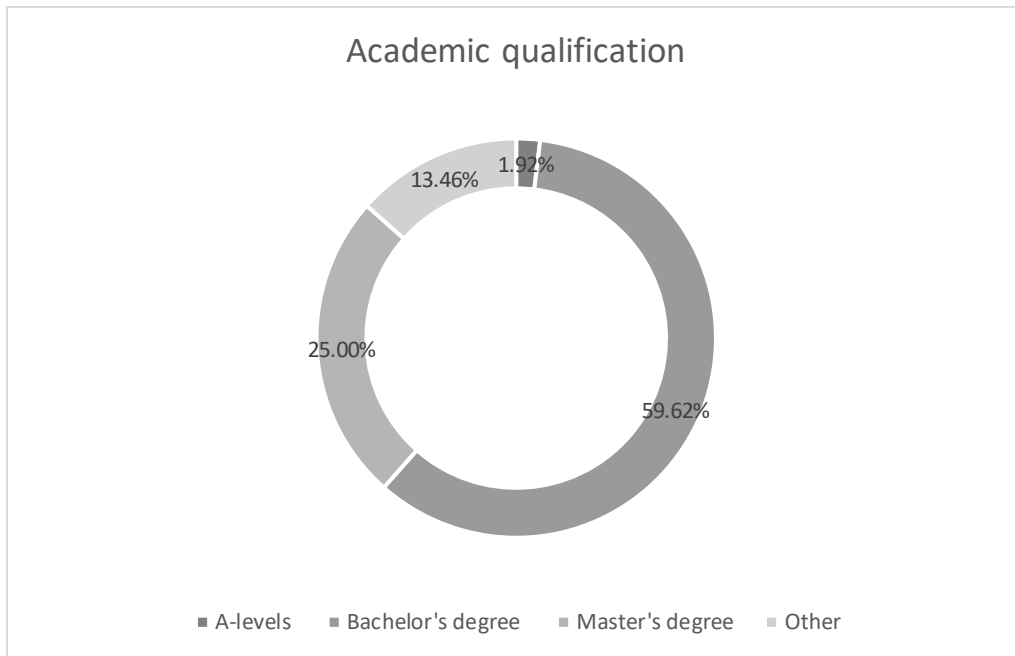


Figure 4.8: Pie chart for academic qualification (Total response count 53)

Source: Author's own work

A crosstab between the variables age and academic qualification is shown below in Table 4.3. Most of the respondents had a Bachelor's degree irrespective of age. Only 13 respondents had Master's degree, 9 of which belonged to the age group 30–50. Again, Master's was the highest qualification mentioned.

	A-levels	Bachelor's	Master's	Others	Missing Value	Total
Under 30	0	5	2	0	0	7
30–50	0	15	9	4	0	28
Above 50	1	11	2	3	1	18
Total	1	31	13	7	1	53
Total response count		53				
Chi-Square Significance		0.488				
Significance (p-value)		0.741				
Correlation Coefficient		0.047				

Table 4.3: Crosstab for age and academic qualifications

Source: Author's own work

Purposes of valuation: To understand if sustainability considerations are in any way dependent on the purposes of valuation, valuers were asked the purposes for which they value properties regularly. In this case too, multiple responses were allowed as one valuer can very well value properties for different purposes. Results are presented below in Table 4.4.

The most common purposes mentioned were secured lending (28.67%) and company accounts (25.87%) followed by market transaction (18.88%) and investment advice (16.08%). Some 'other' valuation purposes were also identified: tax purposes, pension fund, probate, IPO, mergers and acquisitions, charities, strategic advice, matrimonial, expert witness, internal purpose, insolvency and corporate strategy. Tax purposes seemed to be the most common valuation purpose that was not originally listed.

	N	Percent
For what purposes do you undertake valuations?		
Secured lending	41	28.67%
Company accounts	37	25.87%
Total response count 53		
Market transaction	27	18.88%
Investment advice	23	16.08%
Others	15	10.49%
Total	143	100%

Table 4.4: Frequencies for purposes of valuation

Source: Author's own work

CPD Sources: Valuers were asked what sources they use regularly to fulfil their CPD requirements. Results are presented below in Table 4.5. The most popular source mentioned by the respondents were professional conferences (24.2%) followed by in-house training (21.3%), online training (19.4%) and professional journals (17.5%). The least popular were academic courses (9%) and academic journals (6.2%) respectively. Some valuers also mentioned using private presentations or seminars by professionals, RICS surveys and committee meetings at different organisations like UK Finance, Building Societies Association, Valuers and Lenders Liaison Group and National Surveyors Forum.

It must be noted that the online survey was undertaken pre-Covid-19; the mode of CPD might be affected by the pandemic and it might be different now.

		N	Percent
Sources of CPD requirements used regularly	Professional conferences	51	24.20%
	In-house training	45	21.30%
	Online training	41	19.40%
	Professional journals	37	17.50%
	Academic courses	19	9.00%
	Academic journals	13	6.20%
	Others	5	2.40%
	Total response count 53	Total	211

Table 4.5: Frequencies for sources of CPD used regularly

Source: Author’s own work

A crosstab between CPD sources and the type of organisation respondents work for is shown below in Table 4.6, which shows that professional conference is the most popular among the respondents across different types of organisations. In-house and online training was also very popular among consultants and corporate valuers. However, professional journal, academic courses and academic journals were equally popular for self-employed valuers and people from the public sector.

	Professional conference	In-house training	Online training	Professional journal	Academic courses	Academic journals	Other
Consultancy	26	23	22	18	8	5	3
Corporate	13	14	11	9	6	1	0
Public sector	4	3	4	4	1	3	0
Self-employed	4	3	3	3	3	2	1
Other	4	2	1	3	1	2	1

Table 4.6: Crosstab between type of organisation and CPD sources used regularly (Total response count 53)

Source: Author’s own work

CPD on sustainability and valuation: Valuers were also asked if they have completed any specific CPD on sustainability and valuation, and 56% valuers answered yes to that question, which indicates a possible interest towards sustainability among these respondents.

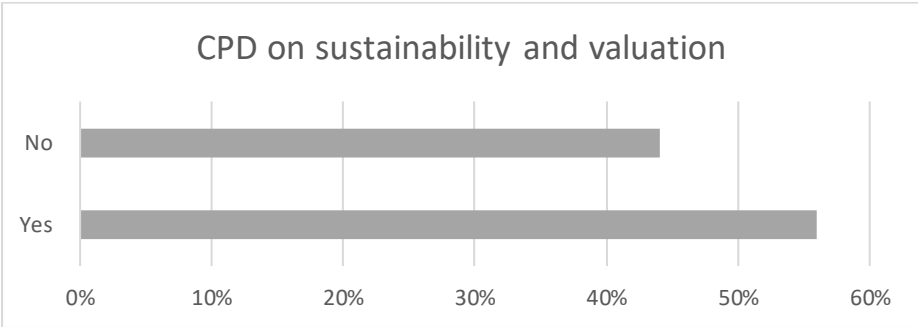


Figure 4.9: Bar chart for CPD on sustainability and valuation (Total response count 53)

Source: Author’s own work

RenoValue: Valuers were also asked if they have completed the RICS training module of RenoValue, and 89% of the valuers answered no, indicating it has not been very popular. However, as mentioned above, 56% of valuers have completed specific CPD on sustainability and valuation.

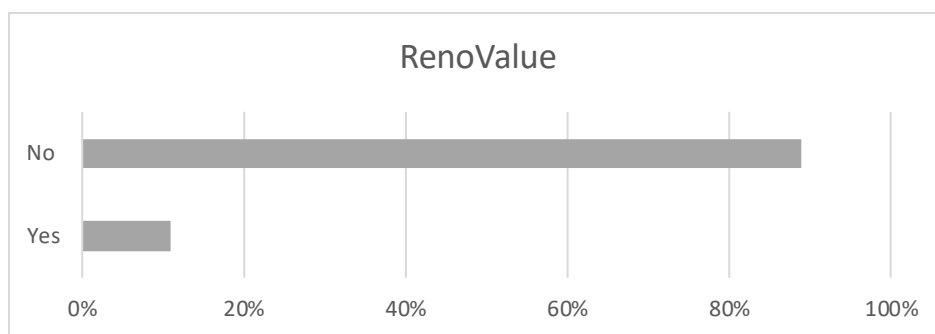


Figure 4.10: Bar chart on completion of RenoValue (Total response count 53)

Source: Author's own work

4.4 Findings and analysis:

Valuers' awareness and use of RICS guidelines: To answer the first research question, valuers were asked about several of the RICS guidance notes along with the Red Book (2017 a). Guidance notes and insight papers are at advisory level whereas Red Book (2017 a) is mandatory to follow. A detailed discussion on the RICS's current standards and guidance on sustainability can be found in chapter 2, literature review (section 2.6).

Registered valuers were asked about the extent of their awareness and usage of three of the RICS guidance notes and insight papers related to sustainability along with the Red Book (2017 a). At the time of the survey, the Red Book (2017a) was considered the latest one, though currently the 2022 version of the Red Book is the latest.

Two of the most relevant guidance notes published by the RICS on sustainability (RICS, 2013; RICS, 2018a) and one insight paper (RICS, 2018b) were chosen for this research other than the reference to sustainability in the Red Book (2017 a) to determine valuers' awareness and use of the RICS advice on sustainability. The result from the survey is below in Table 4.7.

The result of the survey suggested a small number of valuers are not aware of the Red Book as well as the guidance notes. Regarding the Red Book, which is mandatory to follow, 7.55% (4 valuers out of 53) of valuers indicated not knowing about it. Looking at the other publications, although not mandatory, valuers are supposed to be aware of them to continue good practice and be updated about the RICS advice on sustainability considerations in valuation. However, 5.66%–13.21% (3–7 valuers) of valuers indicated they “do not know about it”. Though the RICS is providing advice on sustainability matters, it is not always the fact that these will reach to all registered valuers, and they will consider these during valuation, especially when these are under advice to maintain good

practice rather than mandatory to follow. The number of valuers overall not knowing about these publications is 3–7 among 53 respondents.

Among the valuers who were aware of the Red Book and guidance notes, most (37.74%–56.60%) mentioned that they use these publications “seldom” whereas 20.75%–24.53% of valuers mentioned that they refer to these publications “frequently”. Since the Red Book is mandatory to follow, the assumption was that it would be the one to receive the highest percentage for ‘frequently’ used or referred to, however that was not the case. The highest percentage achieved in the ‘frequently’ used or referred to category was the RICS insight paper on MEES (RICS, 2018b). As MEES came into force in April 2018, it has been mandatory to have a minimum standard of E or higher EPC (on a scale of A to G) for all let properties. Therefore, valuers referred to the MEES insight paper (RICS, 2018b) to understand and reflect the implications of MEES on property valuation. This finding indicates the impact of mandatory policies and regulation introduced by the UK government. The increasing accountability that is expected from the introduction of mandatory certification (Arnold, 2022) is possibly forcing valuers to consider MEES and EPCs, hence the higher usage of the RICS (2018b) insight paper was found.

For comparison, study in the UAE showed 70% of the respondents were not well-acquainted with the sustainability guidance provided by the RICS (Lambourne, 2020). A previous survey conducted by the RICS in 2012 by Michl et al. (2016) found that only 5.1% of valuers in the ‘UK and other regions’ at the time of the survey “always” used the sustainability and commercial property valuation guidance note (RICS, 2011), while 10.9% used it “occasionally” and 12.30% “seldom” used it. 17.4% never referred to this guidance and 54.3% valuers did not respond. Within this study all of the valuers responded to this question (total 53) which could be an indication of increasing awareness of the publications. Results of this research therefore shows the awareness and usage of the RICS guidelines on sustainability has improved since then.

Total no. of responses 53				
Missing Value 0				
	Do not know about it	Never	Seldom	Frequently
Sustainability and Commercial Property Valuations, (RICS, 2013)	5.66% (3)	22.64% (12)	50.94% (27)	20.75% (11)
Reference to Sustainability in the RICS Valuation – Global Standards (2017)	7.55% (4)	15.09% (8)	56.60% (30)	20.75% (11)

Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	9.43% (5)	32.08% (17)	37.74% (20)	20.75% (11)
RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	13.21% (7)	24.53% (13)	37.74% (20)	24.53% (13)

Table 4.7: Extent of awareness of RICS guidelines

Source: Author’s own work

Note: Response count for each category is presented in brackets. Total number of responses in each case is 53.

Several crosstabs are presented below that is an attempt to investigate if valuers’ awareness and usage of these guidelines are dependent upon other factors such as experience. The crosstabs also include results from Chi Square tests, correlation coefficient and significance level (p-values), however these results were not significant which could be attributable to small sample size (Seth et al., 2009). Thus, these results have not been compared to earlier studies. Though these results were not significant the crosstabs provide insights on the possible relationships between variables.

A crosstab (Table 4.8) between experience and use of RICS standards and guidelines is presented below which shows most of the respondents who responded either “do not know about it” or “never” regarding any of the RICS publications have less than 20 years of experience. Valuers with more than 20 years of experience mostly responded using these publications either “seldom” or “frequently”. Only 1 valuer with more than 20 years of experience responded, “do not know about it”. This indicates more experienced valuers are better aware of these standards and guidelines than less experienced valuers. While younger valuers are typically taught about sustainability as part of their education (RICS, 2018c), this is not apparently improving their awareness and use of the RICS sustainability guidelines. However, the better awareness of the senior valuers who responded could also be attributable to self-selection bias, i.e. those senior valuers with a strong interest in sustainability participated within this study. A similar finding was reported by Warren-Myers (2011) in Australia where senior valuers were found to be more knowledgeable on sustainability, rating tools and market dynamics. Though the Australian study did not check for awareness or usage of the RICS guidelines among valuers, this finding is still relevant as it shows that the knowledge base of the senior valuers and their heuristics may be developed through experience rather than education. Similarly, the literature and the conceptual model suggested (model 2 in chapter 3), experience helps valuers for effective decision making (Evans, 1989; Levy & Frethey-Bentham, 2010).

A second crosstab between purposes of valuation and RICS standards and guidelines is also presented in Table 4.9 below, which shows most of the valuers have indicated using the RICS publication seldom for all four purposes. However, quite a few valuers have also indicated that they “never” use the RICS publications for secured lending or company accounts purposes. From the crosstab it appeared respondents tend to use these publications more for market transaction and investment advice purposes. However, it must be noted that multiple responses were allowed for the purpose of valuation question as a single valuer would normally undertake valuations for various purposes. Therefore, it does not guarantee that a valuer would use the sustainability guidance for every type of valuation that they undertake. “Seldom” could simply mean that they use it for some valuations and not others.

A third crosstab is presented in Table 10 below showing the relation between type of organisation and RICS standards and guidelines. Most of the respondents either worked as consultants or for corporates. Among the corporate valuers, most respondents have indicated that they use these publications “seldom”. For the consultant valuers, the results are not very clear as most valuers indicated using these publications either seldom or frequently, however quite a few consultant valuers also indicated never using them.

	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b
Experience more than 20 years	0	1	0	1	5	3	8	8	11	13	10	10	8	7	6	5
Experience less than 20 years	3	3	5	6	7	5	9	5	16	17	10	10	3	4	5	8
Total	3	4	5	7	12	8	17	13	27	30	20	20	11	11	11	13
Total response count = 53																
	Chi-Square significance				Significance (p-value)				Correlation Coefficient							
RICS 2013	0.451				0.220				0.171							
RICS 2017a	0.769				0.159				0.196							
RICS 2018a	0.278				0.943				0.010							
RICS 2018b	0.701				0.162				0.195							

Table 4.8: Crosstab between experience vs use of RICS standards and guidelines

Source: Author's own work

Purposes of valuation	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b
Market transaction	2	2	3	3	6	4	9	9	15	16	10	8	4	5	5	7
Secured lending	3	3	4	6	10	7	14	8	19	21	15	15	9	10	8	12
Investment advice	2	1	3	3	3	3	5	7	12	12	10	7	6	7	5	6
Company accounts	2	4	5	7	10	6	12	9	16	20	12	11	9	7	8	10
Total response count = 53																
*Chi Square significance, Corelation coefficient, Significance level (p-value) cannot be calculated as the sample size under each category is too small.																

Table 4.9: Crosstab between purposes of valuations and RICS standards and guidelines.

Source: Author's own work

Type of organisation	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017a	RICS 2018a	RICS 2018b
Self-Employed	0	0	0	0	0	0	2	2	3	3	0	1	1	1	2	1
Public Sector	0	1	0	0	0	0	1	0	3	3	2	3	1	0	1	1
Corporate	0	1	2	3	4	1	3	1	9	10	8	8	2	3	2	3
Consultancy	2	2	3	4	7	5	10	9	10	12	9	7	6	7	4	6
Other	0	0	0	0	1	2	1	1	2	2	1	1	1	0	2	2

Total response count = 53			
	Chi-Square Significance	Significance (p-values)	Correlation Coefficient
RICS 2013	0.803	0.341	-0.133
RICS 2017a	0.518	0.436	-0.109
RICS 2018a	0.440	0.749	-0.045
RICS 2018b	0.616	0.708	-0.053

Table 4.10: Crosstab between type of organisation and RICS standards and guideline

Source: Author's own work

Data collection on sustainability attributes: A major part of the first research question refers to the Red Book's (RICS, 2017a) strong recommendation to valuers to collect sustainability-related data even if the value impacts of sustainability attributes are not visible. Therefore, valuers were asked about the extent to which they collect data related to the seven sustainability attributes identified through RICS guidance (RICS, 2013) and various literature (see Table 3.3 for details). In total, questions were asked on 23 sustainability factors under seven sustainability attributes and the responses are listed in Table 4.11 below.

Under **certification**, EPC is the only data valuers indicated to have collected "routinely" (86.79%) which can perhaps be attributed to the fact that EPC is now mandatory for all let properties and without an EPC, landlords are not allowed to let their properties. This finding is again consistent with the expectations of model 1 and the fact that though mandatory certification may be seen as a form of punishment (Bloggs, 2013), it is effective to create accountability (Arnold, 2022) for professional valuers' due diligence process as they reported on "routinely" collecting EPC data. In terms of voluntary certifications, valuers were asked if they collect data on BREEAM, WELL and LEED. Regarding BREEAM, 26.42% of respondents indicated that they collect data "routinely", whereas another 34% indicated "not normally". It is worth mentioning that BREEAM rating is only applicable for prime and newly built properties, whereas most of the UK property stock is old. Due to this, BREEAM data is not available for the majority of the UK's stock and, hence, valuers cannot collect this data. For the other two voluntary certifications, LEED and WELL, data were not collected as indicated by majority of the valuers (50.94%–56.60%). Therefore, the voluntary certificates were not possibly as effective as the mandatory certificate to influence the due diligence process of the valuers.

For data related to **energy and carbon**, valuers indicated they did not collect anything routinely in most cases, though 37.74% of valuers indicated that they collect data on energy sources on a routine basis, another 30.19% indicated that they do not collect it at all. Hence, there is a conundrum as to what extent valuers are collecting this data. This is further investigated through crosstab.

Data collection related to **quality of external environment** was greater compared to the other attributes. Valuers indicated that they routinely collect data on proximity to open and green spaces (39.62%), any pollution in areas contiguous to the property environment (54.72%) and proximity to public transport (73.58%). It is important to consider that these characteristics are mostly related to the most important factor of any real estate, 'location', and traditionally location of a property and its surroundings can be a significant determinant of value. In Nigeria, connections to green

spaces were found to be a significant attribute that can impact on value (Babawale and Oyalowo, 2011) and this is similar to this study. Water consumption was also found to be a significant cost saving factor in Nigeria (Babawale and Oyalowo, 2011). However, none of the **waste or water management** data were collected routinely for this study as indicated by the respondents.

In terms of **adaptability and resilience to climate change**, valuers indicated that they routinely collected data on flexibility (52.83%), building component design for reuse (39.62%) and flood risk (73.58%). Around 80% of valuers indicated that they report all the sustainability-related data (Figure 4.12) that they collect in the final valuation report. This is more than what was reported by Warren-Myers (2013), who found that 54% of Australian valuers did not report on sustainability-related features (inclusion of sustainability attributes, building ratings, building initiatives, owners sustainability objectives, tenant sustainability objectives, level of sustainability) in their valuation reports unless specifically asked by clients, whereas 46% reported that they regularly reported on sustainability (Warren-Myers, 2013). Later survey in 2021 found the reporting has improved since the last survey in terms of details being reported to a medium level compared to minimal reporting in previous surveys (Warren-Myers, 2022b). On the other hand, these results are broadly consistent with those found more recently by Michl et al. (2016) where data on features such as flood, storm risk and flexibility were found to be collected by valuers more than other selected characteristics, though at levels which were significantly below what this study has found, so the collection of these data appears to be gaining traction. Factors that have gained importance since the study by Michl et al. (2016) are mostly related to traditional building or location attributes such as proximity to open and green space, proximity to public transport, any pollution in area contiguous to the property environment and flexibility of internal layout. However, data on less traditional factors such as health and well-being or waste and water management have not gained much more importance since the survey by Michl et al. (2016).

Total no of responses 53				
Missing Value 0				
Sustainability Attributes	Never	Seldom	Not normally	Routinely
Certification				
1. EPC	5.66% (3)	1.89% (1)	5.66% (3)	86.79% (46)
2. BREEAM	26.42% (14)	13.21% (7)	33.96% (18)	26.42% (14)
3. LEED	50.94% (27)	13.21% (7)	26.42% (14)	9.43% (5)
4. WELL	56.60% (30)	13.21% (7)	26.42% (14)	3.77% (2)

Energy and Carbon				
5. Energy consumption data	37.74%	32.08%	15.09%	15.09%
	(20)	(17)	(8)	(8)
6. Carbon emissions data	47.17%	28.30%	16.98%	7.55%
	(25)	(15)	(9)	(4)
7. Energy source used	30.19%	18.87%	13.21%	37.74%
	(16)	(10)	(7)	(20)
8. Renewables for heating and cooling	30.19%	24.53%	24.53%	20.75%
	(16)	(13)	(13)	(11)
Waste Management				
9. Waste management facilities (e.g. sorting, compaction etc.)	54.72%	28.30%	9.43%	7.55%
	(29)	(15)	(5)	(4)
10. Waste management data (e.g. records, materials to landfill etc.)	62.26%	20.75%	13.21%	3.77%
	(33)	(11)	(7)	(2)
Water Management				
11. Water conservation installation (e.g. sprinkler taps, leakage detection etc.)	49.06%	20.75%	22.64%	7.55%
	(26)	(11)	(12)	(4)
12. Grey water system	54.72%	22.64%	15.09%	7.55%
	(29)	(12)	(8)	(4)
13. Water consumption data	69.81%	15.09%	11.32%	3.77%
	(37)	(8)	(6)	(2)
Quality of External Environment				
14. Proximity to open and green spaces	18.87%	15.09%	26.42%	39.62%
	(10)	(8)	(14)	(21)
15. Any pollution in areas contiguous to the property environment	24.53%	7.55%	13.21%	54.72%
	(13)	(4)	(7)	(29)
16. Proximity of public transport	13.21%	3.77%	9.43%	73.58%
	(7)	(2)	(5)	(39)
Health and Well-being				
17. Occupiers' satisfaction data	58.49%	22.64%	15.09%	3.77%
	(31)	(12)	(8)	(2)
18. Internal environment (e.g. indoor air quality data; levels of natural light)	43.40%	20.75%	13.21%	22.64%
	(23)	(11)	(7)	(12)
Adaptability and Resilience to Climate Change				
19. Flexibility of internal layout	20.75%	9.43%	16.98%	52.83%
	(11)	(5)	(9)	(28)
20. Building component design for reuse (e.g. readily demountable/reusable partitions)	28.30%	18.87%	13.21%	39.62%
	(15)	(10)	(7)	(21)
21. Site flood risk	5.66%	1.89%	5.66%	86.79%
	(3)	(1)	(3)	(46)
22. Resilience to extreme weather (e.g. roof design, good heating/cooling)	26.42%	18.87%	35.85%	18.87%
	(14)	(10)	(19)	(10)

23. Use of renewable/recyclable construction materials	26.42% (14)	24.53% (13)	28.30% (15)	20.75% (11)
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Table 4.11: Extent of data collection for sustainability attributes

Source: Author’s own work

Note: Response counts are presented in brackets

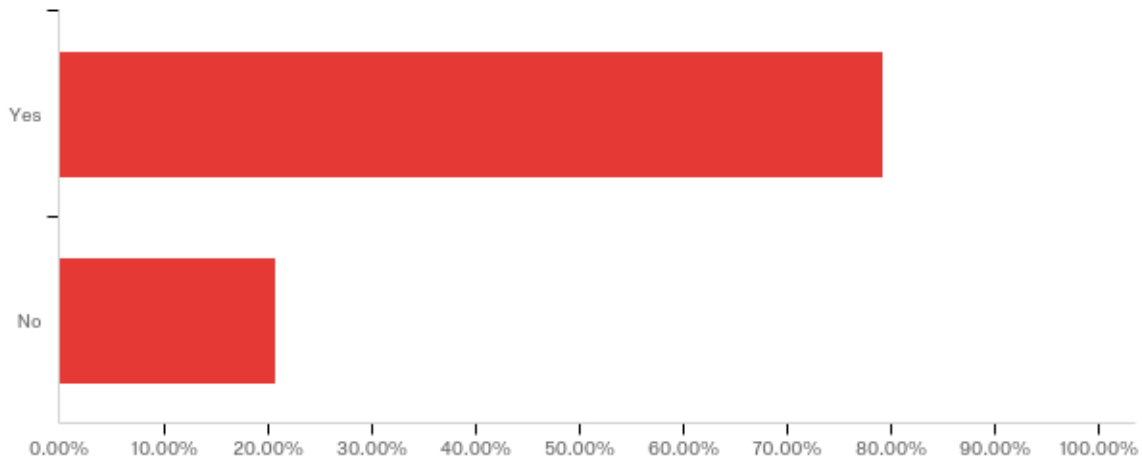


Figure 4.11: Reporting of sustainability data collection (Total response count 53)

Source: Author’s own work

It appeared that valuers collect data either routinely or seldom on EPC, BREEAM, energy sources used, proximity to open and green space, any pollution in areas contiguous to the property environment, proximity of public transport, flexibility of internal layout, building component design for reuse, site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials. A further analysis was conducted to check if these data collections is depended on other factors such as purposes of valuations, regions, academic or professional qualification of valuers, RenoValue or CPD completion on sustainability, experience, type or size of organisation valuers work for. The resulting substantial relations are presented below. The rest are presented in Appendix 3. Again, for all crosstabs chi-square significance level, correlation coefficient and significance level or p-values have been added though they were not significant due to the small sample size. Thus, these results have not been compared to previous studies’ significance levels.

A crosstab between certification (EPC and BREEAM) and purposes of valuation is presented below in Table 4.12 where it appeared data on EPC is collected regardless of the purposes of valuation. However, data on BREEAM is more likely to be collected for investment advice and company

accounts. This again indicates to the better effectiveness of the mandatory certification through MEES over voluntary certification (Arnold, 2022). For market transaction and secured lending, quite a few valuers have indicated that they never collect data on BREEAM. It is also important to note that BREEAM certifications are not available for most buildings, therefore, valuers will not be able to collect it regardless of the purpose of valuation for most buildings.

Purposes of valuation	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Market transaction	1	0	2	24	7	1	10	9
Secured lending	2	0	1	38	12	6	13	10
Investment advice	1	0	2	20	4	0	9	10
Company accounts	2	0	1	34	8	2	14	13
Other	1	1	0	13	4	2	4	5
Total response count 53 out of 53 *Chi square significance, correlation coefficient and significance levels (p-values) could not be calculated because of too small sample under each category for the variable Purposes of Valuation.								

Table 4.12: Crosstab between purposes of valuation and certification

Source: Author’s own work

A crosstab between valuers’ experience and certification is presented below in Table 4.13, which shows valuers with different levels of experience collect data on EPC, however, data on BREEAM is more likely to be collected by more experienced valuers.

The superior collection of EPC data compared to other factors may reflect a better due diligence process which can be linked to the introduction of the MEES as was reported by Sayce and Hossain (2020). In Australia Warren-Myers (2022b) reported on valuers increasing knowledge and awareness on the rating system NABERS due to the introduction of mandatory disclosure legislation which is possibly happening in the UK too with EPC due to the introduction of MEES. Data on BREEAM will normally be available for new, prime properties only, as one of the respondents commented, “*These factors pertain more significantly to higher value commercial stock*” (such as prime office spaces or other prime assets). The buildings with BREEAM

certifications are more likely to be valued by more experienced valuers, hence BREEAM data is more likely to be collected by senior valuers. A similar outcome was reported by Warren-Myers (2011) who found that senior valuers in Australia were marginally more experienced in valuing sustainable properties.

Experience	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0–5 years	0	0	0	11	4	1	5	1
5–10 years	1	1	2	7	4	3	4	0
11–20 years	1	0	1	5	3	1	0	3
More than 20 years	1	0	0	23	3	2	9	10
Total response count = 53								
	Chi Square significance			Significance (p-values)			Correlation Coefficient	
EPC	0.165			0.812			0.033	
BREEAM	0.080			0.011			0.349	

Table 4.13: Crosstab between experience and certification

Source: Author’s own work

Another crosstab between number of valuers in the organisation (size of organisation) and certification is presented below in Table 4.14. Regardless of the size, valuers regularly collect data on EPC, however, data on BREEAM is routinely collected by most of the valuers belonging to the bigger organisation with more than 100 valuers. The reason could be that larger firms are more likely to value higher value properties which are BREEAM certified.

No. of valuers in organisation	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0–5	1	0	1	13	6	1	4	4
6–20	1	0	1	6	3	0	3	2
21–100	0	0	1	13	4	2	6	2

More than 100	1	1	0	14	1	4	5	6
Total response count = 53								
	Chi Square significance			Significance (p-values)			Correlation Coefficient	
EPC	0.775			0.859			0.025	
BREEAM	0.410			0.184			0.185	

Table 4.14: Crosstab between number of valuers in organisation and certification

Source: Author's own work

A crosstab between experience and energy sources used, flexibility of internal layout and building component design for reuse is presented below in Table 4.15, where it appears experienced valuers are more likely to collect data on these factors, which could mean experienced valuers are observing the importance of energy efficiency in the market and trying to factor that into valuation. This is again consistent with the expectation of model 2 which conceptualized senior valuers are more likely to identify sustainability attributes in buildings and its benefits due to their experience. The use of heuristics to identify sustainability is more likely among senior valuers too as they have the experience to value various types of properties and in various scenarios. Vast knowledge and short-term memory are needed for efficient and accurate analysis (Simon & Simon, 1978) which more experienced valuers are more likely to possess (Arocha et al., 2005).

Another crosstab between number of valuers in the organisation (size of organisation) and energy sources used, flexibility of internal layout and building component design for reuse is presented below in Table 4.16, from which it appears valuers from small organisations are more likely to collect data on energy sources used. The reason behind this did not emerge very clearly. Further research is required to identify the reasons why small firm valuers may be interested to collect data on energy sources.

Experience	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0–5 years	5	2	1	3	4	0	1	6	4	1	1	5
5–10 years	4	4	2	1	3	2	1	5	2	2	2	5
11–20 years	1	0	2	4	2	1	0	4	2	2	1	2
More than 20 years	6	4	2	12	2	2	7	13	7	5	3	9
Total response count 53 out of 53												
	Chi Square significance				Significance (p-values)				Correlation Coefficient			
Energy sources used	0.252				0.058				0.262			
Flexibility of internal layout	0.360				0.188				0.183			
Building component design for reuse	0.983				0.710				-0.052			

Table 4.15: Crosstab between experience and energy sources used, flexibility of internal layout and building component design for reuse

Source: Author's own work

No. of valuers in organisation	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0–5	2	1	1	11	3	2	2	8	7	3	1	4
6–20	4	0	2	2	2	1	2	3	2	0	1	5
21–100	6	2	3	3	4	0	2	8	5	4	2	3
More than 100	4	7	1	4	2	2	3	9	1	3	3	9
Total response count 53 out of 53												
	Chi Square significance				Significance (p-values)				Correlation Coefficient			
Energy sources used	0.012				0.017				-0.328			
Flexibility of internal layout	0.926				0.612				0.071			
Building component design for reuse	0.218				0.054				0.266			

Table 4.16: Crosstab between number of valuers in organisation and energy sources used, flexibility of internal layout and building component design for reuse

Source: Author's own work

Sustainability attributes’ importance to various stakeholders: Valuers were asked about their opinion on the importance of sustainability attributes to investors, lenders and owner-occupiers. Figure 4.12 below presents three panels, panel A presents results for investors, panel B lenders and panel C owner occupiers. Starting with the investors, valuers indicated certification is one of the most important sustainability attributes followed by quality of external environment, energy and carbon, health and well-being and adaptability and resilience to climate change. Water and waste management seemed to be less important than the other attributes.

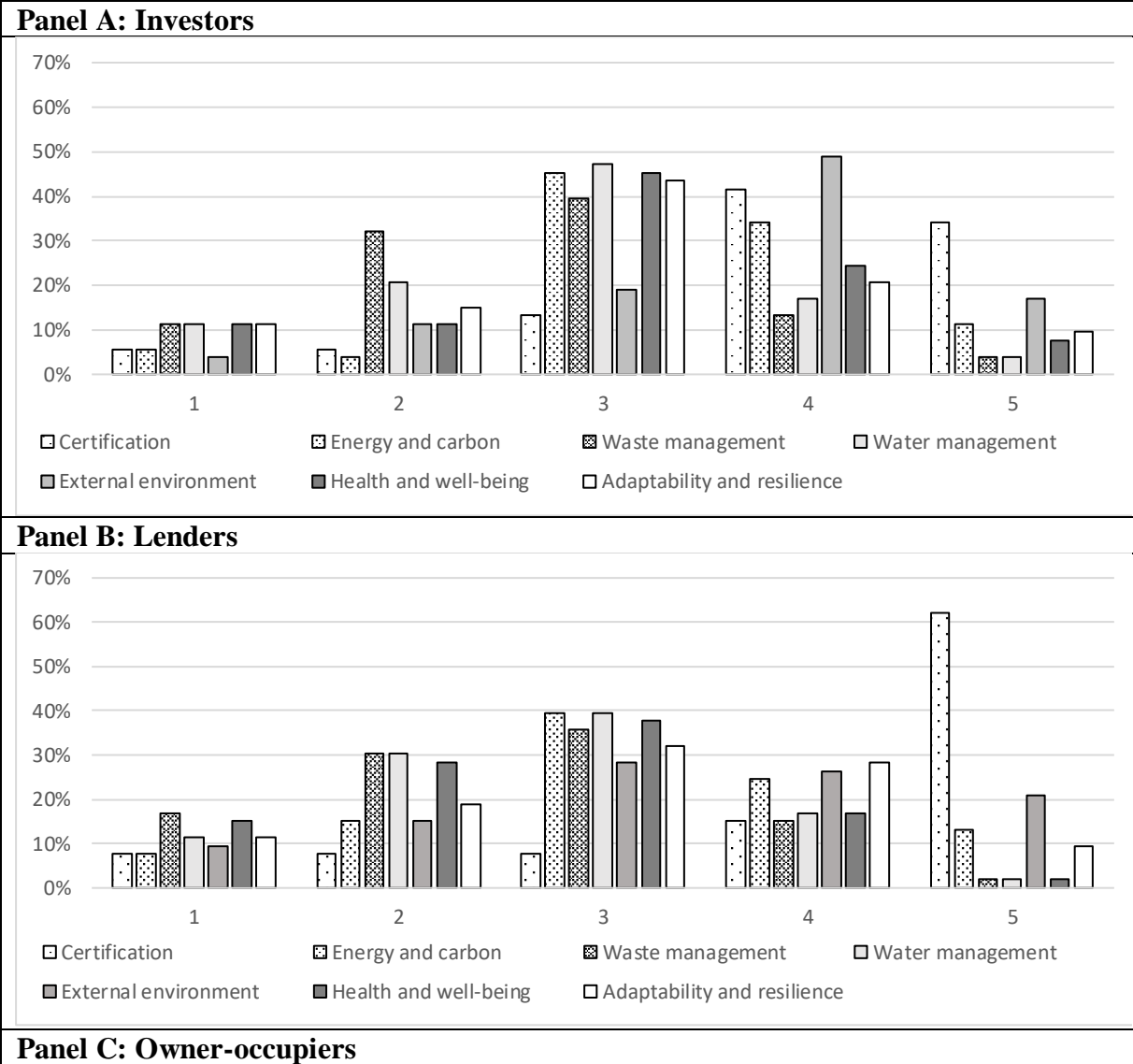


Figure 4.12: Perception of importance of sustainability attributes to different types of clients
Note: Scale 1 to 5 where 1 is of no importance and 5 is very important to that type of clients
(Total response count 53)

Source: Author’s own work

For lenders (panel B above) too, valuers indicated that certification seemed quite important followed by adaptability and resilience to climate change, health and well-being and energy and carbon. The other factors seemed less important, as indicated by the valuers.

For owner-occupiers (panel C above), valuers indicated that certification is quite important, followed by energy and carbon, quality of external environment, health and well-being and waste management. Water management and adaptability and resilience to climate change seemed less important than the other factors.

A weighted average table (Table 4.17) and figure (Figure 4.13) of the above three panels are presented below. Each score was multiplied by the proportion of respondents who gave it to create the weighted average table. It also shows certification is the most important factor for all three commissioning clients, as indicated by the valuers. The reason behind the perceived importance of certification to all three commissioning clients according to valuers could be the result of the combined effect of mandatory and voluntary certifications. Additionally, according to the valuers, all the sustainability attributes are more important for owner-occupiers. The possible reason behind this thinking might be that owner-occupiers directly enjoy a lot of the benefits of sustainability compared to lenders and investors such as health and well-being factors, waste or water management benefits (Aroul & Hansz, 2012). Study in Australia by Warren-Myers (2011) found valuers had a mixed response regarding if occupiers (tenants) were paying more for sustainable properties.

Sustainability attributes	1			2			3			4			5		
	I	L	O	I	L	O	I	L	O	I	L	O	I	L	O
Certification	0.17	0.3	0.08	0.17	0.3	0.3	0.92	0.3	2.28	9.13	1.21	2.72	6.11	20.55	10.87
Energy and carbon	0.17	0.3	0.08	0.08	1.21	0.17	10.87	8.32	1.53	6.11	3.19	9.13	0.68	0.92	5.45
Waste management	0.68	1.53	0.17	5.45	4.83	0.3	8.32	6.81	3.7	0.92	1.21	7.55	0.08	0.02	2.72
Water management	0.68	0.68	0.17	2.28	4.83	0.3	11.79	8.32	4.83	1.53	1.53	6.81	0.08	0.02	2.28
Quality of external environment	0.08	0.47	0.02	0.68	1.21	0.17	1.89	4.25	1.53	12.76	3.7	8.32	1.53	2.28	6.81
Health and well-being	0.68	1.21	0.08	0.68	4.25	0.08	10.87	7.55	3.7	3.19	1.53	6.11	0.3	0.02	5.45
Adaptability and resilience to climate change	0.68	0.68	0.3	1.21	1.89	0.92	9.98	5.45	4.25	2.28	4.25	5.45	0.47	0.47	1.89

Table 4.17: Weighted average values of Sustainability attributes: valuers' views about importance to investors, lenders and owner-occupiers (1 being of no importance and 5 being very important) (I = Investors, L = Lenders, O = Owner Occupiers)

Source: Author's own work

Note: Total Response Count 53

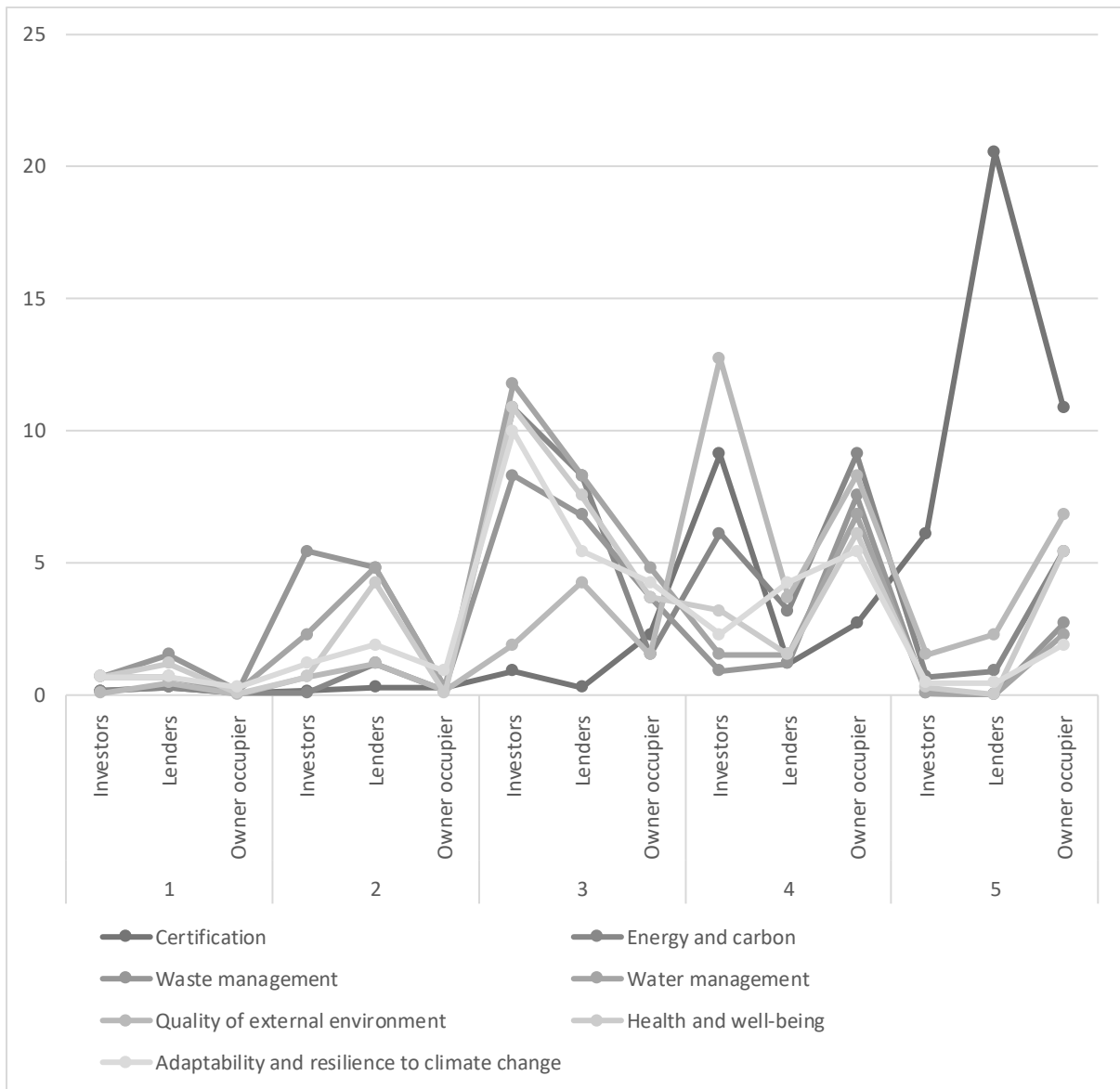


Figure 4.13: Comparative analysis of importance of sustainability attributes between commissioning clients (1 being of no importance and 5 being very important)

Source: Author's own work

A comparative analysis is shown in Figure 4.13. This shows certification is the most important sustainability attribute for all three commissioning clients, as indicated by the values. The second most important sustainability attribute according to valuers is quality of external environment and the third, energy and carbon. Water, waste, health and well-being and adaptability and resilience to climate change do not seem to have much importance according to the respondents. However, adaptability and resilience include flood risk, flexibility and building component reusability which valuers indicated they collected data on routinely. For comparison, Michl et al. (2016) asked valuers in 2012 about client demand for integration of sustainability attributes in valuations. Across the

geographies surveyed, they found that most respondents had not been asked about sustainability, but the most demand for inclusion of sustainability in valuations in the UK came from investors.

Impact on market value: Valuers were asked about their opinion regarding if and how they are reflecting sustainability attributes in market value through seven sustainability attributes stated above and three value indicators: adjustment of rental evidence, likelihood of voids and capitalisation rate. An option ‘none’ was also provided for all seven sustainability attributes to indicate no value impact. It is important to mention that respondents could indicate multiple responses for each of the sustainability attributes as one attribute may impact market value through several value indicators.

The first analysis on the impact on market value is presented below in Table 4.18, showing the number of valuers who thought sustainability attributes were making some value impacts vs. no value impacts at all. The valuers who indicated no value impacts did not choose any other option listed in the question, whereas valuers who indicated some value impacts listed multiple value indicators for each of the sustainability attributes. For example, if a valuer thought certification had some value impacts, he could choose from several value indicators such as adjustment of rental evidence, likelihood of voids and capitalisation rate. The majority of the valuers indicated certification and quality of external environment had some value impacts whereas waste, water, health and well-being and adaptability and resilience did not have any value impacts. Regarding energy and carbon, the responses were very close.

Sustainability attributes	Impact on market value		
	Some value impacts	No value impacts	Total
Certification	74% (39)	26% (14)	100% (53)
Energy and carbon	47% (25)	53% (28)	100% (53)
Waste management	19% (10)	81% (43)	100% (53)
Water management	23% (12)	77% (41)	100% (53)
Quality of external environment	60% (32)	40% (21)	100% (53)
Health and well-being	38% (20)	62% (33)	100% (53)
Adaptability and resilience to climate change	36% (19)	64% (34)	100% (53)

Table 4.18: Percentage and Number of valuers indicating impacts on market value (Response count for each category in brackets and total response count is 53)

Source: Author's own work

A further analysis of these results is presented below in Table 4.19. According to valuers, only certification was indicated to have some market value impact among all seven sustainability attributes. In Australia however, energy efficiency was found to have the strongest positive impact on market value though all 8 sustainability elements within that study had some level of positive influence on market value (Warren-Myers, 2013). The 8 elements were energy efficiency, water conservation, low emissions, indoor environment quality, low VOC materials, renewable energy, rainwater collection or recycling and management (Warren-Myers, 2013). The survey was repeated, and later study found diminishing impacts on value for all 8 elements (Warren-Myers, 2016). The higher association to value of these 8 elements in earlier study (Warren-Myers, 2013) could be due to highest sustainability initiatives during 2007 when the survey was conducted (Warren-Myers, 2016). The latest survey in Australia reported by Warren-Myers (2022b) showed energy efficiency was still at the top of the list to impact on market value along with indoor environmental quality, renewable energy and low emissions which could be attributable to the sector's increasing focus on climate change and lowering emissions. It also showed, more valuers believed that sustainability influenced value (Warren-Myers, 2022b). Study in the UAE also found energy efficiency design as one of the top three sustainability features (Lambourne, 2020). In terms of certification in Australia valuers reported influence of NABERS and Green Star on value has increased over time (Warren-Myers, 2022b). However, in the UK the impact of certification is greater possibly because of the mandatory certificate EPC. As EPC came into effect as well as the increasing popularity of voluntary certification (notably BREEAM, as for the other certifications data are not collected as indicated above), it is likely to impact all three value indicators, which are capitalisation (cap) rate (34.07%), adjustment to rental evidence (25%) and likelihood of voids (25%). Cap rate appeared to be the most important value indicator to reflect the impacts on MV. Contrary to this finding, in Australia rent was found to be the most important value indicator along with saleability and price (Warren-Myers, 2013). Later studies in Australia found valuers have moderated these views possibly due to change in market sentiment (Warren-Myers, 2016). However, positive impacts on value for sustainability was reported again through yields, rents, rental growth, saleability and price in the latest study in Australia (Warren-Myers, 2022b). On the contrary, in the UK, the use of an all-risks yield is dominant for calculating MV. Michl et al. (2016) similarly found that yields were more influential in the UK than Germany and Switzerland because of its influence in calculating market value. The cap rate is calculated through dividing the net operating income by comparable

sales price. Therefore, adjusting the cap rate means it can be an adjustment to comparable sales price or net operating income or both. This indicates, based on a better or worse certification, a property may have higher or lower rental income or sales price, or it may take shorter or longer to let.

Waste and water management are likely to have no impact on market value according to the valuers as well as health and well-being and adaptability and resilience to climate change. Similarly in Nigeria social factors were found to have less significant impact on value than economic and environmental issues (Babawale & Oyalowo, 2011). Quality of external environment’s impact on market value for this study seemed unclear, as the responses were very close. 26.25% respondents indicated none, whereas 20.00%–27.50% indicated the other value indicators. Contrary to this finding, study in Nigeria found connections to green spaces and other factors related to environmental issues can have highly significant influence on value (Babawale & Oyalowo, 2011). As the results of this study is mixed it needs further investigation.

Sustainability Attributes	Adjustment of rental evidence	likelihood of voids	capitalisation rate
Certification	30% (23)	30% (23)	40% (31)
Energy and carbon	37% (16)	30% (13)	33% (14)
Waste management	41% (7)	29% (5)	29% (5)
Water management	43% (9)	29% (6)	29% (6)
Quality of external environment	36% (21)	27% (16)	37% (22)
Health and well-being	28% (10)	39% (14)	33% (12)
Adaptability and resilience to climate change	21% (6)	34% (10)	45% (13)

Table 4.19: Impact on Market Value (Response count for each category in brackets) (Total response count 53)

Source: Author’s own work

The following crosstab (Table 4.20) is an attempt to understand why valuers are not collecting data on sustainability – is it because they do not think it is impacting on market value or is it because data is not available? When a valuer believes there is a market value impact for a factor, he/she is more likely to collect data on that factor. However, even though someone thinks a factor is likely to impact on value but still not collecting data, that is probably because data is not available for that

factor. Whereas, if a valuer thinks there is no market value impact of a factor, he/she is less likely to collect the data.

As seen in Table 4.20, 14 valuers indicated there were no market value impacts for certification and 39 valuers thought there were some value impacts. Among the 39 valuers who thought there were market value impacts of certification, three indicated not collecting data on EPC and 22 indicated not collecting data on BREEAM. It is likely that BREEAM data is not available for many of the buildings that valuers value as it is only available for a selective number of properties, therefore, valuers cannot collect the data. On the other hand, three valuers who thought there was a value impact of certification but not collecting EPC data is probably because data was not available. 14 valuers said they did not think there is a market value impact of certification, but still 11 of them were collecting data on EPC, probably because it is mandatory for let properties. Three of them were not collecting data on EPC which could be because data was not available. It is worth mentioning that EPC is not mandatory for owner-occupier properties. On the other hand, 10 of them mentioned not collecting data on BREEAM, probably because data was not available.

In terms of energy and carbon, 28 valuers thought there were no value impacts, and 25 thought there were some value impacts. Among the 25 valuers who thought there were some value impacts, the majority (20) were collecting data on energy sources used; the rest were not collecting it, probably because data was not available. On the other hand, the majority of the 28 valuers who thought there was no value impacts were not collecting the data.

Regarding quality of external environment, 32 valuers thought there were some value impacts, the majority of whom were collecting data on proximity to open and green spaces (21), any pollution in the area contiguous to property environment (26) and proximity to public transport (28). The rest were not collecting it, probably because the data was not available for the properties they valued.

In terms of adaptability and resilience to climate change, 19 valuers indicated that it was impacting on market value to some extent. The majority were collecting data on flexibility (14), building component design for reuse (12), site flood risk (18), resilience to extreme weather (10) and use of renewable/recyclable construction materials (9). Whereas the majority of the valuers who thought adaptability and resilience to climate change was not yet impacting on market value were not collecting data on these factors.

Data Collection		Impact on market value							
		Certification		Energy and carbon		Quality of external environment		Adaptability and resilience to climate change	
		Yes (39)	No (14)	Yes (25)	No (28)	Yes (32)	No (21)	Yes (19)	No (34)
EPC	Yes	36	11						
	No	3	3						
BREEAM	Yes	17	4						
	No	22	10						
Energy sources used	Yes			20	10				
	No			5	18				
Proximity to open and green spaces	Yes					21	8		
	No					11	13		
Any pollution in areas contiguous to the property environment	Yes					26	7		
	No					6	14		
Proximity of public transport	Yes					28	13		
	No					4	8		
Flexibility of internal layout	Yes							14	19
	No							5	15
Building component design for reuse (e.g. readily demountable/reusable partitions)	Yes							12	19
	No							7	15
Site flood risk	Yes							18	29
	No							1	5
Resilience to extreme weather (e.g. roof design, good heating/cooling)	Yes							10	10
	No							9	24
Use of renewable/recyclable construction materials	Yes							9	15
	No							10	19

Table 4.20: Crosstab between data collection and impact on market value

Source: Author's own work

Impact on Investment Value: Valuers were also asked about their opinions on how sustainability attributes might be affecting investment value or worth. To investigate the effect on worth, valuers were asked about the effect of each of the seven sustainability attributes on investment value or worth through five value indicators: adjustment of rental evidence, estimate of rental growth, discount rate, rate of obsolescence and exit yield. For each of the sustainability attributes, an option

'none' was also provided to indicate no value impact and multiple responses were allowed. The first analysis is presented in Table 4.21 which shows the number of valuers who indicated some value impacts of sustainability attributes vs. none at all. The majority of the valuers indicated that certification and quality of external environment had some impacts, whereas waste, water, health and well-being and adaptability and resilience of climate change had no value impacts. The responses for energy and carbon were again very close. The valuers who selected the option "none" to indicate no value impacts did not choose any other option, but valuers who indicated some value impacts listed multiple value indicators for each of the sustainability attributes.

Sustainability attributes	Impact on investment value		
	Some value impacts	No value impacts	Total
Certification	75% (40)	25% (12)	100% (53)
Energy and carbon	53% (28)	47% (25)	100% (53)
Waste management	26% (14)	74% (39)	100% (53)
Water management	26% (14)	74% (39)	100% (53)
Quality of external environment	64% (34)	36% (19)	100% (53)
Health and well-being	40% (21)	60% (32)	100% (53)
Adaptability and resilience to climate change	45% (24)	55% (29)	100% (53)

Table 4.21: Percentage and Number of valuers indicating impacts on investment value (Response count for each category in brackets, Total response count 53)

Source: Author's own work

A further analysis is presented below in Table 4.22. According to the valuers, again, only certification was indicated to have some effect on investment value or worth. The other attributes appeared to have little or no effect. Valuers indicated certification was most likely to have an effect through exit yield (22.58%) and/or adjustment of rental evidence (20.43%) and/or discount rates (19.35%). This means valuers were likely to adjust the impact of certification on investment value either through rental income and/or exit value and/or risk adjustments.

Valuers provided quite clear responses on the impact on worth of energy and carbon (none: 32.89%), waste (none: 62.90%) and water (none: 61.90%) management, adaptability and resilience

to climate change (none: 42.03%) and health and well-being (none: 43.84%). At the time of the survey, these attributes appeared to have no impact on investment value.

Other than certification, quality of external environment appeared to have some impact according to valuers. About 22.62% indicated ‘none’ whereas 20.24% indicated adjustment of rental evidence and 16.67% indicated discount rate. Again, as the percentages of responses were very close, this does not allow for a clear conclusion, and needs further investigation.

Sustainability attributes	Adjustment of rental evidence	Estimate of rental growth	Discount rate	Rate of obsolescence	Exit yield
Certification	24% (19)	14% (11)	23% (18)	14% (11)	26% (21)
Energy and carbon	18% (9)	14% (7)	27% (14)	24% (12)	18% (9)
Waste management	17% (4)	13% (3)	30% (7)	22% (5)	17% (4)
Water management	21% (5)	13% (3)	29% (7)	25% (6)	13% (3)
Quality of external environment	26% (17)	17% (11)	22% (14)	14% (9)	22% (14)
Health and well-being	22% (9)	22% (9)	22% (9)	17% (7)	17% (7)
Adaptability and resilience to climate change	15% (6)	8% (3)	30% (12)	28% (11)	20% (8)

Table 4.22: Impact on investment value (Response count for each category is presented in brackets) (Total response count 53)

Source: Author’s own work

The following crosstab (Table 4.23) is again an attempt to understand why valuers may not collect data while calculating investment value. As seen in Table 4.23, 41 valuers thought there was a value impact for certification while calculating investment value and the majority were collecting data on EPC (39) and BREEAM (19). For the rest, data was probably not available. Whereas the majority of the valuers who thought there was no value impact of certification were still collecting data on EPC (8), probably because it is mandatory.

28 valuers indicated that they thought there were some value impacts of energy and carbon and 21 of them were collecting data on energy sources. The rest (7) were not collecting it, probably because data was not available. Whereas 25 valuers thought there were no value impacts of these factors, and the majority were not collecting data on energy sources used.

In terms of quality of external environment, 34 valuers indicated that they thought there were some value impacts. The majority were collecting data on proximity to open and green spaces (31), any pollution in areas contiguous to the property environment (28) and proximity to public transport (31). The rest were not collecting it, probably because data was not available. On the other hand, 19 valuers thought there were no value impacts of such factors, however some of them were still collecting data. That could be because of their clients’ interest or the RICS’s advice.

24 valuers said they thought there were some value impacts of adaptability and resilience to climate change. The majority were collecting data on flexibility (18), building component design for reuse (16) and site flood risk (21). However, data on resilience to extreme weather and use of renewable/recyclable construction materials were probably not available for all properties.

Data Collection		Impact on Investment Value							
		Certification		Energy and carbon		Quality of external environment		Adaptability and resilience to climate change	
		Yes (41)	No (12)	Yes (28)	No (25)	Yes (34)	No (19)	Yes (24)	No (29)
EPC	Yes	39	8						
	No	2	4						
BREEAM	Yes	19	3						
	No	22	9						
Energy sources used	Yes			21	9				
	No			7	16				
Proximity to open and green spaces	Yes					31	10		
	No					3	9		
Any pollution in areas contiguous to the property environment	Yes					28	5		
	No					6	14		
Proximity of public transport	Yes					31	10		
	No					3	9		
	Yes							18	15

Flexibility of internal layout	No							6	14
Building component design for reuse (e.g. readily demountable/reusable partitions)	Yes							16	15
	No							8	14
Site flood risk	Yes							21	26
	No							3	3
Resilience to extreme weather (e.g. roof design, good heating/cooling)	Yes							10	10
	No							14	19
Use of renewable/recyclable construction materials	Yes							13	11
	No							11	18

Table 4.23: Crosstab between data collection and impact on investment value

Source: Author's own work

The findings of this studies are similar to the study by Michl et al. (2016). The major change is in the perceived impact of certification, which was found to be not very significant in 2012 (Michl et al., 2016). It is evident that by 2019 this had changed. The other sustainability attributes did not influence Market Value or Investment Value to a great extent according to the respondents.

4.5 Qualitative part

Valuers were welcomed to provide comments at the end of the survey regarding their thoughts on the topic ‘sustainability and valuation’ and anything else they thought might be relevant or helpful for this research. A total of seven comments were left by the respondents and certain factors affecting valuation as well as valuers’ capability to include sustainability in valuation methodologies came to light. These were analysed in terms of several themes, which are discussed below.

Purposes of valuation: Few valuers who left comments indicated that while it was appreciated that the RICS is advising valuers to include sustainability factors factored into valuation, it was not a “*current consideration*” at the moment. One valuer mentioned “*business rate and compulsory purchases*” for which sustainability considerations were not paid “*much attention*” to. This indicated sustainability consideration might be different for various scenarios or purposes of valuation. As the online survey sample size is small, drawing clear conclusions were difficult. Thus, this finding is later explored in more detail during the second-phase data collection, semi-structured interviews.

Sustainability consideration is limited to higher value stock: Several valuers indicated sustainability consideration could be more relevant for higher value stock, especially prime office properties. One valuer’s view was,

“Sustainability will not be valued until the market demands this. Everyone knows it will eventually, however at the moment it is not really considered”.

The above quote indicates that at the time of the survey, sustainability was not reflected through market demand though it was expected that it will be in the future. However, some valuers’ views were that these attributes are “*considered by the larger funds or corporates*” only. Therefore, according to the respondents, only a few commercial properties which are at the higher end of the property market and bought/occupied by larger funds/corporates were being impacted by sustainability factors, whereas for the majority of the stock, it was not being considered since “*outside the Grade A office market, the market does not seem to apply any real science to this*”. Hence, the demand for sustainability is not reflected much for lower valued stocks. This is consistent with the expectation of model 1 and the enforcement pyramid to some extent as BREEAM being the voluntary certificate was expected to self-regulate the industry by creating a standard which is seemed to be happening through prime properties in the UK. Similarly, in

Australia valuers indicated sustainability features were typical for new buildings (Warren-Myers, 2022b) and in Poland greater awareness of sustainability costs and benefits were found among corporate tenants, especially international tenants (Kucharska-Stasiak & Olbinska, 2018). This is apparent in other literature too, Fuerst et al. (2017) found voluntary certifications were becoming norm for prime properties and Fuerst and van de Wetering (2015) described the BREEAM rating as the “de facto” standard of sustainability in the UK. Demand for sustainable attributes were found to be increasing too especially for certified properties (example, Fuerst & van de Wetering, 2015) and it has been increasing for some time (Jackson & Orr, 2018). These findings are evidence that informal social control of self-regulation through voluntary certification can be effective (Gunningham and Sinclair, 2017), however, one respondent stated,

“At present the issues raised tend to be most important to occupiers but investors and banks are still more concerned with income return and saleability and quantifying the impact of sustainable criteria in a building are far less apparent. In other words, certainly with existing stock, too little emphasis is placed on how sustainable a building is compared with the quality of income.”

The above quote referred to the lack of focus on sustainability for lower valued stock. Investors and lenders for these stocks are more interested to keep the saleability and income flowing whereas for occupiers’ sustainability attributes are more relevant. The reason behind this is the fact that occupiers enjoy the majority of the benefits of sustainability directly unlike investors and lenders. Some of these factors might be cost savings related to energy efficiency, health and well-being factors, waste, water management (Aroul & Hansz, 2012). Further empirical research is required in this area to investigate if that is actually happening. The apparent disinterest of clients of sustainability and resulting lack of its inclusion in valuation has also been reported in other countries such as the UAE (Lambourne, 2020) as well as in the earlier study in the UK (Michl et al., 2016).

An important phrase from the above quote is “*existing stock*”, which refers to the older stock of the UK. These properties comprise the majority of the property stock in the UK. To have sustainability factors included for these properties is more challenging than for new stock. Also, the lenders or investors for these properties are more concerned about income return or saleability rather than sustainability factors. Therefore, if sustainability attributes’ relation to saleability or income could be identified for these properties, it could be useful to bring the investors and lenders on board for the inclusion of sustainability attributes in these properties. This could be done through

enforcing the upper levels of the enforcement pyramid (penalties and strengthening of regulation). If MEES is used effectively, the government can force the market to consider EPCs even at the lower end of the property market and the MEES is already tied to saleability and income of properties. Without enforcing the upper levels of the enforcement pyramid it is not possible to fully achieve the potentials of smart regulation (Gunningham and Sinclair, 2017).

Difficulties in valuing sustainability attributes: One valuer also commented on the fact that valuers were not sufficiently equipped to consider sustainability or its attributes. According to this respondent,

“A lot of things being asked are outside of valuers’ expertise and RICS would be very harsh on valuers providing advice on areas [in which] they’re not qualified.”

This indicated that though valuers were provided with multiple publications by the RICS on sustainability and its impact on value, currently at least some valuers do not consider these to be enough to make them experts on sustainability. The RICS’s instruction in this case is, where valuers lack necessary skills, they should consult specialists (RICS, 2013), however the small or local valuation firms may not have that luxury to appoint specialists every now and then. The studies in Australia found valuers lack the knowledge on sustainability and its assessment (Warren-Myers, 2011) as well as popular Australian rating tools like NABERS and Green Star (Warren-Myers, 2013). Similarly in the UAE lack of technical knowledge and lack of awareness were found as barriers to recognising green premiums (Lambourne, 2020). The lack of knowledge on sustainability may be hindering the confidence of valuers to fully comprehend the value impacts of sustainability factors. The UAE study reported at least 25% participants felt “not so confident” or “not at all confident” on their own abilities to value sustainable buildings (Lambourne, 2020). The lack of knowledge on sustainability can also hinder the development of heuristics on sustainability.

From the comments, the impact of EPC certification on value became clear. It is either reflected through *“expenditure or a direct cap-ex of the top line to bring it up to the appropriate level”*. This comment refers to a situation when a property’s EPC is not up to the minimum standard and the cost of bringing the property to the minimum standard of E is calculated and deducted from the final value as cap-ex. This was found by Sayce and Hossain (2020) as well. They also reported on variations in the treatment of EPC non-compliance, whereby no value impacts for non-compliance were reported by some of the valuers in that study (Sayce & Hossain, 2020). There are echoes of something similar within this study as well as one valuer mentioned, *“There are also multiple*

opinions on how to value sustainability and sustainable aspects.” Though the RICS provided guidance to valuers on how to incorporate EPC non-compliance through the publication of RICS (2018a) insight paper on MEES, it is up to the valuers to consider whether they should merely flag an EPC or seek specialist advice to determine value impact of cap-ex expenditure. The lack of prescriptive instructions from the RICS is possibly creating multiple opinions among valuers to consider EPC.

Some valuers indicated towards the difficulties faced to *“assess whether one property is greener than another in valuations”*. Because of the absence of a *“realistic benchmark”*, it was becoming increasingly difficult for valuers to assess properties and put a realistic value on sustainability factors. One valuer stated,

“It is hard to answer specially as each case will be different and looked at on merit – in some cases I have suggested no change – but of course there could be if something was unusually poor”.

Similar findings were reported by Warren-Myers (2013) where it was found that Australian valuers had limited knowledge on sustainability and questioned their own capacity to consider the impacts of sustainability in valuations. Warren-Myers (2009) also identified that Australian valuers were not well adept or equipped to identify relationships between sustainability and market value. Additionally, Warren-Myers (2013) reported on a lack of knowledge, skills and ability of Australian valuers to incorporate or consider sustainability. A later study in Australia reported though market growth in sustainability was noticeable valuers’ knowledge and reporting on sustainability did not improve much (Warren-Myers, 2016). A more recent longitudinal study in Australia found that lack of knowledge was still playing a significant role in limiting explicit sustainability considerations in valuation practices (Warren-Myers, 2022b). This brings us back to an earlier point about the education and training of valuers on the significance of sustainability when conducting valuations and whether this is currently adequate for meeting changing market requirements. This study and previous studies have found a repeated failure over time to advance the debate on how to address sustainability-related issues in valuations at a pace that reflects the apparent adoption of such issues across different markets. Valuers’ heuristics on sustainability should be developing as growth of sustainable properties increase in markets (Warren-Myers, 2009) and as valuers learn from the market through experience (Model 2 depicted in Figure 3.2 in chapter 3). It should also increase through education and training from academic and private educators as well as from the regulatory bodies (RICS and IVSC). However, currently, there

appears to be a lack of heuristic formation on sustainability for the valuation profession that could help them to address these issues in valuations. This points towards a need to better address an apparent lack of proper education, training, industry standards and guidance on how to explicitly incorporate sustainability in valuation practices.

Therefore, though valuers collect data on some sustainability attributes, it has been challenging for them to reflect sustainability in valuation. One of the reasons mentioned was valuers' lack of skills and expertise related to sustainability. Another possible reason could be the heterogenous nature of commercial properties which does not allow valuers to be prescriptive, rather they have to be case specific. On the other hand, valuers also indicated demand for sustainability is currently limited to higher value stock.

4.6 Summary of findings

From the online survey, it appeared that the usage of RICS publications (RICS 2013, 2017a, 2018a & 2018b) has increased compared to the Michl et al. (2016) study. However, the data collection on sustainability attributes for valuation of commercial properties still remains limited. Only EPC, proximity to public transport and site flood risk data are collected routinely by most respondents. Some respondents also mentioned collecting data routinely or seldom on BREEAM, energy sources used, proximity to open and green spaces, any pollution in areas contiguous to the property environment, flexibility of internal layout and building component design for reuse. Among the seven sustainability attributes, certification appeared to be the most important for commissioning clients followed by quality of external environment and energy and carbon according to the respondents. However, only certification was mentioned by respondents to have value impacts on both market and investment value. The major limitation to the online survey is the limited number of participants (53). Because the number of respondents was low, it was difficult to define relationships among different variables. Though experience, purposes of valuation and type of organisation were found to have some impact on the usage of RICS publications by valuers, it is difficult to draw clear conclusions because of the limited number of respondents. Similar impacts could be found in between sustainability data collection and purposes of valuation, experience and size of organisation. As expected, model 1 and model 2 factors were found to be making some impacts on valuers' due diligence as well as on value and heuristics formation. Notably, mandatory certification and the introduction of MEES were found to have some impacts on valuers' due diligence in terms of higher usage of RICS guidance on MEES (RICS, 2018a), collection of EPC data and impact of certification on market and investment value as well as its importance to commissioning clients. On the other hand, voluntary certification BREEAM was found to be

impacting on prime properties which could be seen as industry self-regulation. There is a possibility that mandatory certification through MEES could be made more effective by implementing the upper levels of the enforcement pyramid. In terms of heuristics formation, it is possible valuers are at odd in terms of their knowledge on sustainability and there are further needs to educate and train them. However, experience of valuers can play a significant role for sustainability consideration for valuations as was revealed through the crosstabs. To have a clearer picture and to draw conclusions, further research is required. The next step of the research included semi-structured interviews with commercial property valuers as well as commissioning clients to have in-depth details, which is presented in the following chapter.

Chapter 5: Findings from semi-structured interviews

5.1 Introduction

This chapter reports on the findings from the semi-structured interviews, which is the second phase empirical work for this thesis. Semi-structured interview was chosen as the second method of data collection to have deeper understanding of the research questions and for the purpose of triangulation. A total of 32 interviews were conducted, 21 of which were valuers and 11 were commissioning clients. The interviews have addressed the research questions as indicated in chapter 3 (see section 3.9 for details). It is also an attempt to offer further explanation on certain findings which were not very clear from the online survey.

A thematic analysis is presented below. A total of six themes are discussed: awareness of sustainability, sustainability within the valuation process, difference in terms of asset classes, motivation, experience, and barriers to include sustainability within the valuation framework. Each theme has several sub-themes. The following section discusses the themes along with the sub-themes.

5.2 Awareness of sustainability

The valuers interviewed had various views of sustainability in the context of its relevance to commercial property. Many of the valuers interviewed appeared to have a pragmatic, task-related viewpoint and did not begin the discussion at a more conceptual level. As the discussion around sustainability started during the interviews, the majority of the valuers' defined sustainability by talking about the two most common and popular certifications – EPC and BREEAM – along with flood risk. Their way of defining sustainability was to identify these certifications for a property. This finding is very similar to the findings of Le and Warren-Myers (2018) where valuers reported on looking at the Australian rating tool NABERS when asked about sustainability. An earlier study in Australia also reported that younger valuers were more likely to rely on design ratings to assess sustainability in commercial properties whereas senior valuers may prefer some other assessment methods such as performance ratings, operating expenses, analysis of attributes and inspection (Warren-Myers, 2011).

When asked about data collection on sustainability attributes, the majority of the valuers responded that they collect data on EPC and flood risk and, in their view, it should cover sustainability. For example, the following valuer explained how sustainability is covered through EPC but in a very “*tenuous*” way.

“I think we're reasonably thorough in checking not only sustainability, but environmental issues. But then there's sustainability issues are sort of covered in the EPC in a very tenuous way. So, yeah, I think that's where it's covered.” (Valuer 16)

On the other hand, some valuers defined sustainability as the cost of upgrading a property (capex). To use the cost data to assess or define sustainability has been found in other markets as well. For example, Poland can be mentioned where market participants associate sustainable buildings with higher costs in terms of design and construction (Kucharska-Stasiak & Olbinska, 2018). While talking about the cost of sustainability, it is not always easy to figure out what might be the cost for property upgrade such as when EPC is below the required standard, how much one is supposed to spend to upgrade the property to the minimum standard. Valuers seek advice from an expert for these costs as they are not trained to answer these questions themselves.

“I think it probably down to a cost, so whether at the end of the lease you need to spend money on upgrading the lighting or taking or removing a space or something like that. So, I think probably from investor's point of view as it comes back to the material things, the cost associated with that property.” (Valuer 6)

Though to the majority of the valuers' sustainability is either a certification or a cost point, there were a few valuers who appeared to have a broader understanding of sustainability that relates to climate change, reducing emissions as well as social factors. Generally, within the sample, these are senior valuers with at least 15 years of experience, for example, the following valuer, who understood that the word sustainability could mean a lot of things such as, flood, reducing carbon footprint and energy efficiency. According to him, this is creating additional confusion for the valuers, especially regarding what data to collect.

“I do get frustrated that all these things are muddled up with the word sustainability....It is just too much stuff there. There needs to be an identification of what it is we're going to collect data on. Then you might be able to focus the market on it, but if you have six, eight, ten different variables in play, they just all get lost in the background noise.” (Valuer 9)

This apparent confusion has been discussed by the IVSC (IVSC, 2021) and the RICS (RICS, 2021c). Though the RICS provided a checklist in 2013 for data collection on sustainability (RICS, 2013), this was not included or updated in the newest information paper (RICS, 2021c). According

to the above valuer, a more prescriptive indication from the RICS in terms of what data on sustainability should be collected is required for valuers to avoid further confusion.

On the other hand, another valuer identified the changes we are going through because of the pandemic and how that might be related to the broader sustainability aspect. Due to a very lengthy period of working from home, many are now realising that they do not need big and shiny offices to do their work, rather they can do it from the comfort of their homes which could help reduce costs as well. The cost of travelling to the office could be reduced for the employees as well as the cost for the employers of renting an office. The demand for prime city centre offices could therefore change in coming years. As demand may plummet for offices, a more flexible use of buildings will be required in future to future-proof the incomes.

“We are looking for different meanings for sustainability. Looking at the different sectors the sustainability of buildings will have to be looked at because they're going to have to be more flexible. The workplaces changing, the demand for offices is going to fluctuate enormously, as we've seen in the covid with people working from home. I think that will continue. So, what an office is will be redefined, town centres and shops will have to be redefined as to what they need to offer society. So, the existing buildings will have to change, and flexibility of their use is going to have to change as well.” (Valuer 13)

Another valuer added that the sustainability issues are related to climate change and to tackle climate change the central concern is to reduce carbon emissions. Therefore, the relationship between carbon emissions, energy efficiency and value need to be identified to deal with the climate emergency.

“I mean, for me, there is really only one sustainability issue and that relates to climate change that we've got to be working out and how we address that, and all comes down to carbon emissions effectively. When we're talking about buildings, it's carbon emissions. And we need, it seems to me, to work out how we analyse the energy efficiency of buildings in carbon emission terms, whether we can identify a relationship between that and value. Once we start to identify that relationship, we can start reporting on it. And that in turn will create the virtual circle of concentrating the minds of the market on it as well. But at the moment we haven't identified what it is that we might look for a relationship for.” (Valuer 9)

Clearly, among valuers there are various opinions and understandings of the word sustainability. The following valuer addressed the confusion around the term and stated:

“I wonder sometimes who the valuers are having a conversation with and what they mean by sustainability. It is a big issue and I'm not sure really that the average surveyor globally understands what we're talking about.” (Valuer 17)

A few valuers showed their concerns about the future. According to them, sustainability is “*absolutely fundamental*” for the built environment moving forward. As valuers work with buildings which are a major source of carbon emissions, there is clearly a role for valuers to help reduce these emissions. Additionally, according to the valuer below, the UK government is not doing enough compared to other countries in Europe.

“I just don't think that it's pushed as much as in this country as the rest of Europe. I think if you look at the impression from the housebuilding in other countries, particularly the Scandinavian countries, they are far more at the forefront of what makes us sort of eco-friendly building than we are and we sort of paying lip service to it, really.” (Valuer 11)

From the above quotes it appears that if not all, at least some valuers are very worried about climate change and how that might affect the built environment. This proved the guardian like role of a professional valuer (Hill and Lorenz, 2011), which can be taken seriously by some valuers where they are responsible to the wider public and understand that the value they calculate and report can have social impacts at various levels. Similarly, some of the other valuers talked about climate emergency issues and how that is increasing because of better public awareness.

“I think that's better awareness as a profession of climate emergency issues now just because the public awareness is so much better.” (Valuer 18)

“I think as a human being, I would like to think that the valuers recognize as much as anybody else does that there is a crisis.” (Valuer 9)

The above quotes showed some valuers are aware of the increasing public interest in climate emergency and may even recognise it as their responsibility to reflect these issues in valuation as part of their social, cultural and professional responsibilities (RICS, 2021c).

As valuers are the reflectors of the market the demand to include sustainability within the valuation framework needs to come from the entire market for them to reflect it, in other words evidence needs to appear (discussed later in section 5.5.4). The following valuer expresses this dilemma:

“I will try to answer as distinctly as I can, but, unless you get the entire valuation fraternity and the investor fraternity to adopt these things it's pointless for a single valuer to try and buck the trend.” (Valuer 1)

Some commissioning clients also showed similar concerns and shared their plans for the future. Among three different types of clients, lenders appeared to be most focused on actions against climate change. As the following lender explained, a more outcome-driven agenda is what they want to focus on rather than being inactive.

“It is just one of those things that is certainly evolving quite quickly and there's a risk of people talking about stuff and it just being talk and not really being that meaningful. And as an organization, we are particularly aware of that and not trying to just say stuff for the sake of it.” (Lender 4)

However, there is a chance of self-selection bias within this data. Valuers in favour of climate change were possibly more interested to be interviewed and valuers who have less interest in climate change and sustainability may have opted out of the interview and did not respond to the request for an interview.

As explained above, there are variations to the knowledge of sustainability among valuers and a lack of consistency. However, senior valuers appeared to have better understanding of sustainability and climate change. Valuers working for international corporations dealing with clients with pursuit of CSR or ESG strategies were found to have superior knowledge and skills of sustainability in Poland (Kucharska-Stasiak & Olbińska, 2018). Within the UK it is likely that the senior valuers will undertake these valuations, which makes them more aware of such issues. The RICS definition of sustainability (literature review section 2.2) or the instructions, does not clearly state what sustainability is and cautions valuers about using the term (RICS, 2022) which may be one of the reasons for having various views on sustainability. Warren-Myers (2011) also found senior valuers to be more knowledgeable on sustainability issues, which is similar to the findings of this study from both the survey and semi-structured interviews. This can be an indication of the fact that experience plays a significant role in heuristics development and senior

valuers are at an advantageous position. As senior valuers within this study mentioned the connections of sustainability to climate change and reducing emissions, the expected heuristics development among senior valuers explained in model 2 on sustainability is found to some extent

5.3 Sustainability within the valuation process

For the purpose of this analysis, the valuation process is divided into four sections: client’s instructions, data collection, data analysis and reporting. To understand how sustainability and its attributes might be embedded into the valuation process, valuers as well as commissioning clients were asked to what extent sustainability attributes were taken on board during each of these steps of the valuation process.

The following figure provides an overview of the theme, sustainability within the valuation process, and the sub-themes within it. To begin with, this theme reports on the extent to which commissioning clients have changed their instructions to include sustainability factors, and then considers to what extent data on sustainability attributes are collected, analysed and reported by valuers.

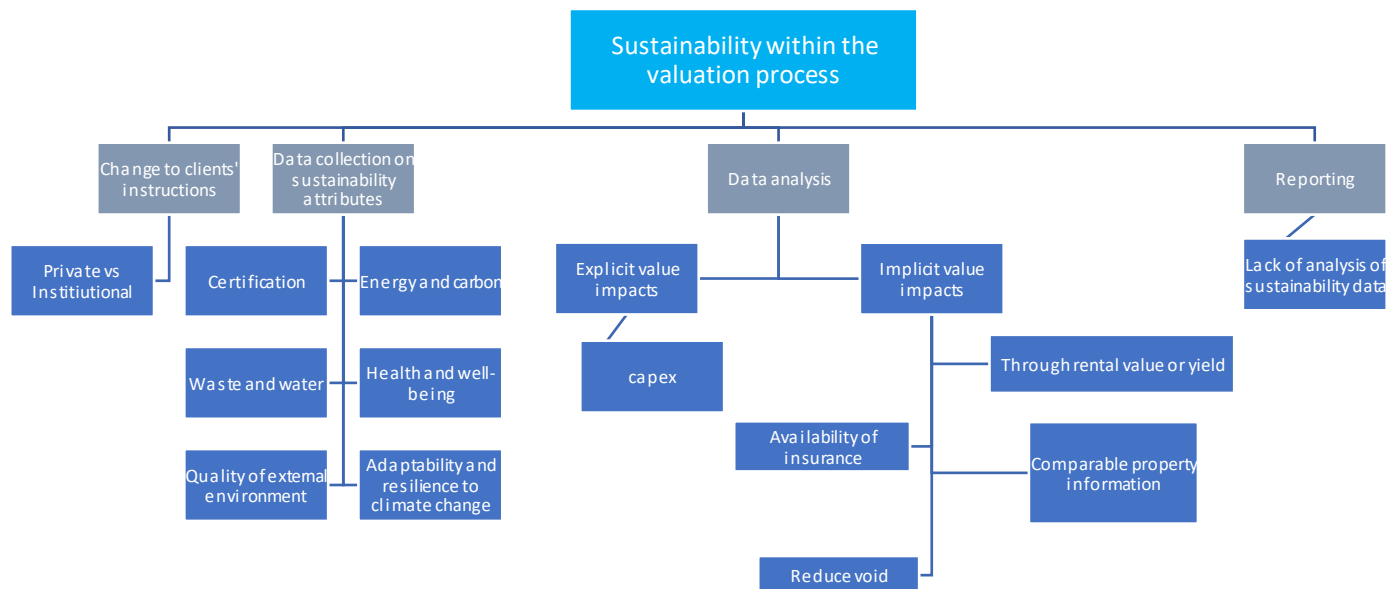


Figure 5.1: Theme 2 sustainability within the valuation process

Source: Made by the author

5.3.1 Changes to clients' instructions

Valuers as well as commissioning clients were asked if the instructions provided to valuers were altered in any way within the last 10 years to include sustainability considerations because of the prominence of issues such as climate change and sustainability. As shown in Table 1 below, 13 valuers, all four lenders and one investor responded positively, whereas two other investors and all four owner-occupiers responded negatively to this question.

Changes to clients' instructions	Valuers	Lenders	Owner-occupiers	Investors
Yes	13	4	0	1
No	8	0	4	2
Total	21	4	4	3

Table 5.1: Tabulation for the results regarding changes to the clients' instructions

Source: Made by the Author

The 13 valuers who responded positively to this question mentioned banks or lenders who have a “checklist” of certain sustainability factors included within their instructions for secured lending valuations. All valuers must collect data and report on these factors in valuations. These factors mainly include EPC, flood risk, contamination and environmental issues. Though these are the main factors valuers are asked to report on, some lenders can be more “comprehensive” than others and include other factors such as “radon, invasive species, plant, plant growth”.

“Individual banks will have slightly different requirements, but pretty much all of them now do specifically ask in relation to any environmental concerns whether that is contamination or soil issues, flooding risk, specifically now EPCs- those are the main ones.” (Valuer 1)

Three lenders and all 13 valuers also added, it is very common for the banks/lenders to ask valuers to get a third party (Groundshore or Siteguard) report on environmental risk assessment for secured lending valuations, that generally includes flood, contamination and other environmental issues of a property. One valuer mentioned that some lenders have a threshold of £1 million, so if the property value is a million pounds or more, valuers must collect this environmental risk assessment. Whereas, for less than £1 million of value, it may not be a requirement. A valuer reported that

“They have sort of secured some questions, some banks will get you to do the checklist type environmental surveys that you receive, and you have to pay thirty-five quid for them or whatever, but they are starting to ask more questions.” (Valuer 3)

This shift in requirements was also confirmed through interviews with the lenders themselves. All four lenders reported that they ask valuers to include EPC, flood risk, contamination and three lenders mentioned the Siteguard or Groundshore reports on environmental risk assessments that must be included with the valuation report for secured lending purposes.

“Other than EPC, the flood risk. So, all the information that comes out of the Siteguard of course, the contamination, the mining, that sort of thing, you know, the invasive species, they're pretty much the basic things that we would expect them to report on.” (Lender 1)

Valuer 7 explained that in London along with EPC rating, lenders will also ask to check for BREEAM ratings. As London has the highest concentration of BREEAM buildings, it has clearly made an impact and valuers from London are expected to include this information (if available) while valuing for secured lending purposes.

“It's become pretty common practice and some of the banks ask you to do it, that you look at the EPC rating and for a bank also BREEAM rating. So those are the two most important areas of sustainability that you look at.” (Valuer 7)

Among all three commissioning clients (lenders, owner-occupiers and investors), lenders were described as the pioneers to bring in the change to include sustainability factors within their instructions to valuers. The expectation is that in future banks will continue to ask further questions related to the impacts of climate change on property value, so the risks associated with it can be addressed while providing loans. Some valuers expect the RICS to follow their lead rather than leading themselves. As the following valuer explained,

“I think it's going to be much more for the banks. I think the banks will drive it more in the future. Because they will have loan books that say how are we going to deal with climate change and the RICS will follow that.” (Valuer 13)

In terms of investors, five valuers mentioned pension funds who are *“much more in tune with this”* (Valuer 21). As this valuer has more than 20 years of experience and has been working with pension funds for a long time, he can report on the changes to the instructions that were made. According to him, as pension funds are often buying properties that are quite old and plan to hold them for a long time, they need to understand *“how sustainable their assets are”*. A less sustainable asset that

may have a risk of “*premature death*” can be risky for them, hence the additional checking requirements.

The same valuer mentioned a specific pension fund with whom they have a contractual set up. Currently, their instructions cover a “*standard environmental checklist*” that includes EPC, contamination, flood risk assessment, hazardous materials and any contamination as per the RICS advice (RICS, 2013). However, this valuer reported that this pension fund is at the “*embryonic stages*” to understand “*whether or not their existing report format covers sustainability adequately*”. Therefore, though they have not changed their instructions yet, this pension fund is looking at the possibilities that sustainability factors might impact on property valuers more in the future because of climate change.

On the contrary, only one of the three investors interviewed mentioned changing their instructions to include some sustainability factors. However, this inclusion is mainly related to the local requirement of energy certification such as EPC in the UK and the overall quality of the asset. Other than that, no specific sustainability factors are included within the instructions.

“The way the valuer sees it, having commentary on the sustainability of an asset as a level of quality or not meeting local requirements is fundamental basically. If it doesn't meet local requirements, the valuer should really be pointing to that as an issue” (Investor 3)

The other two investors reported to not have changed or included any sustainability requirements within the instructions that they provide to valuers for different purposes (either accounts or acquisition).

“The valuation instruction is as per the Red Book with no additional requirements.” (Investor 1)

However, among these three investors, one reported that they have targets to become carbon positive by 2030 and another reported their target is to become carbon neutral by 2030. Nevertheless, their ESG policies are not included within the instructions to valuers. They expect their valuers to collect data and report on sustainability as per the RICS advice which includes, EPC, flood risk assessment, hazardous materials and any contamination.

We currently don't instruct the valuers to consider our ESG policy in their valuation. (Investor 1)

Investor 2 reported not having any carbon emission or ESG targets at the moment. For valuers, they stated that:

"I would say that we don't ask them explicitly to consider that. Probably should be a discussion, but it's not an area that we get into a huge amount of discussion on (about sustainability). I would say it's not something we explicitly ask them to consider as part of their methodology."
(Investor 2)

Therefore, though two investors have ESG policies and specific targets to reduce carbon emissions by 2030, their instructions have not changed significantly. Similar ideas were reported by the owner-occupiers. Four owner-occupiers were interviewed and all of them reported not having changed their instructions to valuers to include sustainability factors. However, all four mentioned that they expect valuers to value according to the RICS advice which should include the EPC and flood risk assessments. This indicates that the commissioning clients expect the RICS to provide up to date instructions and advice to valuers that will be incorporated within an RICS valuation as well.

"I suspect that the RICS standards require those things (flood and EPC). So, you can probably expect that as a minimum that they will adapt the RICS standards requirements for valuation, which I would expect would include those things." (Owner-occupier, 1)

However, it must be noted that the sample size for commissioning clients was rather small with 11 participants. Therefore, drawing firm conclusions was hard. The sample for valuers was bigger with 21 participants. As the focus of this research was to understand property valuers' perception of sustainability, a bigger sample for valuers was chosen.

Eight of the valuers interviewed talked about private and individual clients such as small investors or owner-occupiers. According to these valuers, sustainability does not feature into the thinking of these clients to the same extent as it does for institutional investors or lenders. According to them, there is a lack of understanding of sustainability within this segment of clients owing to which sustainability does not come out as a very significant factor for valuation. As the following interviewee described,

“I’m not necessarily finding clients mentioning it when they talk to me. The fact that something might have an EPC of an F that isn’t necessarily something that had occurred to them as a problem.” (Valuer 9)

One of the valuers with more than 40 years of experience described this segment as the “*gritty end*” of the market and according to him, only EPC has made an impact to some extent after the MEES regulation was introduced in 2018. However, small investors or owner-occupiers at this end of the market will probably do the bare minimum to continue to let their properties with a “*begrudging*” recognition of it, another valuer explained. The cost to bring a property up to a minimum standard of E or above is not generally welcomed. As the following valuers described,

“There is I think the general lack of understanding or lack of wanting to accommodate anything that it’s going to cost more money when it comes to property transaction.” (Valuer 10)

The findings on the so-called *gritty end* of the market in the UK are very similar to studies which looked at less established property markets such as Poland where clients associate sustainable buildings with higher costs rather than giving much weight to certificates and their awareness on sustainability benefits are limited (Kucharska-Stasiak & Olbińska, 2018). Another example is the UAE, where client disinterest was also found to be one of the major barriers (Lambourne, 2020). Lack of client instructions for including sustainability was also reported in more developed markets like Australia (Le and Warren-Myers, 2018) and in the UK (Michl et al., 2016). However, the same valuer (valuer 10 above) along with some others predicted that in future, when the MEES regime becomes stricter, it will cause a lot of issues especially related to funding and capex requirements to upgrade properties. The lack of “*corporate responsibility*”, unlike giant corporates or pension funds, and lack of funds for improvements discourage these “*small-scale enterprises*” to undertake anything “*which is going to increase their cost base*”.

“I think that the changes to the EPC regime recently and the proposed ones that are coming through over the next 10 years actually really change the way people perceive things. But it will be done, I think, at the level that I’m at again, it will be done begrudgingly.” (Valuer 10)

Therefore, it came out quite clearly that the lenders are the frontrunners to include instructions about sustainability inclusion within the valuation report along with some pension funds, institutional investors and corporates. It is a particularly difficult topic to address at the smaller end

of the commercial property market where individual investors and small owner-occupiers lack the knowledge as well as the funding to improve their properties. The instruction from the RICS states that when agreeing to instructions, valuers should make sure that their commissioning clients are aware of sustainability and ESG issues (RICS, 2021c), however, at the moment valuers are following client instructions rather than offering to advice on sustainability factors proactively as the data suggests. In addition to that, the expected behavioural changes from the clients explained in model 1 due to the transition risk are found to many extents. First of all, there is a strong influence of MEES as expected for all types of clients, investors (both small and institutional), lenders and owner-occupiers. All three commissioning clients are expecting valuers to check EPC as it is a mandatory certification. In future as MEES becomes stricter, market participants are expected to do more in form of improving the quality of the properties to keep letting. However, there is a possible lack of knowledge and awareness around MEES that will need addressing. BREEAM on the other hand is only impacting in certain areas such as London where it is presumably considered norm for new build properties. But it is not possible for this certification to impact on the behaviours of small investors or owner-occupiers as it is voluntary certificate.

5.3.2 Data collection on sustainability attributes

The RICS advice for valuers on data collection on sustainability and ESG is to obtain enough evidence to make a professional judgement on these matters and if that is not possible, it should be included in the terms of engagement as a limitation (RICS, 2021c). The researcher has identified seven sustainability attributes from literature and the RICS advice (RICS, 2013) and valuers were asked to what extent data on these attributes are available and collected for valuation. In addition, commissioning clients were also asked if they can find these attributes in valuation reports. Table 5.2 summarises findings from the interviews in terms of data collection on sustainability attributes.

Sustainability attributes	No. of valuers	Data collected
Certification	21	EPC (21 valuers), BREEAM (8 valuers), DEC (3 valuers)
Energy and carbon	2	Energy sources
Waste management	8	Recycling
Water management	4	Recycling and consumption

Health and well-being	12	Disability access, potential health hazards, presence of quarry or mining, cladding, asbestos, inadequate ventilation, temperature, condition of air conditioner, previous use, natural light, LED lights.
Quality of external environment	12	Environmental risk surveys (all 12), any contamination, invasive species, plant growth, check for radon, gas tower nearby, close to open or green spaces.
Adaptability and resilience to climate change	21	Flood (21 valuers), adaptability/flexibility,

Table 5.2: Tabulation on data collection

Source: Made by the author

5.3.2.1 Certification

EPC: Because of the MEES regulation EPCs are mandatory for a property when being let or sold. Because of this regulation and its impact, all valuers have reported collecting data on EPCs. This finding is very similar to the findings reported by Warren-Myers (2022b) where NABERS appeared to have become the norm for the Australian market because of mandatory disclosure policy for this rating tool whereas for the UK it is the EPCs. Therefore, it was found to be a part of valuers' due diligence process; as a valuer suggested, it is becoming an *"integral part of the day-to-day work"* (Valuer 6). However, though all valuers reported collecting data on EPC, only four valuers reported checking for the expiry date on the certificates, whereas only three valuers mentioned going through the recommendations provided by the EPC assessors. A few valuers have also mentioned to check for subsequent EPCs when an EPC is too old or is nearing expiry or when a building has been recently refurbished. Checking for a subsequent EPC becomes important as it will consider the newest updates on the property that may have changed its EPC rating. As the following valuer explained,

"Let's say often we will find record of an EPC that doesn't make sense because this building is being refurbished so it sounds not okay. So that's why if we are provided with one from say 2012 for a refurbished building then we would have another look and make sure there isn't another recent one." (Valuer 1)

Although all valuers have reported on checking for an EPC certificate, there are differences to the level of inspection and analysis of the data. To some valuers, it is a *"tick box"* exercise to check if

EPC passes or not, whereas for others a lot more digging is necessary to understand the future risk associated with it. For example, the following valuer explained the EPC checking process:

“As part of the valuation, we will look at some sustainability items such as EPC, does it have one? What does it say? What are the implications if it’s not a good pass? Will it sale in future? How long does it last?” (Valuer 5)

The same valuer, who has more than 40 years of experience, also explained the risks associated with EPC. A non-compliant EPC of G or F is legally not lettable without being upgraded to a minimum standard of E which will eventually impact on value in the form of capital expenditure.

“EPC is less than an E, and it doesn’t pass, the buyer will be made aware that if they want to let it in future, they will have to make improvements on various things and that will impact on value. Which is then largely to find out what is involved and what it will cost, which they can do with an EPC surveyor.” (Valuer 5)

Though the current MEES regulations require a minimum EPC of E, by the year 2030 the minimum requirement will be a B (Energy White Paper, 2020). This creates a huge risk for non-domestic properties which are currently below B and continue to be let. These properties will not be lettable if landlords are unable to improve the quality of the properties and thus raise the standard of EPC. The risk is being discussed by several valuers:

“I think with EPCs it's gonna start biting over the next few years as energy efficiency requirements sort of kick in, that landlords will be finding that they can't let accommodation without proper EPC, nobody will touch it, that will force them to upgrade which will obviously be a cost.” (Valuer 1)

However, from the interviews, it appeared not all valuers were aware of the proposed changes. Those who were aware talked about the cost implications of properties that will need upgrading and moving forward, it will be vital for valuers to identify the cost of upgrades and include it within the valuation framework.

“But I think the impact is going to be much greater when that minimum requirement starts moving up. And we're expecting it to be up to say B by 2030. So, I think over the next ten years

that explicit cost is going to become more important. We're going to have to think a lot more about it.” (Valuer 18)

Therefore, some of the valuers are definitely aware of the future risks of accelerated obsolescence for properties with lower EPC ratings, but valuers are required to provide *appropriate explanations* where they have identified risk of material obsolescence due to the statutory or regulatory deadline for minimum energy efficiency (RICS, 2021c, p. 16). However, from the interviews it does seem that the explanations are kept at a minimum. Therefore, though some valuers are aware of it, it is not clear to what extent they are prepared to advise their clients.

Some valuers reported on small investors or individual clients who are not too concerned about MEES or minimum EPC requirements.

“Now, as far as they're concerned, all they're interested in is, does it achieve E or better on energy performance certificates? My view is that is simply not enough, because whilst it might be a band E now, the government is likely to change the criteria for leasing or even selling properties to even stricter rules in the future”. (Valuer 13)

Unlike corporate clients or pension funds, these small investors or occupiers are unlikely to have ESG policies and therefore might only do the bare minimum to continue to let their properties. As the following valuer explained,

“It's not like having corporate responsibility that they have to take sustainability as part of their corporate approach, dealing with the likes of the pension fund or big property company. With small scale enterprises anything which is going to increase their cost base is not encouraged, is not encompassed, they're just not interested.” (Valuer 10)

Some participants also addressed the issue that a minimum EPC of E is very easily achievable. In most cases, the lightbulbs or glazing for windows need to be changed and an E could be achieved from F or G. This is consistent with the findings reported by Sayce and Hossain (2020) where participants mentioned EPC E is too easily achievable. Therefore, achieving E does not mean a huge improvement from F or G nor does it take a huge investment.

“So generally, EPC, it's usually a very little cost to put it up, secondary glazing, some new light bulbs, things like that. It's such a small amount that nobody's actually gonna care when they are purchasing it.” (Valuer 2)

“I don't think there's a massive cost difference to get from F to E. I think it's quite possible that, that could be wrapped up in normal refurbishment costs because it might just be a case of replacing LED lights. Also, quite small at that level.” (Valuer 18)

However, when it is required by law to be a minimum of B by 2030 to be able to let, it may create a lot of funding issues for these small investors as reported by the following valuer. To achieve a B or C rating from E will require additional capital expenditure (capex).

“They will go for an E. Then obviously that's going to have to be a B by 2030, which is going to cause issue, I think, with a lot of independents.....This is purely down from a cost base. So, in an ideal world yes, we would like to do it, but we can't afford to do that.” (Valuer 10)

On the contrary, valuers who are valuing for secured lending purposes reported lenders are increasingly concerned about MEES. They would like to know if an EPC rating will expire during the loan period to understand the risk associated with a property's lettable that can eventually have a negative effect on income. If income from a property is being affected negatively, it can create difficulty for the borrower to pay back the lender.

“That's what we are doing when valuing for a bank if somebody has got a low rating, we will say that's an issue that's something that needs to be addressed and it's basically the bank to put pressure on the borrower by whatever retention or whatever it is until such time as they've sorted it out.” (Valuer 1)

One of the MEES regime changes is that it will be applicable for existing leases from 2023 which means if a property does not have an EPC E or above it will be unlawful to continue to let that property or renew the lease without doing works and upgrading the EPC rating to a minimum of E (see section 2.4.2 for detail). Therefore, even if a property is allowed to be let currently with an F or G rating, a valuer needs to inform the client of the future risk associated with MEES. To upgrade a property to an E, works need to be carried out and the cost data need to be collected from a building surveyor. Valuers are not equipped to advise on these upgrade costs. However, these cost data need to be considered within the valuation as capex. As the following valuer explained,

“In 2023 it will also apply to lease renewals. So, we're looking at a property if there is a lower EPC rating of F and G, then you will increasingly need some advice from a building surveyor as to what needs to be done, the cost of doing that..... if it's something that you need to re-let , then you're going to have to look at possibly reflecting some capital expenditure in your valuation in order to achieve that requirement .” (Valuer 8)

Some valuers also discussed some problems related to EPC; one problem being air-conditioning of buildings. Valuer 10 talked about properties with air-conditioning. It improves the quality of the building and is seen as an “*added benefit*”, however, it decreases the EPC rating as it requires higher energy usage. Though the air-conditioning should technically make the property more lettable, it is doing the opposite by decreasing the EPC below E, thus creating a confusing state for the landlord regarding whether to remove the air-conditioning or not.

“In the past, buildings without an air conditioning could not be rented for more but now if it doesn't reach an E, it technically cannot be let until it's worked out. So, it rather skews away from where you have the added benefit in the building was having air conditioning and having this and having that on. Now it's going the other way that taking the air conditioning out is more of a benefit to the building. Does that make it more lettable, probably not. So, it's a very odd situation where sustainability doesn't run hand-in-hand with the commerciality of a property.” (Valuer 10)

Another problem regarding EPC is that it is being measured based on a property's insulation, efficiency of heating and water system, condition of the property to determine the model energy consumption and usage as well as carbon emissions. However, the model energy consumption and usage are based on cost of energy. When cost of energy is higher, the EPC rating will decrease and vice versa. For example, if a property uses clean electricity vs. another property that uses gas for heating, the second property will have a better EPC as gas is less expensive than electricity. However, the electricity source is clean which means it will have zero or less carbon emissions. The reason for introducing EPCs was to gradually improve the quality of properties and thus reduce carbon emissions from properties to tackle climate change. However, only one valuer identified the above-mentioned problem and questioned if EPCs are enough to address the issue of reducing carbon emissions from properties. As this certificate is focusing on cost, it is leading people to choose more cost-effective options, whereas the market needs to move towards a less emitting option. EPC's apparent disconnect with carbon emission has been noted by the RICS too and recent

reports suggested the UK government to improve the rating tool to include final energy use, energy cost as well as carbon emissions (RICS, 2022b).

“I just had a client talk to me about an EPC, which they couldn't understand compared to other buildings on either side, which had much better EPCs. It turned out that this is basically because all three buildings have heating by electricity, most of them have heating by night storage type heating, which was therefore deemed to be cheaper to run because it was taking out electricity at night and his had day time heating, which was deemed to be more expensive to run. Well, of course, they're still going to be using exactly the same amount of fuel effectively. I mean it's the same emissions and yet they have completely different EPCs.” (Valuer 9)

The same valuer has worked with the RICS in various occasions, pointed towards the original advice from the RICS to the government regarding EPC. The EPC, according to him, was supposed to be a *“much more sophisticated model”* that would consider *“locational factors such as which way a building is faced, where would the wind be etc.”* However, the existing EPC does not consider such things and according to him does not properly consider the climate factors around a building.

“We went around a number of working parties to various people who were competing to provide the EPCs and we ended up with the cheap and cheerful one because that was what the government thought anybody would pay for. And really the cheap and cheerful one is not up to the job. If you take up a given building of a certain shape and size with a certain type of heating and you put that down in pans out in a sheltered valley, you're going to get the same EPC rating on it as if you pick it on the top of a mountain in the north of Scotland. It makes absolutely no sense. What the climate circumstances around the building are going to feed through to its performance.” (Valuer 9)

Another problem mentioned was that the non-domestic EPC certificate does not provide a lot of details, especially if someone wants to upgrade the property, because it does not inform on costs of upgrades. To get the costs of an update, one must talk to a building surveyor. The following valuer discussed it:

“EPCs (Non-domestic) don't put a plan of what they've done, there's no real description, they're not very useful as a report. As a report it's all great and well to know it's a C and obviously I

know the resi (domestic) ones usually can tell you how much this is gonna cost approximately.”
(Valuer 2)

Hence, although MEES has created awareness of EPCs, some of the participants’ view is that it is still not making a huge difference in terms of improving the quality of commercial properties in the UK as well as decreasing carbon emissions from the environment. As MEES impacts on lettability of a property, it has the potential to bring in these much required changes.

“I guess from an investor's perspective, unless it's fundamentally going to start biting in terms of lettability, then it's really not going to get the attention it needs. I think for those various reasons, I don't think you can see that it kind of had the intended effect they wanted. I think MEES is definitely having an impact.” (Owner-occupier 2)

The same owner-occupier also discussed how the EPCs are not being effective enough to drive change, change that would improve the quality of the buildings over time and not only focus on costs or savings. The following owner-occupier stated:

“I don't think they are driving a change in the way that they could have been. They got kind of commoditized, and they were seen as a kind of tick box exercise in terms of being able to transact property.... And at the end of the day if your building has a particular performance unless you can get it stuck up in terms of improvement versus savings, it is not that easy to get stuff happening.” (Owner-occupier 2)

Some of the valuers also had similar thoughts, however they also reported on changes that they have seen occurring. Though the change is slow, it is still noticeable. The following example was provided by a valuer from the Southeast,

“One of the retail units that one of my clients is acquiring at the moment, the landlord contacted us and advised that they were improving the lighting. So, changing it to LED lighting as opposed to what was in there before, which is quite old, to improve the EPC rating of the building. Now, that is unusual, I think in 20/25 years of doing this, that's the first time I can recall a landlord advising a prospective tenant that they are going to improve the building for environment purposes.” (Valuer 10)

From the commissioning clients' perspective, lenders as well as investors have pointed out that considering EPC is a primary objective to ensure that the underlying property's lettable is not going to be affected in future. For lenders, it is about ensuring a stable income flow from the subject property so that the borrower can keep paying the loan instalments. Whereas for investors it is about ensuring the fact that they can continue to let properties. As the following participants said,

“So included in our valuation instructions is making sure that we understand what the EPC ratings are. That's been in place for a number of years and is making sure that the EPC compliant is a significant point for us.” (Lender 2)

“I think the EPC ratings have impacted our investment decisions, because we've got to keep an eye to make sure that we are able let out our properties currently and in future and any new buildings that we bring in. It has made an impact in that respect.” (Investor 2)

It appears that valuers do report on EPC rating regularly which proves the impact of legislation on valuation practice (model 1), but the reporting does not go beyond checking if EPC passes. If EPC does not pass, a cost component is considered if data is available which is discussed later in this chapter. In terms of MEES, quite a few changes are proposed by the government, but it is clear that valuers are not reporting currently on these proposed changes of MEES and the associated risk of decreasing lettable or increase in capex in valuation reports. Moreover, MEES has been criticised by valuers as well as commissioning clients for not being effective enough, nor having a direct connection to carbon emission and depending too much on cost. Some of these issues have been reported by the RICS (2022b) too. To effectively use MEES, these issues need to be addressed properly by policy makers and government.

Other certifications: Three valuers who undertake property valuation for public buildings mentioned collecting data on Display Energy Certificates (DECs) as it is mandatory for government properties. Eight valuers also mentioned collecting data on BREEAM rating if the property is new. As one valuer stated,

“If its modern built and appropriate we will see if the property has a BREEAM rating” (Valuer 1).

Another valuer mentioned,

“If its BREEAM you would know, you would be told” (Valuer 4).

Some valuers as well as commissioning clients believe multiple certifications are creating additional problems rather than offering up solutions. Certifications such as BREEAM are not available for all properties. Even EPCs may not be available for all properties, it is mandatory to have an EPC rating when properties are being transacted either for sale or letting, however owner-occupied properties may not have an EPC. The lack of consistent certification across the property market reduces comparability among properties. Moreover, the knowledge of what goes within that certification, the factors and how that is being calculated is also not great. This has also been reported by the IVSC (2021) where the creation of so many standards, disclosure requirements and ESG ratings were explained to have created possible confusions and hesitancy among professional valuers to incorporate sustainability factors in valuation wholeheartedly. Valuers need reliable metrics to report that will be consistent between companies, across borders and over time (IVSC, 2021). As one valuer stated,

“The other problem is that we're getting multiple forms of certification. And that I don't think is at all helpful, you know, things like BREEAM that are applied to funky buildings. They're not applicable at all to even slightly smaller buildings or there's no consciousness of what they mean.... I think that, you know, we do need a certification process. I think it needs to be common to all buildings. We have one option now and that is the EPCs and at least we can think about revising it and how we can use that.” (Valuer 9)

However, valuers who have experience valuing BREEAM buildings described the certification becoming a norm within the prime property market for offices. This proves that the industry has self-regulated itself to create a new standard for prime category as was expected through the enforcement pyramid in chapter 3. Without having BREEAM certificate saleability of certain properties might be reduced in some markets. As the following valuer explained,

“Offices now will try to be BREEAM Excellent or outstanding as minimum, because otherwise they can't sell. The world is moving very quickly. And occupiers are now demanding better space.” (Valuer 4)

Among all three certifications – EPC, BREEAM and DEC – EPC has certainly made the most impact within the UK commercial market because of the introduction of MEES in 2018. It is very clear from the interviewees’ discussions that the EPC rating has created the necessary awareness,

however, to bring in the necessary change in terms of reducing carbon emissions, a stricter version of MEES is required along with a connection between carbon emissions and the EPC rating. The RICS's (2022b) recommendations on EPCs will need to be applied to make it fit for purpose. As for the other certifications, BREEAM is definitely making an impact for prime office properties. This confirms the point made by Arnold (2022) which is that mandatory certification can create greater accountability among market participants, in this case valuers, and force them to pay more attention to it. Whereas adopters of voluntary certification aim to achieve environmental stewardship (Gabe 2016) which is visible among for instance property investors and occupiers of prime office space.

5.3.2.2 Energy and carbon

When asked about energy and carbon, the view of a majority of the valuers is that *“EPC takes care of that”*, however there are other factors related to energy and carbon which are not being considered through EPC. EPC looks into the model energy consumption, however the actual energy consumption and the carbon emission from it needs to be considered separately. Another factor is the source of the energy, whether it is coming from a clean source such as solar panels or from gas which is a fossil fuel. Only two valuers mentioned collecting some data on energy sources. According to most valuers, data related to energy sources or carbon emissions are not available and thus not collected on a regular basis. As the following valuers mentioned,

“It's something we would when we run inspection if it was there, we would note it. But I wouldn't say it's something we go and data collect on, it's something that we talk about in the description obviously when we are actually valuing the property.” (Valuer 2)

Similarly, other valuers mentioned not being able to collect data on energy sources and carbon emissions as these are not available and because valuers do not always have enough time to collect them. A valuer who undertakes internal valuation for a local council regularly receives a lot of third-party valuation for the council explained that it is not common practice to collect or consider energy source or carbon emissions within valuation of a property from his experience.

“And to be honest, we don't collect information on that front (on energy and carbon). And it's difficult one, because there is a limitation on the data that we can do collect, or we can get our hands on in the limited time needed to provide the report. I suppose the other thing is we instruct a lot of third-party valuations and looking through all of them, I don't think there are any of

them that include valuations of all of the big points, I don't think there are any of them that include that information.” (Valuer 14)

However, one valuer mentioned, *“We would always check how the building is heated fundamentally”* (Valuer 4), but whether that is part of all valuers' due diligence, given that only one valuer mentioned it, is doubtful.

Valuer 7 who worked in the London offices for one of the UK top valuation firms pointed out that some properties have a building management system through which it is possible to *“identify your energy usage and carbon emissions”* and that valuers would collect that data as well if available.

Another valuer, from the south of England with more than 25 years of experience, explained that as part of his job, he needs to be *“looking at the underlying business as well”* for some clients. And while doing that,

“we're trying to understand what the heating and cooling plant is, how old and efficient it is, because the EPCs still not going to that much detail, also trying to find out are there opportunities for installing solar panels or if the plant is clear to date, Is there a potential to present an air source or heat sourcing pumps, and, you know, particularly keen on if you're having staff or members of the public turning up have you got charging points for them.”
(Valuer 13)

However, this valuer is looking at more efficient heating or cooling options and the potential to install solar panels as part of his job as a strategic advisor to value a business. To what extent this information is considered for valuation of a property is questionable as the majority of the valuers who undertake market value or market rent valuations reported not collecting or considering energy sources or carbon emissions of properties.

On the contrary, another valuer, from London who works for one of the largest valuation practices in the UK, talked about the importance of energy- and carbon-related data and its potential impacts on value in future.

“It is something that we're talking about doing in the context of assessing, for example, the effect on value of retrofitting to a net zero carbon standard, then you'd have to understand the implications for the energy use at the asset or that the change in tariffs and the operational costs

of running the building. So, it's something that we are trying to develop in order to deliver a service of assessing the impact of sustainability on values. But it's not an existing thing that we've done historically... It's something that we've been talking about doing more, but we're not sure whether that kind of information will be readily available. But it's something we're considering to kind of putting in our standard questions that we ask, but currently we're not doing that, no.” (Valuer 18)

As legislation around minimum energy efficiency standards becomes stricter to address the net zero target, in future it will be important to understand the effect of retrofitting and the impact it will have on property operational cost as well as reducing emissions. As seen from the above quote, some larger practices have started the process of understanding its impact on value.

Few valuers mentioned certain new technologies, one being biomass which is a heating system that is increasingly becoming famous for certain properties such as hotels, another being gas peaking plants, which are small gas-powered stations for days when wind or solar powers cannot be used. However, biomass is no longer considered as a renewable energy source, but the valuer who mentioned it did not seem aware of that.

“I've noticed a trend, I would say, in the last three, four years that a lot of hotels have installed biomass. Heating systems, which are sort of wooden pallets. I would check, you know, and that's, I suppose, a way of improving the sustainability and efficiency of that building. So, we would ask questions on site about that.” (Valuer 11)

“I know some of the NHS buildings I've valued had bio generators in them and that's been picked up and accounted for asset valuations.” (Valuer 15)

Contrary to what valuers have said, several owner-occupiers and investors mentioned their increasing appetite to reduce energy costs and the importance to find alternative sources of energy such as solar panels to reduce the use of energy from the grid. To understand the consumption of energy and to identify the ways to reduce it, their properties are being installed with smart meters as reported by several owner-occupiers and investors. As these commissioning clients have specific targets to reduce carbon emissions and become carbon positive or neutral by 2030, it is an important task for them.

“The other point is we have for a while now and more so I have been asking my partners to provide to me quote for heat source ground pumps, solar panels, building information systems that can manage consumption better. I on a regular basis ask that of my asset manager.”

(Investor 3)

“Energy performance is a key factor. And the vast majority of our buildings also have solar panels plugged into the building to try and support to reduce the take from the grid. And there is a wide requirement for us to I think by 2025 to produce as much electricity as we can too.”

(Owner-occupier 4)

It appears from the findings that certain valuers will look for data on energy sources, carbon emissions and potential to install solar panels, however, it is not a norm for all the valuers interviewed and has not become part of their due diligence process. A majority of the valuers responded negatively regarding data collection on energy and carbon. To most of them, an EPC certificate takes care of the energy and carbon issues. However, it is important to note that EPC does not consider all the factors related to energy and carbon. As EPCs are not covering emission of properties and there is a possibility that the UK might not reach its zero carbon target if these emissions are not addressed soon (IPCC, 2023; RICS, 2022b), it may be vital for valuers to collect this data separately, however, data may not be available in this respect as indicated by the valuers.

5.3.2.3 Waste and water management

Eight valuers mentioned collecting some data on waste recycling and four valuers mentioned collecting some data on water recycling and consumption. However, it is important to note that the valuers who mentioned collecting data on waste or water management also reported that they will only collect it if there is a requirement from the clients to do so because of the nature of the business or if the data is available. For example, one value mentioned,

“Some businesses, yes, we're dealing with waste transfer licenses and understanding how waste is being dealt with out of an organization. But very little.” (Valuer 13)

Similarly, another valuer mentioned that waste and water will only be looked at if there is a problem or if the nature of the business demands it.

“And we have one client extracting water from a stream and putting it back again, they have got a license and that's the end of that. So, waste and water don't feature unless we think there

is a problem and if it's a private water supplier then we'd have to investigate, but I haven't come across one of those.” (Valuer 5)

Another valuer mentioned that she would always ask about waste management out of personal interest, however it might not be a general practice around all valuers.

“That's one thing I very much look at when I go around and its waste and then how is your waste dealt with, it's a question that I have, though I can't promise you that everyone does that.”
(Valuer 3)

Most valuers who mentioned collecting data on waste or water management worked for large valuation practices and they mentioned their checklist for inspection includes waste and water recycling.

“Yes, we look at waste recycling on site, carbon recycling or water recycling we look for that.”
(Valuer 6)

Valuer 7 also belongs to one of the largest valuation practices. According to him, generally valuers will not look for waste- or water-related data unless they think there is an issue. He again mentioned few properties with a management information system, in which case this data can be collected.

“No, we don't as valuers, if there's no doubt. If that management information is available, you would look at it as you'd want to be able to benchmark other properties against it. But at the moment, the vast majority of valuers don't.” (Valuer 7)

On the other hand, valuers who work as independents or for smaller practices such as Valuers 5, 9, 10, 11, 12, mentioned small-scale properties where it is *“pretty unusual”* to look into water or waste management, whereas Valuer 11 suggested that he would make *“mental notes on site if it had rainwater recycling or anything like that”* and it would be mentioned in the report.

Though some valuers try to collect data on waste and water management, it appears the data does not make much of a difference in terms of value impacts, though it could be an added feature to help with the transaction. As one participant pointed out,

“If an office building has a particularly clever system, then yes, of course. These are things that we take into account, and it's something that I would probably add as a sales feature rather than something actually impacting on value, it's something that improves the saleability. So, yes, we like that for our green credentials. That's another box ticked rather than something that's actually going to impact a vast amount on value unless it can be explicitly shown that saves X amount a year, which I don't think I does in the vast parts of the situation.” (Valuer 14)

From the findings, waste- or water-related data are not collected regularly by all the valuers who were interviewed. Some reported collecting data because of specific reasons such as the nature of the business demands it or when a property has a “*clever system*”. The HM Government (2022) report showed due to climate change there is a high risk to the public water supply that can create risks for businesses in terms of scarcity of water, however some valuers reported on the fact that the data are not always available. The valuers who collect these data did not seem to think that it made any difference in terms of value, other than increasing saleability on a few occasions.

5.3.2.4 Health and well-being

Sustainability is not only about environmental or economic factors, it may also consider social elements such as health and wellbeing factors (RICS, 2021c). Valuers mentioned a wide range of health and well-being factors that might be relevant to look at for valuations. These include asbestos register, disability access, presence of disability toilet, temperature, air conditioning and its condition, checking for any safety risk issues such as pilings overhead, WELL certificate, natural light, bike storage, insulation, ventilation and light. However, these factors are not mentioned by all valuers. There are differences in terms of how old a property is and based on those certain factors might be more important than others. Valuer 2 from London mentioned prime city centre offices where health and well-being factors are looked after by corporate employers. As the office environment becomes better, employees are expected to take fewer sick days and be more productive.

“Now well-being is becoming a big thing and getting people to spend forty-two hours in the day in the office cause it's all a great nice environment, go to Google and things like that, so for them well-being is important if you can get more productivity out your stuff as well. You don't have to maybe hire as many people you can save cost that way so for them there's actual tangible benefit.” (Valuer 2)

On the contrary, in older properties various health and well-being issues were reported by valuers, such as inadequate ventilation, outdated air conditioning, asbestos roof and lighting as the demand from the occupier market is shifting. Partly because of MEES and partly because of demand for better spaces, landlords are spending more to improve and upgrade older properties to stay in the market.

“Sometimes that arises on inspection If we feel that it’s inadequately ventilated or lit or it’s too cold or too hot. Certainly, with office buildings of any size, it can become a major factor, air conditioning systems can become out of date and ineffective and that can affect health and well-being quite a lot.” (Valuer 5)

“Certainly, on older buildings where you’ve got asbestos roofs, that’s got a big thing. So certainly, there’s a lot of buildings that would either need the roofs being removed at the end of the lease or potentially over clad so that’s quite a big thing to do, dirty uses of commercial buildings that are certainly something that gets factored into. And also, I think LED lighting or all types of lighting that has to be replaced for older offices. In terms of the lifecycle of a building, I think these days there’s a lot more cost being contributed to these sorts of buildings, which previously you may not had to do.” (Valuer 6)

Only one valuer mentioned WELL certification,

“We would be aware if say there was a WELL certification, then we would talk about that probably in the report. But we don’t specifically ask questions on health and well-being.” (Valuer 18)

Valuers have also expressed the difficulties they face to quantify the health and wellbeing factors. The RICS advice is to provide appropriate commentary for subjective and intangible sustainability matters if they are unable to demonstrate it quantitatively (RICS, 2021c). At the moment, it is not clear to what extent valuers’ comment on health and wellbeing. Probably because it is not clear to them what level of commentary can be considered as “appropriate”. Moreover, climate change can create additional health and wellbeing issues such as through temperature increase, destruction of infrastructure that deliver social care, air pollution and aeroallergens and reduced water quality (HM Government, 2022). In addition, mental health challenges may increase due to increasing temperature and extreme weather events (IPCC, 2023). None of the valuers seem to be aware of these potential future challenges.

5.3.2.5 Quality of external environment

The most common data collection regarding quality of external environment mentioned by valuers is the environmental survey undertaken for secured lending valuation as it is required by the majority of banks/lenders, which is discussed in section 5.3.1. Valuer 3 mentioned that it normally costs £35 to collect it. The report covers a four-tier risk assessment that meets RICS appraisal and valuation standards and flags up “Need for Further Assessment” where issues are identified.

So, off the top of my head, I can think of Barclays, HSBC, NatWest banks. They would all stipulate whether they wanted a desktop environment report creating as well, which would include, you know, various factors of risk, flooding, minerals that might be in the ground. All that sort of stuff that's normally done by an external third party. So, we would just request the report and comment on it.” (Valuer 11)

One valuer pointed out that the data used for this report is backward looking data, which means the data will look into historical evidence of flood or contamination and then predict what may happen in the future. However, with climate change, the risk of natural disasters occurring such as flood or cyclones may not be in line with the historical data. As temperature and sea levels rise, the occurrence of natural disasters will increase, and it is very likely that it will not be the same as before. However, currently this is the data that is being used to assess the environmental risk for a property.

“They're looking at historical evidence of contamination or the presence of high frequency radio mass or pylons. What they're not looking for is looking forward to see what could happen in the future because of climate change.” (Valuer 13)

Some of the lenders are aware of this issue and are looking forward to some forward-looking data that they can use to assess the impacts of climate change. However, no other data were mentioned by valuers or commissioning clients that could be used. RICS's (2023) recent publication suggested lenders should provide additional data to valuers if available.

However, for small-scale properties these environmental assessments are not commonly undertaken as the clients do not demand or pay for it.

“No for the small-scale properties those sorts of things are not generally available and people are not going to pay for an environmental assessment on a small high street unit unless they absolutely have to and there is a reason for it. And for majority of them there is no reason. So, I've got one client at the moment where they will be entering into environmental assessments because of the use of the property, that might be affecting the water course and things like that. And so, they are going into that but their operation, it needs to be seen proactive, to be forward thinking, it's unusual. As I said, it's not completely unheard of.” (Valuer 10)

Other data related to quality of external environment that valuers may collect includes any contamination, invasive species, plant growth, checking for radon gas, gas towers nearby and close to open or green spaces. One valuer also pointed out that the factors within quality of external environment are embedded with locational factors and it plays a vital role in any valuation,

“We make a note of the external environment in terms of what's surrounding the property. If there was something that we felt would affect the value of the property, if it was next door to a factory that was emitting fumes or something along those lines, then it might be noted in the report. And so, with any valuation, location does play a factor in how much the valuation is.” (Valuer 20)

A few valuers also mentioned that certain factors such as electric car charging points and internal environment are becoming increasingly important for offices, especially prime office properties.

“Again, I'd say offices. It's more important to the Bristol offices that we have. The people I would draw attention to on the office side, we've got offices that led to go compare in Newport and South Wales, and they do a lot of work on the external environment and the internal environment. The quality of their work base is really very high. They spend a lot of money, you know, fitting out the canteen. They did it which cost to 200000 pounds to provide their staff with areas, to circulate a table football, etc. So, I guess that's, you know, that there is an element of sustainability there. And they've also introduced electric car charging points externally. And I guess a lot of buildings are doing the same. And we've certainly had the quotes to doing that. But other buildings, although we haven't gone into providing electric car charging points yet.” (Valuer 14)

5.3.2.6 Adaptability and resilience to climate change

All the valuers interviewed mentioned collecting data on flood risk. Flooding can cause huge damages to infrastructure and business sites that may be from river, surface water, groundwater or sea level rise (HM Government, 2022). Several interviewees mentioned that flood risk is normally assessed in the UK by looking at historical flood data. If a place has been flooded in the past, what might be the likelihood of it getting flooded again? This data is backward looking data which does not consider climate change. Because of climate change, temperature will increase, which will create potentially hazardous scenarios such as sea level rise. However, this risk of climate change is not considered by the data that valuers collect to assess flood risk. The source of this data is the Environmental Agency. The following valuer reported that,

“Those risk assessments look backwards; they look at what has happened rather than what could happen.” (Valuer 13)

Similarly, a lender also confirmed that they are trying to determine the emerging risk of flood as opposed to what has happened in the past to address the additional risk from climate change.

“So, in terms of flood risk, I think when we're looking at flood risk and I think a lot of lenders are looking at this now, so flood risk is always being driven out by backward looking data as opposed to forward looking. So, when they work out the insurance and they work out the flood risk they always look at the events they've had over the past ten, hundred years or whatever. Now, increasingly, lenders are looking to actually determine what is going to be an emerging flood risk as opposed to what has happened previously. So, I think that's quite an important point, so that's becoming more proactive around those types of risks. That's certainly something that's emerging.” (Lender 1)

This is a potential problem for valuers as they are not fully able to follow the RICS instruction on accounting for physical risks of climate change. The advice is to explicitly consider and reflect on physical risks (RICS, 2021c), however, the lack of forward-looking data is prohibiting them to do that. There are several questions related to the data to address physical risks that are unanswered. Valuers in the UK can check for flood risk of a property using the Environment Agency's data as several valuers have mentioned them. But as this data is backward looking and is based on historical data, they are unable to detect future flood risk patterns, i.e., emerging flood risk. In this case, should valuers investigate other forward-looking data? Do they ask their clients for help? Lenders are already interested to find forward-looking data as one lender has mentioned, however, how do

valuers collect them? This lack of information and guidance on physical risks of climate change was also reported in Australia (Warren-Myers & Craddock, 2021). The RICS (2023) recently suggested lenders to provide additional data for secured lending where it is available.

On the contrary, only valuer 18, who is working for one of the top valuation firms in the UK, reported that they have a climate risk modelling service that is primarily used for calculating the cost of insurance. However, it is now being considered to put forward to clients for valuation advice.

*“At the moment, not much of assessment of climate risk, although at *** our sustainability consulting team have a climate risk modelling service that we are talking about linking up with in the right circumstances. So that could access, you know, if in a scenario of two degrees of warming what that would mean for your property portfolio. It uses a value app risk calculation, but it's more insurance cost calculation rather than a valuation. So, no, we don't currently look at climate risk outside of flood risk, but it's something that is definitely on the radar. We're thinking about putting forward to clients.”* (Valuer 18)

Therefore, though flood-risk-related data are collected regularly and have become part of the due diligence process, there is still the question of whether that data is fit for purpose as it does not consider climate change.

Most valuers also mentioned flexibility/adaptability/alternative use of properties. According to some of the valuers, adaptability is not always seen as a factor in terms of climate change or sustainability; rather it could be useful to protect the “*long-term value*” of some properties. Especially as the high street is suffering so much from the effect of online business and the pandemic, some flexibility or alternative use of property is useful to protect the value of such properties by changing the use.

“Adaptability and flexibility of the building is always useful...And I think at the moment, with the High Street taking such a hammering, that change of use... I think that's more related to the market and the impact of Amazon and the decline of the high street rather than sustainability in the towns that you're looking at.” (Valuer 16)

Valuer 5 mentioned that when some buildings are more constrained than others in terms of flexibility such as listed buildings, that is also a consideration that they need to think about.

“Quite a lot of the buildings that we look at are suitable for variety of purposes and require a little adaptation to allow other people to come in. Particularly true of many plan offices, factories, warehouses. If they are particularly constrained in their site or on several stories or defend themselves too much flexibility, that’s because they are a listed building or because of the structure, or it isn’t a consistent match ...So that is a consideration.” (Valuer 5)

Valuer 9 mentioned that a more flexible building may be exposed to shorter void period which is considered in valuation.

“A building that is suited to be occupied in more than one way, to subletting for example, again an investor buying such a building may take the view that they’re less exposed to void than they would be if it wasn’t so flexible. So, yes, that sort of things featured through.” (Valuer 9)

Commissioning clients also mentioned flexibility or mixed use as an important factor. As the following investor who is heavily invested within the retail sector explains,

“I think at the moment, because majority of our investments are in the retail sector, so that is a very challenged sector at the moment particularly with the impact of covid. But just in general, the changes have been on-going with people moving to where it’s online more and then a more omni channel world. So, I think that is where our investment strategy is very much focused on starting to move away or shopping centres from being pure retail to a more mixed-use assets, which you could argue probably has a lot to do with sustainability as well, because of the more mixed use. It’s looking more at the customers problems so people can find more pings in the same place, so, having that kind of Links to that.” (Investor 1)

On the other hand, the following owner-occupier discusses some important factors such as ground condition and any needed remediation, flood risk, air quality and traffic generation around their stores.

“When we’re developing the site, obviously we do a lot of investigation into the ground conditions of a site and have the necessary remediation of the site. We are always looking at flood risk. Air quality tends to be a big issue, particularly when it comes to the stores, big debating point. And we generally look at our traffic generation and other issues where we’re developing a store.” (Owner-occupier 4)

5.3.2.7 Summary of data collection

The above section includes discussion of valuers' data collection on seven sustainability attributes: certification, energy and carbon, waste management, water management, health and well-being, quality of external environment and adaptability and resilience to climate change.

In terms of certification, despite its shortcomings, EPC affects all properties being let or sold whereas BREEAM only affects prime office properties. Though a majority of the valuers did not have any experience of valuing BREEAM properties, a few valuers pointed out some beneficiary impacts of BREEAM rating such as achieving highest rent. They also added that certification is becoming a norm for centrally located office properties, suggesting BREEAM is the new prime. On the contrary, it is mandatory to have an EPC rating when a property is being sold or let because of MEES. The overall view is that though the minimum standard has created an awareness, it is still not driving a huge change in terms of improving the quality of the properties, mainly due to the fact that EPC E is too easily achievable. However, as MEES becomes stricter over the coming years it will demand a huge change and a lot of properties will be at risk of being stranded as a majority of the UK's stock is very old. Nevertheless, not all valuers were aware of these changes.

Aside from EPCs, energy- and carbon-related data are mostly not available or collected as per the valuers who were interviewed. However, investors and owner-occupiers interviewed reported that they keep carbon emissions and energy consumption data. Data on waste and water management are also not collected on a regular basis by valuers. Most of the valuers interviewed who mentioned collecting some data on waste or water worked in big valuation firms whereas small valuation firms and valuers working individually are less likely to collect data on waste or water management according to the findings.

In terms of health and well-being, some valuers mentioned it to be an important factor for offices. Slightly more data on quality of external environment is collected compared to waste and water management. The most common data is the environmental survey undertaken by a third party, especially for secured lending valuations. However, the data used in this survey was pointed out to be backward looking. Electric car charging points, which are becoming increasingly important for office properties, has also been mentioned by several valuers.

In terms of adaptability and resilience to climate change, flood risk assessment and flexibility of properties were mentioned by almost all the valuers. However, though flood risk data is collected regularly, these are still backward-looking data that do not consider the risk of climate change.

Many of the valuers appeared to be unaware of this problem. Meanwhile, adaptability or flexibility was mentioned as an added benefit that can help sustain the value of a property in the long run.

5.3.3 Data analysis and value impacts

The sustainability data that are collected by valuers are analysed and reported in valuation reports. However, eight valuers indicated that analysing the data on sustainability is not easy and quantifying to show value impacts per square foot can be quite challenging. Though data on certain factors are collected on a regular basis and these have become part of the due diligence, it is not clear to what extent valuers are able to analyse these data and work out the connections to value. As the following valuer indicated:

“it's hard to interpret it, isn't it? I mean you could spend two days just researching everything that you thought was related to sustainability for a particular property. But it's not in a readily usable form. But everyone within the industry regards as a standard.” (Valuer 11)

The challenges related to the analysis of data are discussed later as part of the theme, barriers to include sustainability within the valuation framework.

The analysis of sustainability data can be divided into two categories: explicit and implicit. From the interviews with valuers as well as the commissioning clients, it appeared that a majority of the value impacts of sustainability factors are now considered implicitly rather than explicitly. The following section discusses the explicit and implicit value impacts of various sustainability factors.

5.3.3.1 Explicit consideration through capex

The explicit consideration includes any cost related to various sustainability factors such as EPC upgrade cost, remediation for flood or contamination. A majority of the valuers reported on cost or capex requirements associated with a property's EPC upgrade. When EPCs are non-compliant (currently G or F), the cost of bringing it up to a minimum standard (E) is considered and it is deducted from the value of the property. Valuer 1 described the process:

“Well, if a property does not have a compliant EPC or required EPC, depending on the nature of the property and assuming it's not exempt in some way, then we would research that more deeply and we will look at the recommendations to find out what's the reasoning behind the non-compliance is. And if is non-compliance we would disregard that particular unit, if it's one building we say, that building is not saleable in terms of the legislation, therefore, we can't recommend a value on that. Or what we would normally do in situations like that is investigate with the owner or the bank or the investor to find out what would be the cost to bringing the rating to compliant level. Then probably represent the difference between full value assuming

compliant and then we deduct the cost plus probably additional management element and time cost for doing the works and assuming it became fully compliant, so that's how we would materially reflect.” (Valuer 1)

This is consistent with the advice provided by the RICS (2021c) where the cost of retrofitting is asked to be considered where properties can be brought up to a reasonable and appropriate level of sustainability. Though there are cost implications to EPC non-compliance, not all clients take that on board or find it important. As the following valuer stated,

“So, you've got two buildings that were built in 2000, but last year, one property is being refurbished. So, you take into account the costs of putting new lighting in, putting more insulation in and perhaps putting photovoltaic cells on the roof. You would make a small adjustment. You would make an adjustment to that which may even just cover the cost of doing the works.... So, some are happy to pay the full value of the other property without the better EPC.” (Valuer 14)

However, the cost of bringing the EPC up to a minimum standard is not calculated by a valuer ; the cost needs to be calculated by an EPC accessor or building surveyor. Therefore, valuers will have to collect the cost from a third party assuming their clients are happy to pay for the extra service. Generally, as a majority of the valuers suggested, the cost of the EPC upgrade will be deducted from the final value or through adjusting rent,

“We would make a judgment call on the likely cost to install or implement the recommendations that are on the EPC certificate and the recommendations report that is normally attached to the certificates. So, we would generally take that into consideration. If the cost was quite prohibitive, if it would be too expensive to adapt the property, we would, I suppose, make a lower play, a lower opinion of value or rent to that property.” (Valuer 11)

However, the data related to the cost of upgrade is not always available as one valuer suggested,

“We don't have brilliant data on what the additional costs are to improve EPC ratings, although we do try and get views from buildings surveyors where we can” (Valuer 18).

When the cost data is not available it appears, there are no value impacts as suggested by several valuers:

“So generally, it has no impact on the value unless we get given a specific cost” (Valuer 2).

“Since it has brought out the regulations that it has to be an E or above, it has caused some issues with purchasers, predominantly because if somebody is purchasing to rent you out, then it will need an EPC rating of E and above to rent it out. But it generally doesn't affect the value, but it will be noted.” (Valuer 20)

However, a different approach was discussed by a senior valuer with more than 40 years of experience when cost data is unavailable. He provided an example of a property that he was then valuing with a non-compliance EPC. As he did not have the data on cost to upgrade the property, he mentioned that he will try to assume a *“round ballpark estimate on that, nothing very specific because the structures can be brought out to satisfactory standards with relatively small expense”* (Valuer 5) and then deduct this assumed cost from the final value. This way the EPC non-compliance will have an impact on value through capex. However, he can do it from experience of handling similar cases, which may not be true for other valuers. A less experienced valuer may wrongly assume a cost that can eventually result in a value that is hard to justify. This is an example where senior valuers are possibly using their heuristics to show value impacts for EPC as expected in model 2 in chapter 3. Additionally, where costs are quite significant valuers will have to consult a specialist rather than assuming it themselves. Seeking an expert advice will require extra payment which the clients will have to pay. If the clients are not ready to pay, then valuers cannot collect this data. That could mean either estimating the cost or not considering it at all. These varying practices are making the valuations inconsistent, and this same issue was found by Sayce and Hossain (2020) in their MEES pilot study too.

Currently the cost of bringing an F or G EPC to a compliant level of E is relatively low as suggested by several valuers.

“It's not too difficult to get something around it and get EPC E so it meets the requirements because again, that is quite easy” (Valuer 8)

Therefore, clients do not bother too much about it. However, the UK government's plan to changing the regimes of MEES would mean it could affect a lot of properties and the cost may be significantly higher to upgrade to a B or C. As suggested by Muldoon-Smith and Greenhalgh (2019), to set the bar so high could mean value disruption and stranding of assets. Therefore, value

impacts of these costs might be quite significant. However, valuers who were interviewed did not seem to be aware of that and currently they are not informing clients of the future risks of the upcoming legislative changes or the future possibility for high capex in this regard.

Other than the cost of upgrading EPC, there might be a requirement for additional capex for improving a property's air conditioning systems, which was mentioned by a few valuers. For older office properties this could create a huge cost implication. Again, to be informed about the cost of replacing air conditioning system may have to be taken from an expert, a valuer may not be aware of that.

“And of course, if you're going to have to replace air conditioning system of a big property, it's a great deal of money that comes off the bottom line of the valuation quite often.” (Valuer 5)

Another valuer pointed out with time the occupier's demands are increasing, especially for office properties which could mean without refurbishing a property, it will be difficult to let. To continue to let properties and have a stable cash flow, refurbishments are deemed necessary, therefore, valuers need to consider that while valuing a property. However, these costs might be hard to quantify as explained by the following valuers:

“The requirements from occupiers and offices these days have really moved on, things like conversion costs or refurbishment costs, they just come back to the big cost implication, I think, which is sort of sometimes hard to actually quantify. But I think since all these years have been sustainability always a factor that does come back to a cost.” (Valuer 6)

A few valuers also mentioned costs associated with remediations for flood or contamination, however it is not clear to what extent these remediation costs are reflected or how these are quantified. It seemed these costs are only considered when there is a really high risk of flood or contamination as the following valuer pointed out,

“I suppose you would have to look at the cost of remediating the site in some way, including flood defences, if there was genuinely a really high risk, but I'm not sure to what extent that is being reflected.” (Valuer 18)

5.3.3.2 Implicit considerations

A number of implicit considerations were mentioned by valuers which are discussed below:

Availability of insurance: According to the valuers interviewed, flood risk is something all valuers would consider and access for all sorts of properties. Sometimes valuers may need to consult experts to determine the riskiness. If the property in question can be insured against flood risk, and what may be the cost of that insurance can be an indication of a value impact.

“Usually if the building's already up you can get insurance for it, that'd be a sort of caveat. It's a standard commercial district so you can obviously get insurance. If it was their development, we would ask to see any environmental (issues)... that all the insurance companies are willing to lend on it and usually that comes up.” (Valuer 2)

Therefore, according to this valuer if insurance can be secured no further value impacts are normally considered. The ability to insure can change over time depending upon the risk of the property, which in the UK is often location-bound as it may be linked to flood risk or other risks (International climate change risk analysts XDI, 2021). That raises the question if it is a valuer's role to consider this future insurability and the potential impact of it on value.

Flood risk can cause significant damage to property values, though the impact on value will depend on whether flood has occurred recently or not as the following valuer mentioned where flood deviation works have been undertaken and it has not flooded for 20–30 years, clients can become “fairly relaxed” about the risk.

“If there's a flood risk, then certainly that will have a severe impact on value. If it was appreciated that flooding was going to happen and a lot of Bath is in the flood zone, but because they have done quite a lot of flood deviations work, things don't flood, so let's say they won't. They haven't flooded for 20, 30 years. So, people are fairly relaxed. We have come across a property where flooding has occurred in the last ten years and that has quite a detrimental effect on value because not many people are prepared to have their offices or workshop a foot deep in water. So that'll hit the value.” (Valuer 5)

Therefore, the value impact of flood is dependent upon the recency of flood occurrence. Something similar was reported by Lamond et al. (2019) where it was found that risk perception of flood is

dependent upon the recency of flood occurrences. Another valuer mentioned that he would flag up a property with flood risk for the banks or lenders.

“I can only really think of the flooding issue here in the Northeast, our valued properties in areas that I know have flooded, you know, and we would look at the likelihood of that happening to that property. But all we would do really is flag that up as a risk to the banks. And it would then be for the bank to determine whether that risk was high enough to lend the money to the client or not or to ask for suitable insurance to be put in place. But it wouldn't really affect my opinion of market value.” (Valuer 11)

Therefore, though the property is at flood risk, the valuer is not showing any negative value impacts, rather he/she is leaving it to the lenders to decide on the acceptability of the risk.

Reduce void or increase lettability or impact on saleability: The RICS asks valuers to consider how sustainability factors are determining the length of time taken to sale or let a property (RICS, 2021c). A few valuers mentioned that the sustainability factors and the presence or absence of some of it can increase or decrease the lettability or void period for the property which can eventually impact on the cash flow or income of the property.

“I think it's about try and get things to let. Sustainability is just a by-product that's trying to get something let.” (Valuer 4)

One such example is the recent flooding history, where flood has occurred recently, properties do not sell very well which is consistent with the findings of Lamond et al., (2019) that recent flood history can impact on the perception of flood risk.

“I am thinking about flooding in York of the Riverside properties which flooded very badly in 2017 or 2016 and yes some of them have not sold very well since.” (Valuer 12)

Similarly other sustainability attributes such as flexibility or waste or water management system or BREEAM certification may not directly impact on value, but the presence or absence of these factors can impact on the saleability of a property as well as impact on void period. Moreover, BREEAM may reflect attributes of the building that valuers consider, rather than adding value in itself.

Rental value or yield: Quite a few valuers mentioned about the impacts on rental value or yields. Some valuers mentioned currently the impacts are marginal when compared to other factors of valuation. Especially for smaller properties, if it is not up to the market standard, rental values will be affected, which will eventually impact on value. As the following valuers discussed,

It's really about considering whether it impacts on the current rental value or the long-term yield, but it is marginal at the moment in the sort (of) property that I'm dealing with. (Valuer 16)

It does matter and will have a material effect, so I'm just thinking, you know, I'm looking at the local market towns and individual properties, small industrial units and things like that. And if there's no insulation and it's going to cost the tenant to run, and that generally goes with being in a poor state of repair as well, that will have an effect on the rent that can be achieved, which will then impact on the capital value. And they'll be you know, marginal amounts, not huge amounts, but people have got two units and one new unit up to standards and looking really good. And the other one's a tacky unit that does not have a great EPC and probably a bit tacky as well, in the round it will have an effect on value. (Valuer 16)

Similarly, if a property is “well specified” according to market standards, it will be automatically reflected in rental levels. Valuer 1 admits the difficulty to determine the “tangible difference”,

If the property is well specified, then that's reflected in the level of rent. I mean it's quite difficult to actually give a tangible difference between a building that is environmentally or sustainably well specified and one which isn't because people will tend to gravitate towards the better specified one. (Valuer 1)

With the introduction of MEES, some changes are becoming the norm within the market such as LED lighting and double glazing, which are required for a minimum EPC of E. Therefore, not having these specifications can harm the rental values of the property. The above valuer's view on “better specified one” suggested that sustainable property attributes to some extents are becoming the norm and not having these attributes will impair the rental value.

Some respondents talked about yield. When talking about yield, a majority of the valuers discussed the all-risks yield as they undertake only market rent or market value calculations and not very often investment value. The fact is that within the all-risks yield the quality of building will

generally be considered. Sustainability is not considered as a separate factor, rather it is considered within the all-risks yield or the rental level. If a property has a better EPC rating or a BREEAM rating, it is generally reflected through the yield or rental level.

Your yields are usually reflective of the quality of the building just in general not necessary that the EPC or the BREEAM rating, so it's kind of is there but the centre is not specifically sustainability. (Valuer 2)

So, the condition of the building will play a big part in that as well, the current rental income, what the estimated rental income would be, for example, if a property is vacant and the condition would come into it. But it isn't something that we would separate out in our mind in terms of understanding the value make up, if you like. (Lender 2)

Quite a few valuers as well as commissioning clients spoke about sustainability premiums as well as discounts. Sustainability premiums were mentioned by respondents mostly for BREEAM certified properties. According to an investor, “we're still at a very early stage of seeing the impact of sustainability on the valuation of an actual asset (Investor 1). On the other hand, a valuer mentioned, “BREEAM is an example of where it would carry a premium (Valuer 21). Similarly in the UAE real estate professionals reported on at least 1% premium for green buildings over conventional ones (Lambourne, 2020). Though participants within this study did not put a number on the premium, quite a few respondents (both valuers and clients) stated that there are possible premiums for both BREEAM and EPC rated properties.

Some valuers also argued that the additional rental value that is seen for BREEAM certified building is not because of the certification, rather it is because of the quality of the property. BREEAM properties are normally the grade A prime properties. They achieve the prime rates because these are built better. Valuer 2 explained his views on BREEAM properties,

It's not usually because of the BREEAM it's just the building's better. You have grade A building obviously, put brand new loft and get that BREEAM because they build it so well. We don't find that actually when somebody cares about a grade A building that brand new has got BREEAM excellent and one that's got BREEAM good it's probably not gonna be a difference in the rent as long as they're basically identical buildings. (Valuer 2)

One valuer mentioned, “*BREEAM building is usually a better fancy and a nicer building with better tenants*” (Valuer 2) and another valuer suggested without BREEAM certification saleability of prime office properties may be reduced.

A lender discussed the various impacts that a sustainable building may have on value. It could attract prospective tenants, reducing the void period, having low operating cost which will help achieve better rent and a longer-term lease which will reduce cost over time. All of these benefits should add to premium pricing. However, to what extent these are being reflected currently by valuers is not very clear.

“There's a lot of debate in the industry at the moment about whether there's a green premium, if you like, for buildings that are better or is it a brown discount for buildings which are less better? And I guess, you know, somewhere in the middle, if you've got a building which has been well invested, or it's brand-new building and it's been built to these sort of excellence standards or has been retrofitted to improve, and that will be more appealing to a prospective tenant and have lower operating costs. So you'll get a better rent, a longer term lease and it will cost you less, then there must be a premium to that, and so I think that the market will lead that really and the valuations will need to ensure that they capture that. whether that is true today or whether that is future proofed, perhaps not.” (Lender 2)

Some valuers also mentioned brown discounts, though not in these exact terms. Comparing an old property with a BREEAM building will definitely achieve less rent as well as value mainly because the non-BREEAM property is not as attractive and will have completely different tenants.

“So, if it was an E or below then technically can't let it so therefore your rent is zero, but if it was a refurbished office building that would probably get a lower rent because not as nice as the grade A BREEAM one. Brown discount isn't what I would call it it's just not as attractive to occupiers as this (BREEAM rated) building. Therefore, they would want if they could afford it, the nicer building which then happens to have BREEAM rating.” (Valuer 2)

A valuer from London also talked about how rent and yield is the reflection of demand from both occupiers and investors. Because of the demand, the best specified prime properties achieve the best rents, and they are now required to have sustainable features. However, if the property is not up to the market standard, a discount effect will be present, and the best rents might not be possible to achieve.

“In UK and most of Europe the rent and yield are reflecting the demand for that property both in terms of occupier demand and investment demand. And basically, it's very hardwith rental demand I suppose it's a bit easier to say that lots of occupiers want that space and therefore they're prepared, they're in competition to get that space. So from that perspective, that pushes the rent up. And the same with investment properties, although you could say because it's a good specification and the best specification that would drive the investment demand for that building. But actually, there are lots of other things to do with the nature of the tenants, the length of the lease and again the location of the property say it's one of the factors that gets put together. But why I think it is the best specification is what we call a prime building and as long as technology and specification demonstrate the sustainability features of a building, then that naturally implies the best rent and best deal should be achieved. So you're just keeping track with the market by being sustainable. Whereas if you're not tracking the market, then there's a discount in effect because your rent would have been at 40 pounds per square foot because you're not as good as a building, you're at 35 pounds. So there's less demand for that space . And it's the same with the yield, it gets higher. If you don't have it. So I'm much more of a discount rather than a premium. (Valuer 7)

Though some premiums and discounts were reported by valuers as well as commissioning clients, the difficulties to quantify it were also reported which is discussed later in this chapter. The RICS (2021c) instruction is to consider the changes in consumer and occupier behaviour over time and valuers are required to be aware of these changes and identify the impact of these changes on rental bid over time. To some extent valuers are following this advice, however, the challenges they face in terms of quantifying premiums or discounts or other factors must be looked at by professional bodies.

Comparable property information: Valuers are bound to search for comparable properties when valuing a property and evidence from recent transactions can help them justify the value. This information on comparable properties can be used to adjust the rental level or yield that the subject property may be able to achieve. For quite a few sustainability attributes, valuers reported that the value impacts are implicitly reflected through the selection of comparable property information. For example, flood risk.

“If you're in a floodplain area and a lot of the comparable evidence came from that area anyway it is normally built in. (Valuer 14)

As valuers look for comparables that are similar to the subject property, it is very hard for them to separate out the sustainability factors and comment on specific value impacts of these items. When they find a recent transaction of a similar property, they see the price as a whole for a “like to like” property and it is challenging for them to separate out a single factor such as the BREEAM rating and affirm that a certain percentage of price is attributable to that factor. All the factors which are similar to the comparable properties are considered implicitly rather than explicitly. As valuer 15 noted,

“...if you're comparing, like with like then value is already captured in it. So, in a way, it's like an implicit consideration.” (Valuer 15)

In Australia Le and Warren-Myers (2018) also reported the same issue that valuers would look for like to like properties and would try to choose the most identical ones possible. Additionally, as they adjust many factors for valuation, sustainability and rating tools are some of them, hence it was part of a bigger picture rather than the sole parameter (Le and Warren-Myers, 2018).

Therefore, how these sustainability factors, which are essentially quality features, might be impacting on rental values is very difficult to calculate, as discussed in detail by Valuer 1,

“Yes, it's very difficult to comment on shall I say 'sustainability premium' is in a particular valuation. Because it tends to be dependent on comparables, we try and find comparables that are closest in terms of construction, location, quality, size. There usually are sufficient pieces of evidence to support or to give you a steer in terms of what the value should be. So it's quite difficult as a thing to identify what differences specific item would make if you have two identical buildings, one has rain water harvesting and the other didn't, you won't be able to determine the difference even probably if one has solar panel on its roof. (Valuer 1)

Valuer 4 also described sustainability as a subconscious part of valuation, which essentially means it is still implicit in most cases, rather than explicit.

“For property value it has an impact, but it's brutal trying to assist our clients and the best in-house use for their property and sustainability is a part of it. But it's almost a subconscious part of it. I don't think it's conscious yet.” (Valuer 4)

A lender mentioned having a comparable analysis of environmental credentials could really be useful from the clients' perspective. However, it is challenging for valuers as it would require them to understand the EPC rating to a much greater extent as well as the comparable properties.

“No and this is something that has come up in the past, when you see the comparables that valuers typically refer to, they're not making any distinction between the environmental credentials between one comparable and another subject property. And to my mind, that would be a very useful thing. But I can see that it comes with all sorts of challenges because they would need to really understand those comparables and better detail than just to say it's a headline rent of 60 pounds per square foot, if it was a rental base, because they would need to understand what the EPC rating is as well. If it was a retail unit, then it stands to sort of fit out. So, I can see that it isn't without its challenges. But I'm saying in the ideal world, the comparable schedule would include the rent, the building, the specifications. One would hope that the location and those locational criteria are similar. You're also including as a minimum the EPC rating.”

(Lender 4)

Other than the above factors the RICS (2021c) also advises valuers to consider the impact of sustainability and ESG factors on risk premiums, exit yield (for DCF) and incentives, however valuers did not mention these during the interview. Comparing these results with previous studies in Australia, Warren-Myers (2013) reported rents were the most likely value indicator to be affected by sustainability followed by saleability and price and all three had a positive impact on value according to the valuers. However, these perceptions of valuers were later moderated during the surveys in 2011 and 2015 (Warren-Myers, 2016). The last survey in 2021 again showed positive effects on yield, rents, rental growth, saleability and price for sustainability factors as per the valuers who responded (Warren-Myers, 2022b). In the UAE rents and low operating costs were mentioned by the respondents to assess sustainability for a building (Lambourne, 2020). In the UK however, the use of all risks yield is quite popular which allows valuers to implicitly consider lots of variables together and the last UK study by Michl et al. (2016) reported on the importance of the all-risks yield in the UK. Similarly, within this study valuers have mentioned the importance of yield as well as rent while valuing properties. These value indicators allow UK valuers to implicitly consider various sustainability factors by comparing the subject property to comparable properties. In terms of the explicit considerations on value, capex has been mentioned in this study which was also reported by Warren-Myers (2013; 2016; 2022b). Though earlier studies found outgoings may have a positive impact on value (Warren-Myers, 2013), it got reduced in later surveys (Warren-Myers, 2016; 2022b). Respondents in Australia also reported institutional owners were willing to

spend additional capex to increase NABERS and water ratings (Warren-Myers, 2022b). In the UK however, the capex for EPC upgrade or air conditioning are impacting on value directly though calculating or findings these data might be challenging.

5.3.4 Reporting

Valuers as well as commissioning clients were asked to what extent sustainability factors are reported within the valuation report. A majority of the valuers admitted that other than some information on EPC and flood risk, sustainability factors are not included that much within the valuation reports. One valuer stated,

“Sustainability data that we're talking about is not being researched for a valuation perspective. It's been researched purely to protect the client legally. From a valuation point of view, a lot of these factors aren't considered in valuations, and they are not relevant unfortunately.” (Valuer 10)

This means these data are being checked or collected to protect the clients from future risks related to legal issues. For example, collecting data on EPC will allow valuers to inform their clients regarding whether EPC has passed or not, which will help determine if a property will be allowed to be let or not. However, when considering the impact of an EPC rating on value that has passed, it might be ignored by valuers completely and hence will have zero value impacts. This is confirmed by the interviews with the commissioning clients. One lender reported *“in relation to EPCs, it was a very short section in the overall report”* (Lender 2) and that it is just a *“tick box exercise”* (Lender 2), that is if it passes or not, rather than an analysis that would help clients understand the implications of the rating. This practice is somewhat contradictory to the advice valuers received from the RICS where secured lending and financial reporting purposes are explicitly mentioned where valuers may be required to *explicitly articulate the evidential base for assumptions around sustainability and ESG* (RICS, 2021c, p. 3). However, this advice was published after the data collection of this research was over.

Therefore, sustainability factors only affect value when there is a clearly identifiable problem such as EPC does not pass and cost of upgrade is available, or the property has significant flood or contamination issues etc. As the following valuer confirmed,

“I think the underlying conclusion is that, you know, for the type of day-to-day work that we do, sustainability isn't yet a factor that particularly affects my value, except for a small number of

specific cases which I mentioned, such as, you know, probably lying on a flood plain or particularly about a business that has to be efficient with something.” (Valuer 11)

An environmental specialist/valuer who reviews valuation reports regularly on behalf of his clients to check for environmental risks also reported that other than EPC he rarely finds any other sustainability related factors reported in valuation reports. According to him, along with EPCs, other sustainability factors may also have an impact on value or rents, however, valuers hardly relate any of these factors with value or rent.

“There may be a reference to the EPC, but that's it, there is nothing else, that's zero. It's very odd. There is a building, this is this big, this is here, where do you go, this is what we want for it. But in terms of deriving valuer or deriving price, there's no disclosure about flood risk or anything else for that matter that could affect that aspect i.e the economic with the truth.” (Valuer 17)

Commissioning clients also reported that the current valuation reports do not hold a lot of information on sustainability factors and there is a lack of focus from the valuers. Though they expect sustainability to become an even bigger driver from owner-occupiers and investors, it is still not fundamentally embedded within the valuation methodology, however there is a “built-in” impact.

“It's interesting, from my point of view, I can see this becoming a bigger and bigger point, but at the moment it's still not embedded as a fundamental valuation principle at all.” (Owner-occupier 4)

“How that is built into the valuation is not clear to me and I think it's difficult to assess. I think certainly there is a certain built-in impact to the valuation I would say for all the buildings now.” (Investor 2)

Lender 3 talked about different qualities in valuation reporting. According to him, “good valuation reports” will generally link building attributes and comparables to valuation whereas, “lesser valuation reports” will not.

“I was just talking about the general attributes of the building and the good valuation reports absolutely link to the metrics in their valuation to comparables and how they compare to

fundamentals of the building. And the lesser valuation reports do that less successfully. A good valuation reports would provide an absolute link not only between buildings attributes, but also the income stream and the comparables that they cited and how they've arrived at the value for the valuation. We see a range of quality of valuation reports.” (Lender 3)

From the above quote, it appears that there are some good practices present within the valuation community. At least some valuers are trying to provide some analysis of the sustainability data and linking these data to comparable property information to show some value impacts. However, the majority of the valuation reports do not provide these connections. As the following commission clients criticised,

“It's not transparent that they have a correlation, unless it's an obvious thing where they're saying, you know, it's an EPC rating and it's G and therefore, it's questionable whether it's acceptable security for the bank, but it's not transparent.” (Lender 1)

“Not very clear. The ability to identify components of value, valuers aren't all very articulate doing that. What they can do is describe and assess and compare over a feature to feature, et cetera. But the ability of them to really articulate and pinpoint how value is represented, it is not very clear. And they certainly wouldn't say, well, the difference between a BREEAM excellent and a BREEAM good is twenty-five bips, I've never seen that.” (Investor 3)

For all purposes of valuation valuers are required to demonstrate how they have considered sustainability factors in their *approach, calculations and commentary* (RICS, 2021c, p. 16). Other than that, the Red Book (2020; 2022) have specific instructions on reporting for sustainability factors in VPGA 8 section 2.6 (c):

- **Instruction:** *“assess the extent to which the subject property currently meets the sustainability and ESG criteria typically expected within the context of its market standing and arrive at an informed view on the likelihood of these impacting on value, e.g. how a well-informed purchaser would take account of them in making a decision as to offer price”*
– Sustainability and ESG are very broad terms that may mean a lot of issues. There is a need for clarity from the RICS regarding which factors valuers should collect data on and how to interpret these data. Currently it is done to an extent for EPC and MEES, however the assessment does not go beyond a tick box exercise for majority of valuers within this study.

- **Instruction:** “provide a description of the sustainability-related property characteristics and attributes that have been collected” – descriptions are kept at a minimum and only for few characteristics like flood, EPC and contamination.
- **Instruction:** “provide a statement of their opinion on the relationship between sustainability factors and the resultant valuation, including a comment on the current benefits/risks that are associated with these sustainability characteristics, or the lack of risks” – statements are not provided with great details as commissioning clients have reported within this study. Only EPCs are mentioned along with flood risk and environmental assessment. But these data are not analysed to show opinions on the relationship between sustainability factors and resultant valuation that would include risks or benefits associated.
- **Instruction:** “provide an opinion on the potential impact of these benefits and/or risks to relative property values over time” – respondents of this study reported future risks and benefits are not discussed with clients to any great extent.

These above findings of minimal reporting and descriptions of sustainability attributes were also reported by Warren-Myers (2013) in Australia where valuers reported on providing minimal or generalised statements on sustainability factors. Additionally, building initiatives to improve sustainability, owners and tenants’ sustainability objectives were found to be rarely reported on and even if they were, the details were kept at minimum. Le and Warren-Myers (2018) also reported on generalised statements used by valuers in Australia for sustainability reporting in valuations. Additionally, government requirements were found to be a benchmark used by valuers in Australia (e.g. NABERS rating) (Le and Warren-Myers, 2018) as is true in the UK for the EPC. Where buildings pass the minimum requirement of an EPC of E it appears that the valuers who were interviewed mostly do not undertake any further analysis or reporting. This is again very similar to the findings in Australia where valuers (8 out of 10) were found to be reporting on the overall ratings without including any further investigation of each category (Le and Warren-Myers, 2018). Therefore, though valuers have reported on collecting some data on sustainability (EPC, BREEAM, flood, contamination, environmental assessments), it appears that the challenge lies for them in analysing these data and showing meaningful connection of these factors to value.

5.4 Differences in terms of asset classes

Valuers interviewed for this research are commercial property valuers who undertake valuations for various assets such as retail, office and industrial. From the interviews, a clear distinction could be made between offices vs. retail properties. Comparing between these two asset classes, a

majority of the valuers admitted that within the current market situation offices, especially prime office properties, are more affected by sustainability factors. According to valuers, certain sustainability factors such as BREEAM rating, electric car charging points, health and well-being factors, air quality or natural light are becoming more and more important for office properties. Some of the reasons were also discussed by some valuers. Health and well-being factors are far more important in offices as employers want to create a comfortable working space. A healthy and comfortable working space could mean employees will not get sick very often, which would benefit the company in the long run. Additionally, prime offices are valued higher than other assets and bought or occupied by corporate giants who have sustainability higher in their agenda.

“I think sustainability criteria are far more apparent and dominant in the office market, far more so than in retail and industrial market...As I said its offices which are the most likely to think of these factors because that's where there will be far more people buying, health and well-being factors will be more appropriate and possibly because the scale of value of offices is typically far greater than equivalent retail, industrial.” (Valuer 1)

The retail sector on the other hand has less focus on sustainability according to a majority of the valuers. The reason mentioned by valuers is the struggle that has been going on for some time in the retail sector; the industry is in survival mode. If the industry can survive the pressures of online business along with the impacts of the pandemic, it could start focusing on some of the sustainability issues in future.

“And retail it will be about individual high street shop. Shopping centres again will require a range of sustainability requirements. Unfortunately, right now (we) see the retail market is very much struggling and probably any environmental criteria are not being viewed very considerably.” (Valuer 1)

Furthermore, it appears that adaptability/resilience/mixed use/alternative use is becoming an important factor in valuation of retail moving forward. As Valuer 6 discussed,

“In terms of retail, retail structure is having such, such difficulties. I'm not sure sustainability is the biggest issue for retail at the moment. But retailers got its own issues and problems at the moment, of what they call a structural problem. And that's a really difficult one to see what was going to happen with retail....at the moment, some retail issues don't have a retail use going forwards, so maybe they will end up being a hotel or leisure unit, so I think it's sort of a different,

different area...Certain retail is having difficulty about what they might be used for actually there.” (Valuer 6)

Additionally, an investor heavily invested in the retail sector was interviewed. This investor has specific carbon reduction targets and has been working for years to reduce the emissions and be carbon positive by 2030. This investor has a huge focus on sustainability and has a sustainability team to sign off on every single project to check if the targets are being met. Though they are working towards it year by year, they also need to focus on the distress within the sector to steady their financial performance which has become their current focal point rather than sustainability.

“In the retail sector, a lot of it is focusing on just how we get the centres to work and make sure that we stabilize the financial performance. So, I could see that although sustainability is still a very important element and we include it in everything that we do, it's not at the forefront of what is really driving our agenda, because there's so much distress in the sector. So, it's something that we always do. So, any investment decision we make, I always need to get sign off from the sustainability team as well. So, we have kind of processes in place to make sure that everything we do is being addressed from a sustainability point of view. But they're probably still, probably peaking at this time, it is not at the top of the agenda, I would say, because we first need to stabilize the financial performance.” (Investor 1)

From the above quotes it appears that both valuers as well as commissioning clients consider office properties, especially prime office properties, are mostly affected by sustainability factors such as BREEAM rating, health and well-being factors etc. However, as retail properties are suffering for various reasons, having resilience to adapt for different purposes of use is becoming more important. On the other hand, the office market was heavily impacted during the pandemic, the demand of this market therefore may have changed due to an increasing interest in work from home.

5.5 Motivation

This theme discusses valuers' motivational factors to include sustainability within the valuation framework. The following figure provides an outlook of the theme and the sub-themes. From the literature review it was found that there are three main market pressures related to sustainability that can create an effect on the value of a property: increase in demand that is market-led, legislative pressure that comes from the government and regulative pressure that comes from the RICS. However, the findings from the semi-structured interviews reveal some additional factors. A total

of five motivating factors were identified, among which two are found from the data : influence of purpose of valuation and incidental factors. The following sections explain the findings in detail.

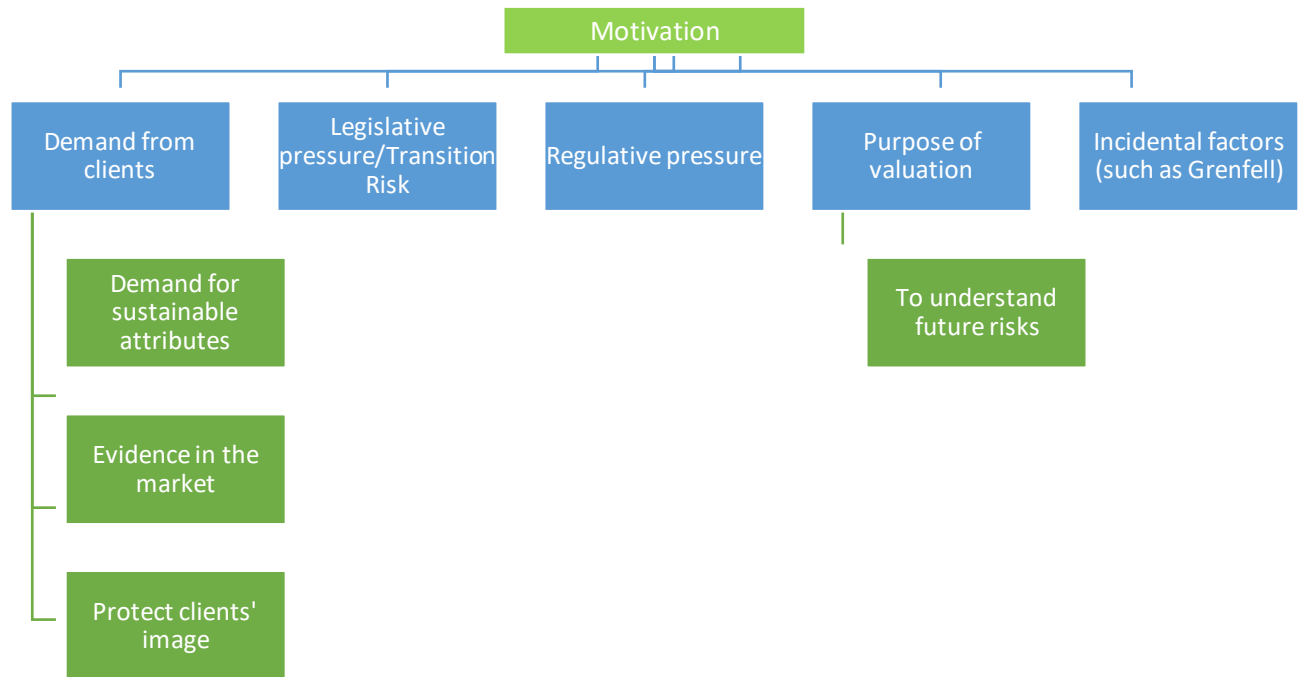


Figure 5.2: Theme 2 Valuers' motivation to include sustainability

Source: Made by the Author

5.5.1 Demand from clients

From literature, it was found that there is an increase in demand for sustainable attributes for commercial properties, especially prime properties. However, the data from semi-structured interviews suggest that the demand is dependent upon varieties of factors such as demand for sustainable attributes from various clients, evidence in the market and to protect a client's image.

5.5.1.1 Demand for sustainable attributes

Generally, valuers reported increasing demand for sustainable attributes among some commissioning clients. Three different commissioning clients were interviewed, investors, lenders and owner-occupiers. The following section explains the demand for sustainable attributes from these three commissioning clients.

5.5.1.1.1 Demand from investors

Demand for sustainable attributes from investors can be divided into two categories, the first being big investors such as pension funds. *“Pension funds do have a list of environmental questions such as flood risk and EPCs”* (Valuer 5) as reported by a valuer. Other valuers who have undertaken valuations for these sorts of investors have explained that these investors are increasingly interested in sustainable attributes of properties. They want to be seen as socially responsible in the market and therefore will be interested to invest in sustainable buildings.

“So, if it's a pension fund, I can see some pension funds trying to convey a very good socially aware and sustainability criteria in order to appeal to certain types of investors and then in turn only seek to invest in what they would determine is sustainable buildings. So, I can see that is being a growing marketplace in the future.” (Valuer 11)

However, the definition of sustainable building for these investors is limited to certification. Hence, these investors are mostly interested in prime properties. In the UK market, new prime properties, especially prime office properties, are now mostly BREEAM rated. Other than BREEAM rating, these investors are also interested in EPC rating, flood risk of properties and environmental risk assessments. The following valuer discussed these investors and their interest in sustainability attributes of properties,

“I think where sustainable issues are probably more relevant are when say probably some prime city centre office building, that's probably where you will take more consideration of how it might impact, because firstly, the investors in those types of building, the people who buy them have sustainability higher on their agenda. The institution investors will want to be seen to be investing in the best quality, sustainable assets.” (Valuer 8)

Another valuer reported on a pension fund that his firm undertakes valuation for. This pension fund has a standard environmental checklist (EPC, flood, contamination, environmental assessment), but they are looking ahead to understand if this list covers enough sustainability factors or whether they should update it.

*“There's a lot of discussion at the moment with *** about sustainability in their reports, whether or not their existing report format covers it adequately. They have a standard environmental checklist, which we have to complete as part of every valuation that we do for them.... I think we're in the process at the moment of discussing with them how their format ...whether it needs*

to be updated and amended and to what extent it possibly needs to overtly refer to sustainability.” (Valuer 21)

Therefore, within the market there are investors who are more concerned and have started the process to look into the possibility of including more sustainability checks (if required) within valuation. Another important attribute reported by some valuers is the lot size of properties. Bigger lot size properties are expected to be bought by big institutional investors who reportedly have sustainability high on their agendas. Therefore, it is made with sustainability credentials, so these investors are attracted to these properties. However, more sustainably generally means that these properties will have a BREEAM rating.

“If it's a 50, 60, 70-million-pound Birmingham City Centre office building, then, you know, that is going to be core institutional investors who will have certain requirements, you know, need to understand or it's a far greater consideration. Whereas if it's a one-million pounds secondary industrial unit in Dudley, then the type of purchaser who is going to buy that property probably will not have sustainable factors or issues high on their agenda. So, lot size does impact on it.”
(Valuer 8)

Hence, for small-scale properties, BREEAM certification is not as important as it is often not available for such properties. Also, investors investing in these properties may not have the same requirements in terms of ESG as institutional investors or pension funds. The primary requirement for small investors is to be able to let the property. As a result of that, the introduction to MEES and the requirement to have a minimum EPC of E has made a difference at this level. As explained above, currently to bring a property up to a compliance level of E, not a lot of capex is required according to the valuers. Just changing the light bulbs is enough in some cases. Though a very small change, MEES is still making a difference in terms of creating an awareness among small investors.

Another important sustainable attribute for small scale properties is flexibility or resilience. Several valuers reported flexibility as being an important factor for their clients,

“Certainly, when we're dealing with private clients they want to know more about the building and its performance and its flexibility because they want to understand if the business change can the property change with that.” (Valuer 13)

Therefore, according to valuers, big institutional investors or pension funds have very different requirements when acquiring a property than a small investor. For big investors fulfilling their ESG requirements is vital, however, it appears BREEAM certification is the only defining factor that they aim for in a majority of the cases, whereas for small investors EPC rating and flexibility and resilience of the property can be a more important consideration. In earlier studies it was reported working for clients with ESG or CSR strategies may improve knowledge and skills of valuers on sustainability in property valuations (Kucharska-Stasiak & Olbińska, 2018). This may be true in the UK too. These experiences may help valuers to develop better heuristics on sustainability.

5.5.1.1.2 Demand from lenders

Among all three commissioning clients, lenders are the ones asking for most information and advice on sustainability related to a property. A majority of the valuers interviewed undertake secured lending valuations on a regular basis and they have reported that most banks ask them to consider certifications, such as EPC and BREEAM, environmental risk such as flood and contamination-related information. Some banks were reported as being more comprehensive than others, but the basic questions are asked around certification, flood risk and contamination along with environmental risk assessments in some cases. The following valuers explained,

“It's become pretty common practice and some of the banks ask you to do it. That you look at the EPC rating and for a bank also BREEAM rating. So those are the two most important areas of sustainability that you look at. Almost all sort of banks you have to be clear, whether it's in a flood plan or not and any other environmental issues that are raised. So that's when you're doing your due diligence. You're expected to cover those areas.” (Valuer 7)

A few valuers also mentioned that banks are now interested to know how valuation firms are handling sustainability, and what are their policies around it. Banks are now asking these questions before they let any valuation firm into their panel.

“They do, yes and when we're on their panel, when we're renewing their panel appointments, there's a whole raft of questions that they said to us in terms of, you know, how well our policies are on this, what our policies are on that, how we deal with issues for health and wellbeing.” (Valuer 21)

According to the valuers interviewed, banks or lender have appeared to be most interested among all types of clients to learn about various sustainability factors and the associated risks. For

example, if EPCs are expiring within the loan period, a lender would expect a valuer to report on that. Similarly, they are also interested to be informed about any other future risks associated with the subject property.

“For banks it's normally just highlighting the risks associated with the sustainability of the asset. So, it's mostly things like flood risk and contamination and also now increasingly the EPC rating on compliance with the minimum energy efficiency standards.” (Valuer 18)

However, they are still asking the valuers to cover the general sustainability items such as flood, contamination, EPC and BREEAM rating. Other than these factors, the lenders are not asking for anything extra that could help advance or escalate the process of including sustainability within the secured lending valuations.

5.5.1.1.3 Demand from owner-occupiers

Regarding the demand from owner-occupiers, valuers appeared divided in terms of their opinions. For some valuers, the view is that currently occupiers of offices have higher demand for a better space, however, other valuers within the sample who undertake valuation for financial reporting or account purpose on a regular basis for owner-occupiers have different views. According to them, owner-occupiers, especially ones on the high street, are less sophisticated and have less care for sustainability as real estate is not their main business. The following valuer discussed her experience with high street banks as occupiers,

“I think because they're less sophisticated. Unless there are a particular type of corporate, I would say generally they're less sophisticated in terms of their knowledge because it isn't their main business and main business is making the widget they're making.” (Valuer 3)

Therefore, within the owner-occupier segment again there are sophisticated corporate clients who would concentrate on sustainability factors more because of their own targets related to corporate social responsibility or ESG etc. However, occupiers who are mainly occupying high street shops or small offices at the secondary or tertiary level are unlikely to have such objectives. The lack of clients' interest (both tenants and investors) on sustainability have been reported as barrier to include sustainability in valuations in other studies around the world. For example, in the UAE (Lambourne, 2020), Australia (Le and Warren-Myers, 2018), Poland (Kucharska-Stasiak & Olbińska, 2018) and in earlier studies in the UK (Michl et al., 2016). It appears sophisticated clients such as institutional investors or pension funds or giant corporates with ESG strategies are mostly

concerned about sustainability, however the less sophisticated clients holding on to secondary or tertiary properties are not.

The above section discusses the view from the valuers. Contrary to that, investors, owner-occupiers and lenders shared their views regarding which sustainability factors are important to them moving forward. The following section discusses some factors identified through the interviews with commissioning clients.

Factor 1: Reducing cost: Investors 1 and 3 as well as owner-occupiers 1, 2, 3 and 4 mentioned that it is increasingly important for them to reduce the cost of energy and utilities. To reduce cost, understanding the consumption of energy and utilities is vital and to do that installing smart meters is becoming common. The cost and associated use of energy, water and other resources are regularly monitored by smart meters and ways to reduce these costs are looked into regularly. Reducing the cost of utilities or energy could have an impact on property values. Investors could ask for higher rents, whereas owner-occupiers can save cost. However, a majority of the valuers did not report on any such case. Collecting data on utilities or energy costs is also not the norm for valuers.

“So, our focus so far has been on looking at installing solar PV, we're installing a lot of smart meters in the centres so that at least we can get a better insight of what is being consumed and we can then start to manage that better.” (Investor 1)

Factor 2: Reducing emission: Investors 1 and owner-occupiers 1 and 2 have ESG policies and most of them have targets to become either carbon neutral or carbon positive by 2030. To ensure these targets are met, reducing emissions is paramount. All of these commissioning clients reported on keeping track of their carbon emissions and how these are being reduced over the years, however, none of the valuers reported on collecting these data.

“So, say the energy service has done a huge amount over the last 10 years, I don't know the exact stats, but they've reduced the emissions of our estate by 60 percent or by 80 percent or something like that, so they've done a huge amount, and it has led to a really significant reduction in emissions from our estate. So, there is a successful program that has been undertaken and is underway.” (Owner-occupier 2)

“So, from our point of view as business, we have a target, as I said, to be net positive in those four areas by 2030. And that's what we're slowly working towards and we're just trying to address the kind of low hanging fruits first and the things that are going to have the biggest impact.” (Investor 1)

The RICS Red Book (2022) suggests valuers collect data on carbon emissions, however, it was never advised before 2022. Therefore, it could be expected, to maintain best practices, that valuers will start collecting data on carbon emissions from now on.

Factor 3: Renewable sources of energy: To reduce emissions and meet the ESG requirements another important factor is to find renewable sources of energy such as solar and wind. A majority of the commissioning clients mentioned that they investigate these various sources of renewable energy and look for opportunities to install them within their properties. These renewable sources also help reduce the cost of utilities.

“And in fact, the company are seriously moving. As you can see on this strategy announcement made last week, again on the general website, we are moving significantly into renewables.”
(Owner-occupier 1)

However, commissioning clients also reported that the initiative to become net zero or carbon positive mostly comes from their ESG requirements, and it is often hard to explain the direct impact of investing in sustainability and thus to fully understand the value impacts of these initiatives.

Going forward it is vital for investors and owner-occupiers to keep investing in these renewable sources to achieve the net zero target. These targets will eventually contribute to the UK government's target of net zero by 2030. As valuers are the experts on valuation within the property market, many of the commissioning clients expect them to come up with ways to show the impacts of sustainability attributes on value, however, so far that is very limited.

“I think in overall terms, valuations have not really focused on this a great deal in the past.”
(Lender 2)

The latest RICS (2021c) advice has been revised to encourage valuers to collect data from clients on carbon assessments, cost of carbon efficiency improvements, cost of energy and energy

efficiency where it is relevant, however this advice was published after the data collection of this study was over.

5.5.1.2 Evidence in the market

For valuers to show any sustainability value impacts, evidence from the market is required. As the RICS (2021c, p. 10) explains, “*the role of the valuer is to assess and report value in the light of evidence obtained*”. The job of valuers is to reflect the market and not lead it. Without the evidence from the market and the price differentials, valuers cannot reflect sustainability factors within the valuation framework. A valuer showed his concerns that the market is taking a long time to price sustainability factors,

“So, I think sometime this information takes a while for it to actually be priced into the market. I mean, sometimes information becomes available, but it's not immediately priced into assets. So, when we actually see a differential in the market, we can actually reflect that in the values. So, I think there's a lag basically sometimes in terms of sustainability it's been on the agenda for a long time now.” (Valuer 6)

However, a few valuers explained that compared to a few years ago, the market is moving faster, and some impacts of sustainability factors can be seen.

“I think we are better placed now than we were five, six years ago. I think the value is coming through now, we are very aware of the built environment.” (Valuer 4)

“I think it's quite slow, but I think valuers are generally trying to reflect the market. And so, if we're seeing that investors are starting to factor in, which I do think they are now well they are starting to, then we will try to reflect that.” (Valuer 18)

Other valuers as well as clients have also reported similar things. The evidence appearing in the market currently is limited to premiums for prime properties when BREEAM rated.

“I think we now see a pricing differential, whereas a few years ago that there probably wasn't one..... whether the BREEAM rating is actually making a difference to the market. Which I would say it does today, whereas not too many years ago, may be very difficult to say whether the BREEAM rating would actually get a premium within the market.” (Valuer 6)

Some discounts for lower end properties were reported as well by some valuers and commissioning clients,

“It is in that high end new build properties. I think there is something there definitely. And there's potentially something that says actually at the bottom end where the properties in the low value and it is tertiary and it is in a really bad state, then you got the negative impact in there.” (Lender 1)

One valuer also reported on new developments with heat pumps and panels that can reduce the running costs quite significantly. Though he talked about residential properties, it may be relevant for commercial properties too.

“In development all we've seen push obviously due to building regs and you'll get some developers who will also go with further, because they think there's now a little bit of a premium on specially more resi builds. If you can effectively have zero running costs through heat pumps and panels and things like that. You might expect to get an extra bit of value. So, they're balancing now at the minute.” (Valuer 2)

Another valuer explains that these premiums are mainly present for prime office properties which are normally bought by institutional investors who have high ESGs on their agenda. These properties are let to big corporate occupiers who again have sustainability high within their agenda. These demands from institutional investors and corporate occupiers reduce the void periods, push the rent up and eventually create the premium. Therefore, comparing with an older building, these prime properties will achieve better yields.

“And also, those types of buildings will also typically let to the bigger corporates occupiers who again have sustainability, employee wellbeing high on their agenda. So, we're looking at those sorts of buildings. So, it could impact on sort of letting periods. They might get up quicker. You might get a slightly enhanced rent and also say if it was from yield evidence, if an older inferior building, you know, with an older spec traded at one yield, you might make an adjustment to reflect that. This is I mean it's all very subjective, but you might suggest this would get a more modern, energy efficient building with lower running costs might come under better yield. (Valuer 8)

As the above valuer explained, the institutional investors are searching for highly efficient sustainable assets to purchase, which has increased the demand for BREEAM properties or prime properties. However, currently the supply of these properties is still limited, which might be a reason for these premiums. On the other hand, the running costs of the properties cannot be known before they have been used, therefore it could be hard to quantify the cost saving and resulting value impacts. Similarly, a study conducted in Poland reported on the lack of readily available market data on evidence of cost savings as one of the main reasons for low awareness of sustainability among market participants (Kucharska-Stasiak & Olbińska, 2018). Another study in the UAE reported on lack of transparency regarding building prices and rents in that market (Lambourne, 2020), which may be prohibiting valuers from identifying a relationship between value and sustainability attributes. Though the UK property market is developed unlike Poland or UAE, a lack of evidence is still apparent. On the other hand, though there has been quite a few normative studies on how sustainability should affect market value, Warren-Myers (2012) identified that application of such research to provide guidance to valuation professionals is still lacking. Along with that lack of evidence on sustainability factors was another significant factor identified in Australia at the time as barrier (Le and Warren-Myers, 2018).

EPC, on the other hand, is a “*cut-off point*”. If it passes, then there are normally no more beneficial impacts even if it is an EPC A. Though one valuer assumes that there might be additional interest from some purchasers for a better EPC, the difference in terms of running cost between different EPCs are not high enough to exhibit significant value impacts. Valuers also reported not receiving or collecting the data related to running or operating costs of a property while valuing it, therefore, it might not be possible for them to consider the cost savings.

“It is a cut-off point. It's a very black and white cut off it would appear. Some purchasers may attribute a little more value to both the A or B but few do. So, at the end of the day, what they're looking at is the actual difference in their heating bills or running costs between a B or a D, maybe which is only a very, very small percentage of their total outgoings. So, are they particularly interested in doing that? And in most times the answer is no. They'd rather concentrate their efforts on improving something else and with a quicker result.” (Valuer 13)

Though some evidence of premiums and discounts has been reported by a few respondents, it is reportedly a minimum for only a few types of properties such as prime office properties in city centre offices or in big cities such as London etc. However, as evidence is appearing, it acts as one

of the most important motivating factors for valuers to consider sustainability within the valuation framework.

5.5.1.3 Protect clients' image

For commissioning clients, an important aspect is to maintain their ESG requirements and protect their image in the eyes of the public. The ESG requirements as well as corporate social responsibility (CSR) factors can also be used as competitive marketing tools by corporate giants, according to some valuers. Along with corporates, many of the local authorities such as local councils in the UK have declared climate emergencies. Therefore, it is important for them to maintain the promise to the general public. As the following valuer explained,

“I can certainly see large corporates and local authorities, people who are very much in the public eye... I think, well in future demand that buildings are shown to be able to have a certain specification and that they are...the occupier is adhering with public as well as their own demands because loss of face now if it turned out that as an example, Amazon were not incorporating particular facility that they could be and therefore their buildings were never sort of less efficient more energy consuming than they should be then there'll be a public outcry and I think there's a lot in the.....well what do we call it..... it's not branding but the market image of corporates, local authorities as well. They won't be allowed to build properties which are too big or beyond the requirements of a particular organisation and properties which are inefficient in any way. So, I think in terms of risk, that's one thing which will become very apparent.” (Valuer 1)

Similarly, some valuers who are dealing with giant corporates with ESG requirements and specific targets to reduce carbon emissions mentioned corporates are interested in showing themselves as more sustainable to maintain their competitive image in the market as well as to reduce costs where possible.

*“We have teams here that obviously work for corporates in terms of the larger kind of like *** and things like that, where they'll see looking at now kind of a sustainability in terms of you know corporate social responsibility. Also, on what they should be doing and then you know corporates are very often about saving money, so how can you get our energy bills down, you know, what could we invest in to basically bring out and keep running costs down, they are variant about saving money and thirdly a lot of it emerges in competition with each other. It's not even actually that they're doing it because they want to be necessarily doing the right thing,*

*they want to be doing something better than their competition, as an example *** would want to do something better than *** Because you know that's basically a marketing tool for them. I suppose it sounds good in the end, but I don't know that the motives are necessarily to do good.”*
(Valuers 3)

However, as the above valuer explained, these could be marketing tools only rather than a genuine promise to really change towards a more sustainable future. The fact that corporates are faced with additional pressure from the public as well as from their clients and investors to be more sustainable and socially responsible makes them appear that they care.

“I definitely think that a lot of our clients are increasingly concerned with it and having to deal with it more and more because their clients might be concerned with it. And they are also under pressure publicly from their investors to consider their corporate social responsibility.” (Valuer 18)

Hence, for corporates and big institutional investors sustainability is becoming increasingly important to maintain their public image and not lose face in the public eye. Because losing face within the market would mean losing value in terms of a deteriorating public image, which would eventually impact on share price.

“I think where you start getting firms that are more concerned about their overall image and public profile, then you will start to find that the sustainability issues impact on the value.”
(Valuer 16)

5.5.2 Legislative pressure/transition risk

The latest RICS guidance states that valuers are required to be aware of any legislative as well as physical risks of climate change (RICS, 2021c). For a lot of valuers, the MEES regulations that were implemented from 2018 became the most important driver of sustainability. From 2018, valuers are required by law to check at least the EPC rating so that their clients are protected legally. As the following valuers said,

“I think regulation is the driver. It is the most obvious driver.” (Valuer 9)

Valuers also reported on increasing interest in EPCs from the clients’ side, especially within the last 5–10 years because of MEES and it is making a difference in the marketplace for all sorts of properties. However, it appears EPCs are currently working as a cut-off point, that is, if the EPC is E, no further analyses are undertaken by valuers. From the clients’ side too, there are no further requirements. Some valuers reported that some clients are not even aware of EPCs or the requirements related to MEES regulations.

“So, we have to go through the necessary factors with the energy performance certificate, since it has brought out the regulations that it has to be an E or above, it has caused some issues with purchasers, predominantly because if somebody is purchasing to rent you out, then it will need an EPC rating of E and above to rent it out. But it generally doesn’t affect the value, but it will be noted.” (Valuer 20)

The above quote suggested that the valuer would note the EPC rating and notify it to the respective client, however there are no value impacts whatsoever even if EPC rating is below E. Though no value impacts of EPC were reported by some valuers, others reported that awareness in the market is being created as a result of MEES. As properties are not lettable without an E EPC, they are forced to consider it if they want to let the property.

“Well, there is now a little bit of interest in EPC because they are needed in order to be able to let but actually it's usually me that's telling the client that rather than the client that was aware of the fact.” (Valuer 9)

“In terms of requirement, it's becoming more widely thought now. And in terms of sustainability, EPC certificates that sort of things we see becoming more on the clients’ radar than say

certainly in the last few years it has definitely increased than compared to last few years ago it was a very low priority.” (Valuer 6)

Only a few valuers reported on the upcoming risks of changes to MEES that were set out earlier. For instance:

“I think certainly with MEES and things on the horizon, that's probably brought it more into context. But I don't think that's going to impact a lot of properties. I don't think it will impact the majority of the properties.” (Valuer 15)

Contrary to what the above valuer said, the majority of the UK commercial properties are old with poor EPCs. The UK government estimates setting a minimum energy efficiency standard of B by 2030 would eventually cover around 85% of the non-domestic rental stock to be energy efficient and help the UK achieve the net-zero emission targets. However, the above valuer along with some others did not appear to be aware of such information. Not being aware of such information could be alarming as it would mean this valuer will not be able to properly advise his/her clients on future risks associated with the legislative changes. The latest RICS (2021c) guidance for valuers' states that they should be aware of public information regarding potential future measures. The interview data suggests that respondents were not currently following this recommendation.

On the contrary, some of the other valuers seemed very aware of the risks. Especially when valuing for lenders for secured lending valuations, they seem to be flagging not only the below E EPCs but also low rating EPCs that could be potentially risky when future legislative changes arrive. As the following valuer explained,

“That's what we are doing when valuing for a bank if somebody has got a low rating, we will say that's an issue that's something that needs to be addressed and it's basically the bank to put pressure on the borrower by whatever retention or whatever it is until such time as they've sorted it out.” (Valuer 1)

A few valuers reported on small-scale properties. At that level, MEES regimes will be taken on board *“begrudgingly”*. As these small property owners do not have any sustainability or ESG requirements, for them it is an additional cost that they have to put up with. To keep the cost at a minimum, they will do the bare minimum, such as E. However, the minimum will become B from 2030. According to the following valuer,

“if you're going to start talking about sustainability to them, the first question they've got to ask is how much is it going to cost me to do so. They will go for an E. Then obviously that's going to have to be a B by 2030, which is going to cause issue, I think, with a lot of independents. But yeah, but that is the thing. This is purely down from a cost base.” (Valuer 10)

The same valuer also talked about how EPC non-compliance might be used in future as a “negotiating tactic” for lease renewals.

“The problem is at the moment; the majority of EPC's were carried out over the last 10 years or so. So, it's not really relevant in respect of what the current regulations are. So, it's relevant when it comes around and they need to be renewed after 10 years. I think where we're going to have issues coming up is with lease renewals over the next few years, where a building's EPC which expires or is going to expire. So, the new EPC if it is going to be below E it will not be lettable, so the tenants are going to argue with the landlords. It is not lettable, so not going to pay rent. Now the landlords going to say no you can't do that. I have got an EPC that says a D. Well but we can get a renewed one, that will say E and then it is unlettable. So, you can get an EPC and it doesn't have to be the landlord. So, I think sustainability in that circumstance could be used as a negotiating tactic or a way to battle the landlord into submission for a lower rent. (Valuer 10)

However, what the above valuer did not realize is that the tenant will not be allowed to occupy a property if the EPC is not up to the standard. Despite several problems, the EPC is the only certification that affects all sorts of properties when let or sold. Some valuers think it has the potential to bring in the necessary change within the market.

“I think then again this brings you back to the EPC that it is probably the only vehicle that we've got that has any chance of feeding through to the market as a whole. And it really needs to be used at every level from the biggest building investigated to the smallest.” (Valuer 9)

The investors and lenders interviewed appeared to be very serious in understanding the MEES regimes and the associated risks related to EPC certifications as it could harm properties' lettable and eventually the income.

“I think the EPC risk is something that is very high. You know, we need to ensure that we don't fall into the trap of holding stock that is F or G.” (Investor 2)

However, none of the owner-occupiers were very concerned, probably because for owner-occupier properties it is not mandatory to have a minimum EPC rating.

Legislative risks associated with sustainability came out as a significant factor that has widely motivated valuers to include sustainability factors. As it was made mandatory to consider EPC from 2018, valuers have automatically included EPC as part of their due diligence process. However, the proposed changes to the MEES regime within the next 10 years were not picked up by a majority of the valuers. The valuers who are aware of these changes appeared to be understanding the risks and problems it will create for their clients, especially small property owners. However, related to MEES and EPCs there are issues such as capex requirements for improvements or analysis of various EPC ratings' impact on property value or that EPCs cannot be used as a negotiating tactics or future MEES regime changes are still not recognized by all valuers completely and there are different approaches that were being reported. Additionally, to show explicit value impacts, valuers require evidence which is currently hard to identify as the following valuer explained,

“I think it's just becoming more and more part of the day to day work we do, but as always it needs to be reflected in the pricing in the market. Which sometimes takes a while in terms of the data to actually look back and see.” (Valuer 6)

The impact of the legislation MEES came out quite clearly and the expected behavioural changes among clients as well as valuers can be found in terms of regularly collecting data on EPC and considering EPC upgrade cost where available. However, the criticism mentioned by the respondents on MEES needs to be looked at for better implementation and more effective results in future.

5.5.3 Regulatory pressure

The regulatory body for valuers is the RICS. As discussed in the literature review section, the RICS provides mandatory guidelines – the Red Book – and some advisory level guidance notes and information papers on sustainability. At the time these interviews were conducted, the Red Book (2017) was the most updated one, but a new Red Book was published later in 2022. In terms of guidance notes and information, the Sustainability and Commercial Property Valuation (2013) was

still valid during the interviews, however an update has been produced in 2022. During the interviews, the main advice from the RICS regarding sustainability was to collect data even if value impacts are not visible and a checklist was provided (RICS, 2013) to list the sort of data that can be collected. The environmental risks and global real estate (RICS, 2018b) also provided some additional guidelines regarding data and how that could be analysed. However, these were all at the advisory level, which is still true as per the new Red Book (RICS, 2022). Nevertheless, some additional data was asked to be considered such as carbon emissions as part of the valuation when relevant, though no new checklist has been provided that can help valuers identify the type of data they are required to collect and how they can start analysing it. The following section reports on how these mandatory and advisory guidelines are affecting the day-to-day due diligence process for valuers.

According to a few valuers who have been valuing commercial properties for many years (more than 40), the RICS guidelines have changed quite significantly over the years, which has reshaped the valuation process. As the following valuers said,

“I think it was clearly quite different concept in terms of property investment that become so much more intricate, complicated and expensive over the last forty years and over time the Red Book developed exponentially.” (Valuer 1)

“We provide them with a lot more information now than we used to back in the day. You have got to put a lot more rational into the valuation, more comparable information, energy performance certificates, environmental issues, flooding issues, which we never really did when I first started.” (Valuer 12)

Respondents also commented on a perceived lack of clear instructions from the RICS on how valuers are supposed to understand or incorporate sustainability in valuation. For example, the following valuer talks about the lack of a clear definition of sustainability,

“We start talking about sustainable development which means completely different to people compared to what we mean by sustainability. And one of the outcomes of the RICS, is driven towards energy and carbon, but we are missing the other things which are really important to the narrative, which is social and economic and the financial benefits. So we tend to looking at things in silos, we are not looking at things in a joined up fashion.”
(Valuer 17)

As valuers are not provided with clear instruction on how to interpret sustainability, the result can be a wide range of interpretations and a very inconsistent set of approaches in reporting and valuing sustainability attributes or a failure to do so altogether. Because of that, valuers are possibly acting conservatively in terms of reflecting sustainability in valuations.

The following valuer expresses the frustration of being able to identify the need to do something, however not being able to do anything because of lack of clarity,

“I think something needs to be done about it and the area in which we work is one of the areas relevant to the crisis in the sense that, much of the global warming problems and emissions are derived from buildings and land. And that's what we deal with, so, quite clearly, there's a need and the potential for us to be doing something. And I think there is the need for us to be doing something. What isn't clear, I think, is what?” (Valuer 9)

Some other valuers said similar things and agreed that valuers currently must collect a lot more data on sustainability such as EPC, flood, etc. The Red Book advice mandatorily asked valuers to collect data on sustainability even if value impacts are currently not visible.

“Well, I think the Red Books from the beginning said the valuers have to collect relevant data, and anything that affects the property's value, such as flood, EPC and all the other sustainability issues are something that one should collect and consider. So, even as the property is on the hill, I will still mentally note or even physically note that there's no flood risk, although one has to check because some properties on high land can have a flood risk, surface water and other things. It has impacted on the due diligence process a little. I would say we were doing it anyway and have to do it. Otherwise, we'd be negligent in not considering the factors.” (Valuer 5)

This advice has had some effect on the due diligence process, especially within the last 5–10 years as described by the following valuer. The checklist provided by the RICS (2013) has had some impact and some valuers reported having incorporated that within their own checklist for inspection. However, having a checklist does not mean all of the data were collected; valuers will collect what they would find during inspection and work on that to produce a valuation.

“I think we do (because of RICS advice) compared to 5/10 years ago, we do a lot more due diligence on sustainable factors...We have checklists to go through to make sure we look at

these factors. As I say, you know, EPC registers flood risk maps. So, we do have quite a detailed checklist to go through. And we record all this data on the property file.” (Valuer 8)

However, data collection on sustainability factors does not necessarily mean it is being analysed or used or reflected within the valuation process. As the following valuer explained and several other valuers agreed,

“It's reflected in the format of the valuation and that's where the extra pages and things come from. So, it shows that we're looking for those issues. So yes, it is affecting the due diligence element because I'm doing the searches on those issues. But at the end of the day, whether it's reflecting the valuation or not, I don't know.” (Valuer 16)

Though valuers are collecting more data on sustainability factors, the question remains as to what extent these data are being used for valuation and to what extent these data are being analysed. According to the following valuer, the reason for sustainability data collection is to assemble it for future use and the time to analyse it has not yet arrived as a library of data is required to do that.

I think the way that the RICS guidance is set out at the moment is it's merely a question of the valuer doing as much as they can to assemble data for future use. It may be that we're not at the point in my view yet, where we can really start to drill down into comparing this data until we've got a bit of a back-up or a library of data available.” (Valuer 21)

To make this library of data available to valuers, the RICS instructed to collect data on sustainability. However, a problem remains related to the storage and sharing of these data. All valuers reported that they store these data on respective property files, however they are not stored in a way that can be shared between valuers such as in a database. If valuers are not able to check the sustainability data of a subject property alongside some comparable data, it is not possible for them to understand the price implications of the sustainability factors.

“We store the data for this specific instruction for this property, but sort of took the comparable databases, we don't have a record of that. I think our London team used to as part of the RICS or maybe IPD get back few years ago, they wanted us to complete all these sorts of sustainable checklists on site and they were collating data. But I don't think we hold the data. We don't properly utilize it that much. (Valuer 8)

Similarly, all the other valuers also reported that they store the information within the property file, however it is not stored in a way that can be shared within the same company let alone with outsiders. Also, there are privacy policies set by clients that will not allow the valuers to share data freely.

Some of the valuers mainly belonging to big firms also reported that before the advice to collect data on sustainability was introduced by the RICS, they were “*ahead of the game*” and were already doing it, thus it did not impact on their due diligence process to that extent.

“When it happened, we were ahead of the game anyway, we were collecting data already and from that point of view, no, we were just doing it already.” (Valuer 7)

“I think we were sort of ahead of the curve slightly with that anyway because we were already recording. It was already in our template to comment on sustainability, certification, and flood risk. So, I think it hasn't. I can't really comment on it because I think it hasn't affected what we were doing because we were already to an extent doing it. I don't think that change has pushed us to do more. But potentially for smaller companies that weren't doing that already, it might have affected them.” (Valuer 18)

One of the valuers, who again works for one of the top valuation firms in the UK, reported on their standard report format and inspection sheet which includes most of the elements suggested in the RICS sustainability checklist (RICS, 2013).

“so we have a standard report format which covers everything that the Red Book requires us to do. We also have a standard inspection sheet which picks up on things like flooding, EPCs, contamination and contamination element is also added to by the questionnaire, the plan contamination questionnaire that everybody fills in at the point of inspection. There's a section on hazardous materials. There's a section on radon, planning to an extent insofar as there are sustainability issues on planning. And then, of course, the back of the appendix A is near the back of the RICS sustainability guidance note.” (Valuer 21)

However, small firm valuers have a different experience, and they can be highly critical of the RICS's role. These valuers, who are working in provincial towns and cities without the support of a big firm behind them, do not feel supported by the RICS. According to the following valuer who

is working for a small firm in the eastern region of the UK with more than 40 years of experience, the RICS does not have enough regard for the “greasy end” of the market, nor do the big firms.

“I’ve had a longish involvement with the RICS, including several years of global and UK valuation boards, and one of the things that I would constantly (talking) about to my colleagues from the big firms in sort of Birmingham and Manchester was that, you’ve got to have the regard to how the market works down at the sort of greasy end of it because that’s really what underpins everything else.” (Valuer 9)

At the “greasy end” of the market, according to him, clients do not have much regard for sustainability as these factors do not seem relevant to these client type. Therefore, sustainability factors do not pose as much importance.

“But frankly, if they’re not relevant to the decision that the client you’re advising is going to take, then at best, with a larger firm that may be a bit more driven by process, somebody will scribble these things down. But do they feed you to the advice to be given? No, not if it’s not relevant to the client.” (Valuer 9)

A few of the other valuers (valuers 10 and 12) in the sample have described the RICS as “ineffective” and “outdated” and not representative of the wider valuation communities that include valuers in regional towns and smaller cities. Some valuers also explained that the lack of clear instructions from the RICS regarding how to incorporate sustainability within the valuation framework is another problem as currently there are many approaches valuers can take. Though the RICS is advising valuers to collect data on sustainability, there are no instructions on how this data can be analysed. The reason for the RICS to ask valuers to collect data on sustainability was that over time these data could be analysed, and value impacts could be identified. However, the following valuer with more than 40 years of experience thinks a rather focused data collection and analysis is important for meaningful feedback into the valuation process.

“If we are to report sustainability issues in a way impacting on value, someone needs to identify what out of many factors should be measured and how those measurements should be collected and analysed so that key data is available in a consistent form and an attempt can be made to identify correlation between that data and prices. If too many things are measured and the data collected and analysed in different ways by different valuers, there can be no meaningful feedback into the valuation process. Without focussed data collection and analysis it becomes

almost impossible to separate out the impact of these issues from established strong factors such as location, size and visual appeal.” (Valuer 9)

Similarly, another valuer/environmental specialist with a long-term working relationship with the RICS reported,

“It seems to be a smaller and smaller car full of people talking amongst themselves to the bigger practices, to the bigger landowners, to the bigger corporates. But the average surveyor, those on the streets are left behind and they are not part of the conversation. But they should be.” (Valuer 17)

As these are not mandatory instructions, different valuers can interpret the instructions differently and take separate approaches which could be problematic,

“As a valuer I have to have regard to what the RICS is guiding us to do and most of it is advisory rather than mandatory. There are so many shades of information right at the moment, its difficult to be prescriptive.” (Valuer 1)

On the other hand, though the RICS is asking valuers to collect data on sustainability, a valuer/environmental specialist with close ties with the RICS reported that while auditing valuers, auditors representing the RICS do not check if the data regarding environmental or sustainability factors have been collected and reported. The lack of enforcement was mentioned to be another reason of the RICS advice not being very effective.

“One of these people who deal with regulation, and he admitted to me that they don’t audit it at all, they even don’t audit the environment or anything in their regular audits of their RICS valuers. So, there’s no driver from the RICS to address these issues or regulations perspective. Yet guidance exists and the valuers should be doing it, the Red Book is telling them that it’s integral to the valuation process. But there’s no driver. So, at the moment, we have empty words, but no real attempt to regulate. I would argue, a little bit like emperors with no clothes as we speak, unless we start enforcing” (Valuer 17)

Valuers who undertake secured lending valuations regularly appeared to think that the lenders have changed their instructions more to include sustainability factors within valuation practice compared to the RICS. As a result of that, some valuers have declared that it is the banks or lenders who are

more of a driver than the RICS. It appears that these valuers think the RICS is being driven by the lenders and not vice versa. However, even though lenders are interested to know more about sustainability factors, it does not go beyond the basics such as if EPC passes, if there is a flood risk, if Groundshore or Siteguard reports (for environmental risk assessments) are at an acceptable level.

“We are required by the banks to do certain things. And the Red Book follows that but we're not benchmarking builders against one another, we're simply looking at what the market is saying when looking at the bank's view of are we safe in lending on this property? And it their artificial cut-off levels, EPC E or better, does the ground shore or site guards acceptable. Once we include those things, certainly, we're not doing any more than that.” (Valuer 13)

On the contrary, another valuer revealed that though the RICS Red Book advises valuers to collect data and report on sustainability, which has changed the valuation reporting process to some extent, it is not clear to what extent clients are considering these additional factors. Some clients were reported to have assumed EPC to pass if not provided.

“So when I first put out a valuation report it would be four or five at the most, whereas now including appendices that usually up to 20 pages or so and there is a section in the valuation report which is based on the standard RICS Red Book format, which covers things like mining, radon, EPC, flooding those sorts of things, but I don't know whether any clients actually looked at them. I provide those because that's in the standard format. But I've never had anyone ask for them. And in fact, some of them are quite shocked when I ask for an EPC and there's an assumption that it passes if the EPC is not provided.” (Valuer 16)

According to valuer 9, some valuation work will definitely be impacted due to the advice from the RICS, such as the secured lending valuation. However, the collection and reporting of sustainability data according to him is to exhibit only rather than analysing it to learn value impacts.

“I think it will have done for certain types of valuation work depending on the type of property and the nature of the client. I think in terms of whether the guidance is being implemented, I'm sure that if somebody is doing regular bank valuation work for the main banks, then they will be implementing the guidance in terms of collecting data in order that they can demonstrate that they've done it. Whether it actually has any impact subsequent to that in terms of effect on value, I doubt it.” (Valuer 9)

Lenders who were interviewed appeared to be quite serious about the risks related to sustainability factors, however, they too are not sure if or how these factors are affecting valuation. They think that the RICS has a big role to play in this regard and hoped that the then to be updated publications such as the Red Book and the guidance note on sustainability and commercial property valuation (RICS, 2013) would address these issues. However, as these are now updated, not much has been added to the previous instructions nor has a new checklist for data collection appeared.

“The RICS have a big part to play in defining how sustainability factors can be run into valuation and how they can affect value. So, that's a very interesting debate, that one. And I know that is something the RICS is taking onboard, because I am meant to be on a sustainability board with the RICS. But there's not been much action for the last 12 months because of COVID.” (Lender 1)

“In truth, I don't think that have been that important to us until now (RICS sustainability requirements), but I can only see that becoming more prominent as we progress. So, I think there's so many aspects of the RICS, their processes are under review now, aren't they? And I think that part is just going to escalate to the top as well, isn't it? And so, we have whole teams internally that are kind of reviewing that work and work with our valuers on sort of changes in policy points on an ongoing basis.” (Lender 2)

On the other hand, other commissioning clients such as a majority of the owner-occupiers appeared to be unaware of any RICS requirements related to sustainability that the valuers need to follow.

“I don't even know what they are to be honest.” (Owner-occupier 2)

Some valuers reported that neither the current guidance notes and information papers on sustainability nor even the Red Book are used by valuers on a regular basis. As the following valuers admitted,

“I do read the Red Book sometimes, not too often but not many valuers do. Even if they are telling you that they are doing it, they are probably lying.” (Valuer 12)

According to the valuers above, these sustainability issues such as EPC, environmental issues or flooding are not relevant for the properties that they value for two reasons. Firstly, their clients are not asking them to consider these, and secondly, the valuers do not think these issues have any

impact on value. Additionally, these valuers are valuing mostly secondary or tertiary properties in local towns and cities which has been identified as the “greasy end” of the property market by another valuer. At this end, sustainability does not feature in clients’ thinking to that extent. Therefore, even if the RICS instructions are present, valuers reported precluding these issues. This is also evidenced from the online survey (see chapter 4).

Another valuer added that during APC one is expected to know everything, so a valuer would study all of the RICS publications. Once someone becomes a valuer, he/she needs to be aware of the changes, however, as the following valuer stated, he/she does not think the sustainability guidance notes and information papers are the most important publications relevant to his/her work.

“No, it's just that, you know, when you do your APC, you read absolutely everything the RICS publishes and then every year you keep up to date with changes. But there's so much regulation with so many changes and if it's not particularly significant to your role at the time, then you kind of bypass it maybe. I'm not saying they're not important. But I'm saying they're not the most important publications by the RICS that I rely on.” (Valuer 19)

Though the RICS has many information papers and guidance notes on sustainability along with the Red Book available for valuers to read and reflect on, it is clear that some valuers never use these. A lack of awareness of sustainability guidance provided by the RICS was also found during the survey stage (chapter 4). As currently the guidance is on an advisory level and not mandatory, many valuers do not feel a requirement to follow it very strictly. Moreover, these advice on sustainability have barely changed over time, for example the wording for the definition of sustainability was kept pretty similar to last versions of Red Books (Sayce et al., 2022) other than adding the ESG element. There is a need for a more prescribed instructions from the RICS in terms of data collection and analysis on sustainability factors so that valuers are not confused, and consistencies in practice can be maintained. However, there are good practices found within the data set as well. As discussed earlier, the sustainability checklist (RICS, 2013) has been adapted by some valuers within the data set mostly belonging to top valuation firms, however they do struggle to analyse these data. If collected data are not analysed or used to the fullest, then one may argue that there is no point in collecting it. Currently, it appears that the RICS guidance is not proving to be very strong to motivate valuers to include sustainability within the valuation framework.

5.5.4 Influence of purpose of valuation

The purpose of valuation is an important consideration for any valuation and based on different purposes, valuers may or may not consider additional sustainability factors. The RICS (2021c) considers the purpose to be fundamental to all valuation activity and when it comes to sustainability and ESG the importance of these factors is amplified (RICS, 2021c). It is also suggested that valuers may need to explicitly articulate the evidence for assumptions around sustainability for some of the purposes such as secured lending and financial reporting (RICS, 2021c, p. 11). Valuers as well as commissioning clients reported that for specific purposes client instructions may vary and there might be instructions to consider certain factors. Some clients can even request not to undertake further investigation,

“Depending on what the purpose of the valuation is, if we are doing a valuation for a company then they may specifically request that we don’t undertake further investigation in certain areas because they are happy to assume the site has no environmental risk or whatever. It’s that instructing us that’s fine.” (Valuer 1)

In the above example, the valuation was undertaken for financial reporting. Other valuers also discussed valuation for financial reporting which is one of the major purposes of valuation undertaken by many valuers. These valuations need to be undertaken on a regular basis, such as yearly or semi-annually or quarterly or sometimes even monthly. As these valuations are undertaken regularly, not a lot of sustainability factors are added here. Investor 1 explained the reason for not requiring much information on sustainability in these valuations,

“I think one of the things why it probably isn't in here, so we look after this value on a monthly basis so that information probably isn't coming through in every month because that would have been done at the start of the instruction. So, yes, the information you just mentioned, like flood risk assessments, contamination that is always being assessed, but that would have probably been more done at the first time that they've been appointed or appointments are normally for, as I said, a kind of three to five year period clearly, or monthly or quarterly valuations don't every time go back into that detail again, because that would have been included in of an initial report. So that is definitely being included in the valuations.” (Investor 1)

Therefore, when a valuation is undertaken for the first time for financial reporting, it would most likely include some sustainability factors such as flood, EPC and contamination. However,

according to the commissioning clients, the subsequent valuation reports will not have all of those details. It was confirmed through other commissioning clients such as the following one,

“No, they don't really look at that and also a lot of them are updated valuations annually and it's just kind of they don't take every valuation as a new case. A lot of it's like updating what was done last year and they'll just be looking at the building itself not so much of the surrounding what's going on around the buildings.” (Owner-occupier 3)

A valuer who regularly undertakes financial reporting valuation for a bank's high street retail assets also confirms it.

“For retail, annually I look at a portfolio for a bank and who have high street retail assets across the UK and they're owner-occupied, we have zero from them, we have absolutely zero from them and they'll very often won't even have an EPC because its owner-occupied, so you know, we will have nothing from them.” (Valuer 3)

As the bank is an owner-occupier, it is not mandatory for them to have an EPC, therefore a valuer will have to undertake the valuation even if the EPC is not available. From the above quote it appears that the banks will not have or provide much information when they are requesting for accounts purpose valuation, however when instructed for secured lending purposes, a lot more information will be provided to the valuers as the same valuer reported,

“Loan security valuations there will always be more information available because the banks will quite often request that information. We don't always get it because there is a cost factor involved but not for us. We can only work with what we've been given but you are more likely to get more information than you would necessarily for doing an accounts valuation. That's because there are legal teams involved and they will be doing a lot of due diligence and searches of their own and we will be provided with information from them which will help us value something and in quite a lot more detail.” (Valuer 3)

Other valuers undertaking loan security valuations reported that it is included within the instructions to consider EPC, flood risk and contamination. and some banks even request an environmental assessment to be collected from a third party as part of the valuation. This was discussed in section 5.3.1.

Some valuers undertaking loan security valuations also reported that for banks it is important to understand the future risks associated with the subject property. For example, if the EPC is going to be expiring during the loan period, the bank providing the loan would want to know.

“...with the loan security work, we have to highlight potential risks to the bank over the term of their loan on which the property is secured. And if there was a series of EPC certificates expiring within that period, you'd have to say, the bank needs to monitor these and make sure that they are renewed and that's acceptable level. So, I think, the process, whether it's the loan security or financial reporting is the same. But the advice around it would differ slightly.” (Valuer 8)

Therefore, in these cases when the EPC is going to expire, the bank will monitor and ensure that the EPCs are at an acceptable level, and they will expect valuers to report and advise on the expired EPCs. An expired EPC could mean that the property will not be lettable, which could hamper the rents/cash flow and eventually impact on loan repayments.

Another valuer reported that as banks are very concerned with risks, sometimes there is a need to produce an appraisal of ESG risks. Although ESG may include more than just sustainability, it is not necessarily different factors valuers have reported to have been asked to look into. They essentially look at the same factors such as flood, contamination and environmental assessment.

“I think our templates are the same whether we're dealing with accounts or loan security. I think there might be more of a focus in loan security because they're so concerned with risk. So, in some cases, we're looking to develop a more comprehensive appraisal of ESG risk, which just to stay in line with what the banks are doing themselves. But fundamentally, we're looking at the same things I would say.” (Valuer 18)

On the other hand, a lender pointed out the difference between secured lending valuations and valuations for loan monitoring purposes. As for loan monitoring, the details are normally much less than secured lending as this is done regularly to ensure the ongoing safety of the loan. Whereas, for secured lending, a detailed valuation is normally requested.

“If it's for the outset of the loan and we instruct to have a detailed Red Book valuation, then you often get more commentary. If it's just for loan monitoring purposes, it may be a much shorter form report. So, you obviously wouldn't get that link between the fundamentals and how the building's actually been valued. (Lender 3)

Similar to secured lending valuations, valuation for acquisition or purchase of a new asset will also require a lot more due diligence than financial reporting valuations as reported by some valuers. Valuer 3, from London, reported that as for acquisitions of an asset, lawyers get involved similar to secured lending valuations, which allows valuers to get access to a lot of data through *data room entries* which are not available for annual accounts purpose valuations.

A valuer from London, mentioned something similar,

“Where you have an investment property. There's a lot more due diligence done because you might have a unit trust. They'll have thousands of people investing. They don't want somebody to buy property with no type of documents or just an area. But sometimes that's what we might just get. So, investment properties are bought with a lot of due diligence done through the marketing process for when they buy or sell. So, when you're buying a property, agents are involved in measurements, surveys done, you'll get contamination report done, you'll get environmental sustainability, an EPC, you have to. And then you'll get lawyers involved doing the legal DD, self-report and title.” (Valuer 4)

Therefore, when properties are valued for acquisition, similar factors regarding sustainability are considered such as, EPC, flood, contamination and environmental survey. An owner-occupier added that when valuations are requested for developments rather than financial reporting valuations, more details are expected from valuers in terms of environmental risks and climate change.

“I guess it depends on what valuation is for. In the context of valuation advice on developments and those sorts of things, we would absolutely draw their attention to the fact that we have declared a climate emergency and we expect them to be working with us on it. (Owner-occupier 2)

On the other hand, valuers were asked if they ever needed to consult experts such as an environmental specialist or a building surveyor etc. and the majority of the valuers who responded positively mentioned that this expert advice was required for loan security or acquisition or for new development. The following are some examples,

Secure lending: *“obviously you're going to pay more attention to things like that (get expert advice) if you are doing a secured lending valuation. It is more likely to get them on secured lending than other types of valuations”*. (Valuer 12)

Acquisition: *“So certainly on purchase, where a fund buys or a client buys a new building, they almost always have some kind of environmental survey done. And depending on what they use, it might be a desktop or in industrial sites it might be a more intrusive one in terms of ground investigations and they might be on retail properties.”* (Valuer 6)

Development: *“A development site that we worked through we had to get in specialists to understand the level of contamination from radon and asbestos in the soil which cost a fortune. So, yes, on larger development, but not on valuation work.”* (Valuer 16)

Expert advice is required when valuers face something on which they are not necessarily experts and cannot comment without consulting an expert. It could be for an EPC upgrade cost, cost for remediation for flood or contamination, to check for a property's air conditioning as well as M & E (mechanical and electrical), testing the concrete for older properties.

“Because we're not experts in that field we are just valuers, so if there was a red flag somewhere or something that we felt needed a specialist, we would just put an advisory within the report to see a specialist for that particular aspect, we would just advise the client that there was something that may needed further attention.” (Valuer 20)

Hence, there are variations to reporting of sustainability attributes depending on various purposes of valuations. Secured lending purposes and acquisitions were reported to be covering some sustainability factors as requested by clients, however the same cannot be said for accounts purpose valuations.

On the other hand, the RICS has cautioned valuers on strategic purpose valuations where valuers may need to provide advice beyond the requirements of a typical valuation instructions on the basis of market or investment value (RICS, 2021c, p. 12).

5.5.4.1 To understand future risks

Understanding various risks associated with climate change is becoming increasingly important for various clients, especially the lenders or banks. For a secured lending valuation, banks are

interested to understand the current and future risks associated with flood, contamination, environmental and any legislative risks associated with the MEES or EPCs. Therefore, the risks associated with sustainability can be classified into two categories: transition risk and physical risk. Transition risks are associated with changes to legislation to become more carbon efficient that can impact on a property's cash flow or saleability. An example of such a risk is the introduction of MEES. On the other hand, physical risks can be climate change risk that will potentially harm a property physically such as flood, cyclones etc.

As per the valuers, among all three clients, lenders are mostly interested to know about sustainability risk of property. It is vital for the lenders to be aware of any sustainability risks related to the subject property during a loan period. However, the following valuer, along with some others, stated that the lenders want valuers to highlight the risks associated with sustainability, rather than *"put a different number on"* (Valuer 3).

For secured lending valuation lenders would want to be aware of any future risks as well to keep protecting their loan *"because that's the purpose of the valuation and therefore, push comes to shove and they get that building back really, what are the risk factors that they have to think about. And the sustainability might come into that where perhaps it wouldn't necessarily before."* (Valuer 3) Therefore, according to some valuers, lenders are asking valuers to just identify the risks and not put a value on it.

In terms of the MEES and EPC, there are two risks associated with property that the valuers and commissioning have stated:

1. Does EPC pass for the subject property?
2. Is there any requirement for capex now or moving forward to upgrade the property?

The legislative changes related to MEES possess a risk of properties being stranded and not being able to let if not EPC E or above. Therefore, if there is a risk that the EPC may not pass, clients would want to know. Similarly, when lenders are lending, they will want to know whether the subject property has the minimum EPC. For an investor too, this can create an additional risk as below E properties are not legally lettable. However, the following investor mentioned that compared to other investment risk, risk from sustainability is not considered as high.

“I mean, there is a risk definitely within the portfolio. But I would say it's not as high a risk as some other portfolio risk that we've managed in terms of the impact on investment.” (Investor 2)

Without a minimum EPC of E, properties are not lettable which will hamper with the security of the income of a property. A sustainable income is paramount for lenders to ensure repayments of the loan. Therefore, related to the security of the income, lease terms, covenant strength, type of tenants etc. are also checked very closely.

“But the primary consideration, I suppose is the security of the income. So, what's the expiry terms on the lease or what's the covenant strength of the tenant?” (Lender 3)

Additionally, lenders are also interested to know if the property is lettable in its current state or if it requires additional capex to modernise or improve. When a property does not pass an EPC rating, capex might be required to improve the rating.

The other thing we're really focused on is what's the underlying asset and is there a future for that asset or asset class or asset in that location, is it modern? Is it going to require repurposing? Is it going to require capex at some point to improve to put it back to a more lettable condition?” (Lender 3)

Therefore, when asking for a secured lending valuation, banks or lenders would want to know about both physical and transitional risks associated with sustainability of a property. Transition risk such as the MEES can impact on the cash flow and rental value of a property quite significantly. Hence, it can impact on the cash flow which eventually will have impacts on loan repayments. In terms of physical risk, banks will ask valuers to collect data on flood, contamination as well as other environmental risks.

A few valuers also mentioned lack of flexibility in a property might be seen as a risk by some clients. It is important for these clients to understand the flexibility of the property and the risk of the property not being resilient enough if and when the business changes in future. This is particularly important when the whole business is being valued and the property is part of the business assets.

“They are looking to make sure that if we’re valuing a business, does the premises meet the purpose of the business now and going forward, knowing that the nature of the business may change, so will the property still remain relevant?” (Valuer 13)

The risk of flood in specific areas of the UK can be quite significant, therefore, understanding the impact of flood risk on property value is also important for commissioning clients. However, rather than having a value implication, the following valuer explained how valuers will “flag” the property for lenders.

However, as discussed in section 5.3.2.6, the flood data currently being used by valuers for valuation is a backward-looking data and lenders are looking for forward-looking data that would incorporate the risk of climate change.

Another valuer talked about a specific bank who is interested in the “*useful economic life of buildings*”

“There needs to be a statement in their report as part of their terms of business, to make comments with regards to useful economic life of the buildings that we've valued for them. And that's something which we tend to include in our standard report formats across the firm. I think the answer is that they are becoming more savvy.” (Valuer 21)

For a lender, an important factor associated with risk is the term of loan; when the term of loan is for a short period, the sustainability risks might not be considered as very high, however for a longer-term loan such as 10 years, sustainability and climate change risks can become quite significant as the following lender explained,

“I think a lot of it depends on the term of the loan, to be completely honest, because clearly, if you've got a shorter-term loan 2 years say, I can't see that the landscape will change significantly within two years. But if you've got a longer-term loan, say, seven to 10 years, I think the landscape will have changed significantly in that period of time. So, the risk of an asset becoming obsolete due to sustainability factors becomes far greater over a 7-to-10-year loan as opposed to 2 to 3. I think the risk eventually depends on the tenure of the loan. I think the other key factor is what's the underlying alternative use. And then if the asset was to become redundant due to sustainability aspects, would there be an underlying alternative use. Because that can obviously mitigate a lot of the risk as well.” (Lender 3)

The above-mentioned details, though stated by a lender, are applicable for investors as well. When investing in an asset for a long time, investors also have to consider how climate change may impact on a property or its surrounding areas and what it would mean for the property's rental income and value. Alternative use or flexibility therefore creates a resilience around the property's value.

5.5.5 Incidental factors

A few valuers as well as one lender talked about how a catastrophic incident can change the market perception really quickly and make the market move towards something. For example, a valuer used the example of the crash in the retail sector during the pandemic (COVID-19, 2020). Though it appeared to be common knowledge that the retail sector will eventually fall, the pandemic accelerated the decline during 2020–2021. This valuer, along with some others, predicted climate change will bring in such a catastrophic event that it will force the market to consider sustainability. However, for the valuers, the main challenge will be to inform their clients of such disasters before they actually happen.

“But if we have a couple of those ridiculously cold winters or catastrophically hot summers, or if there are a significant number of flooding events in an area, then all of a sudden, the area will zero in value, if those properties become either unoccupiable or very expensive to run. And I think the challenge for the valuation profession would be to reflect that or inform their clients before that happens, because a crystal ball is quite difficult.” (Valuer 16)

Another valuer and a lender used the Grenfell example. Before the Grenfell incident, it was neither a practice nor advice from the RICS to check for cladding. The incident, however, has now forced the market to check for this type of risk in high-rise buildings. Both the lender and valuer predicted that sustainability will eventually become part of day-to-day work for valuers when such an incident occurs.

“I will use another example here, so, for instance, cladding risk is a very good example, very topical because now I'm going to say to my valuers, I want you to report on this, this, this and this. You make it absolutely succinct, exactly what I want you to report on. They would only do that if that is in line to what the RICS is. Because they can't go against what their industry says. So, it's a case of a partnership approach between the lender and the RICS and the valuers to come to a common agreement as to how we take things forward. And sustainability is exactly the same, as those debates are starting to happen.” (Lender 1)

“Something like the planning and building like Grenfell, that is a very obvious point we have to have regard to. Any high-rise building, we have to find out what the cladding is, caveat, just needs to be properly inspected, it's a potential risk. But it's not always the case that particular new concept comes into market which is applicable to one particular type of property actually this can be adopted when you're dealing with a totally different type of properties, so it's something which affects offices obviously the next time we value an office it's relevant.” (Valuer 1)

Hence, according to valuers as well as commissioning clients, sustainability factors are being considered by the market at the moment, however, not to an extent through which valuers can explicitly consider it while valuing. The prediction from the above two participants is that climate change events possess the risk of forcing the market to consider sustainability by creating events that cannot be avoided such as natural disasters like flood or wildfire. Some of these events are already happening, for example, the UK has faced hotter summers in the last couple of years. As soon as these events make an impact on property value as the Grenfell incident has, the market will be forced to consider climate change and its impacts. Eventually, lenders will ask their valuers to consider these risks to a greater extent in valuations (to show explicit value impacts of these events on property value) and the RICS will also express it more strongly in their advice. However, the challenge here is to predict these events before they happen and make a drastic impact. For valuers, the challenge moving forward is that they are not only required to study market evidence but also to understand how climate change can have an impact on property value in future. In the end, valuers are advisors on property value and any risk to property value needs to be reported by them, including climate change.

5.6 Experience

The theme experience can be categorised based on valuers' experience on three issues which are identified as the sub-themes. The sub-themes are:

5.6.1. understanding of sustainability based on experience

5.6.2. big vs. small firm valuer experience and

5.6.3. locale experience.

The following section explains these three branches in detail.

5.6.1 Understanding of sustainability based on experience

A total of 21 valuers were interviewed for this research and the following table provides an outline of their experience of being a valuer.

Less than 5 years	5–10 years	11–20 years	20–39 years	40+ years
3	3	6	7	2

Table 5.3: Experience of valuers within the sample

Source: Made by the Author

A majority of the valuers within the sample had more than 20 years of experience and there were two valuers with more than 40 years of experience. Another valuer within this group (20–39 years) is currently working as an environmental specialist in his own firm. Six valuers had 11–20 years of experience and three valuers had 5–10 years of experience. Only three valuers were interviewed with less than 5 years of experience. This is very similar to the responses found in Australia in a longitudinal survey of valuers on their perception of sustainability where all 4 surveys had more than 50% of the respondents with more than 5 years of experience (54% in 2007, 67% in 2011, 77% in 2015 and 67% in 2021). This could mean that generally senior valuers are more concerned or interested about the topic sustainability in valuation and therefore, they are more inclined to be interviewed or surveyed for such studies (Warren-Myers, 2022b).

As these valuers were asked the same questions around changes to client instructions, data collection on sustainability and the analysis and reporting of sustainability factors within valuation, it appeared that those valuers in the sample with less than five years of experience only undertook valuation for either secured lending or financial reporting purposes, whereas more experienced valuers in this sample undertook valuations for a wide variety of purposes such as acquisition, disposal, planning, viability, adaptation or extension purposes, compulsory purposes, witness requirements. Therefore, with experience, valuers would undertake various sorts of valuation that will increase their understanding of the market and effectively use their heuristics as the literature suggested. Warren-Myers (2011) reported that in Australia senior valuers (with more than 5-year experience) had better knowledge on rating tools as well as the market dynamics.

“I think more experience valuer, who is doing it for a long time they know how to value buildings, they know how to value within a day. They’ll probably be able to put prices on it but

they're kind of then looking at different angles... they're trying to work out on how to value which might come a lot quicker to someone with more experience” (Valuer 3)

As the above valuer mentioned senior valuers are more likely to look at the “different angles”, something similar was found by Warren-Myers (2011) in Australia where young valuers (with less than 5-year experience) assessed sustainability mostly using design rating, whereas senior valuers assessed sustainability using not only rating tools but also performance ratings, operating expenses, analysis of attributes and inspection. As valuers were asked about data collection on sustainability, valuers with more than 10 years of experience responded with a higher number of factors that they would search data on while inspecting than younger valuers. For example, among the six valuers with 10 or less years of experience, only one mentioned collecting data on health and well-being factors such as, air conditioning, type of heating and windows. The other five mentioned collecting data on only EPC, contamination, flood and environmental risk factors (for secured lending only) and mentioned no other data collection on health and well-being, waste or water management and quality of external environment. On the contrary, valuers with more than 10 years of experience mentioned collecting data on these issues to a greater extent. A table is provided in the appendix 5.1 that provides a comparative assessment of the data collection by all valuers from various experience.

A valuer from London with more than 20 years of experience pointed out that some of the younger valuers may not stay a valuer for life, rather it is “*just a stepping stone to something else.*” (Valuer 3). As they may not be staying within this profession for life, their commitment and motivation to the profession is different compared to someone with 20 years of experience. Additionally, with more experience, valuers learn to use their heuristics effectively and eventually value faster. A few valuers suggested experienced valuers may not take as long to value the same property as a less experienced valuer because they have better understanding of the market factors.

“I don't know if it's just they're thinking of sustainability alongside a whole other range of things that they know that they're trying to work out on how to value which might come a lot quicker to someone with more experience.” (Valuer 3)

“I think the more experienced valuers have just that, more experience and so they can look at 20 years of market experience and factor.” (Valuer 5)

Experienced valuers are also more likely to have valued a variety of properties and that experience helps them understand the market better. One valuer mentioned, “*Prime trophy office buildings*” which are more likely to be valued by the most experienced valuers,

“The prime trophy office buildings, which are, you know, 50, 60, 80 hundred million pounds, typically valued by the more senior members. And those factors are more relevant for those types of properties.” (Valuer 8)

These buildings with higher lot size are more likely to be valued by an experienced valuer. Additionally, valuers within the sample who reported having experience of valuing BREEAM properties have more experience. This was found in the survey too, where senior valuers were found to be collecting data on BREEAM regularly. Warren-Myers (2011) reported Australian valuers with more than 5 years of experience were marginally more likely to value sustainable buildings because of the complexities these properties present, which possibly helps them develop better heuristics on sustainability. As senior valuers are more likely to value higher, larger or BREEAM-certified properties, it is likely that the valuers of such properties are more experienced and have improved their heuristics on sustainability factors. Some good practices among valuers in terms of evidence was found in this study (such as ballpark estimations of EPC cost rather than showing no value impact) which are mostly undertaken by senior valuers.

5.6.2 Big vs. small firm valuer experience

The big firm valuers that were interviewed mentioned some advantages that they receive from their organization, the first being internal training. A majority of the big firm valuers mentioned that they organise internal trainings, workshops and evaluations for their employees and some of these are related to sustainability and how that might be impacting on value.

“We have an internal evaluation group, they come up in February one of the items which is going to be discussed is building construction and the provision of the effect on different building types on sustainability criteria and I would expect most of the large firms with valuers will do similar things.” (Valuer 1)

The significance of this support base can be crucial to identify value impacts of sustainability factors, however, small firm or independently working valuers rely on the RICS or third-party CPDs for training.

The second advantage mentioned by a majority of the big firm valuers is having in-house experts within the firm whom they can consult when they need expert advice; much of this expert advice is sustainability-related advice. As valuers are not experts on many of the sustainability factors such as EPC, flood, contamination, having these experts in-house means they can consult them for any valuation.

“We are in general practice surveyors or valuers; we aren't experts in environmental remediation or EPCs. We're certainly working for a company that have in-house experts. So, we do have the expertise with enhances so from my point of view is really very helpful. We have people who we can pick up the phone or email and they can help us over this. I think depending on who you work for or where you work, it can be a real challenge, I think.” (Valuer 6)

“If something when you are looking at a property, if something falls outside your area and you need to understand more about it, and then we have a duty to our clients to highlight that and say, listen, this needs to be looked into more detail. It falls outside my area of expertise. We would recommend you take further advice from a specialist. Fortunately, we have those specialists in-house. You know, we have engineers, you know, environmental people. So, I don't think it's appropriate to sort of say that we don't understand it, or we can't advise on it. We have a duty to sort of highlight where something warrants further investigation.” (Valuer 8)

Working for a big firm allows valuers to talk to these in-house experts when needed. Over time and with experience and training, valuers from these big firms will perhaps have the opportunity to build their expertise in these areas. Whereas for a valuer working independently or for a small valuation firm without any in-house support or internal training that opportunity is rare. It is also reported to be more time consuming and difficult to handle valuations that require expert advice when working independently or for a small firm. While handling cases like these normally clients are advised to seek expert advice from elsewhere. For expert advice additional fees are required which need to be paid by the clients. Therefore, if clients do not agree to it, valuers cannot collect this additional piece of information.

“Occasionally I have to tell the client that I can't proceed without this or the other, either a contamination survey or a bit more detail on the work that would be involved to satisfy an EPC or air conditioning is the biggest factor we come across where expertise from QSS or mechanical or electrical engineers is vital. So, rather slows the valuation process, I would just put a ballpark figure on it. If you want any expertise, you have to go out and get it and it takes

some time to get it. But the clients are aware, probably they have asked you to look at it and with the particular problem in mind.” (Valuer 5)

Big firm valuers also mentioned having a checklist for inspection and using proformas for valuations. Having this checklist during inspection helps them not to miss anything. One valuer also added that their checklist includes all items from the RICS sustainability checklist (RICS, 2013). However, none of the small firm valuers or independent valuers mentioned anything like this.

“so we have a standard report format which covers everything that the Red Book requires us to do. We also have a standard inspection sheet which picks up on things like flooding, EPCs, contamination and contamination element is also added to by the questionnaire, the plan contamination questionnaire that everybody fills in at the point of inspection. There's a section on hazardous materials. There's a section on radon, planning to an extent insofar as there are sustainability issues on planning. And then, of course, the back of the appendix A is near the back of the RICS sustainability guidance note.” (Valuer 21)

An environmental specialist who is also a registered valuer with the RICS was also interviewed. As part of his job as an environmental specialist he reviews valuation reports produced by both small and large valuation practices for real properties from all over the UK on behalf of his clients (mainly pension funds). According to him, large practices address sustainability issues better than the small practices, however, the regional offices of the big practices do not address the same issues very well.

“I would say that sustainability issues may be addressed by the big practices in the city of London dealing with big ticket city office buildings. That same practice, which has a regional office in Belfast, Glasgow, wherever, doesn't. They will tick some boxes, but they don't address it very well.” (Valuer 17)

On the other hand, small firm valuers have mentioned some of the disadvantages that they face, one being access to databases and costs associated to it, such as the following valuer,

“To get any information that's relevant to a property you've got to do formal searches and there's no readily available database, something to refer to. Yes, some of these subscription

services like CoStar offer these sorts of services. But again, not everybody can afford a CoStar subscription.” (Valuer 10)

Another provincial valuer with more than 40 years of experience explains that because of the variety of properties he values on a daily basis, he does not have any particular specialty, and any knowledge that he gathers from one property might not be useful for the next property. Therefore, the analysis of data is even more difficult.

“From my point of view, the type of property that a provincial valuer will deal with varies so much. We don't have the specialism that the urban values have, and I remember having this discussion with this lease valuer when we sat on a working group together and he was basically saying that his valuers would do nothing but a certain type of office space within a sort of half mile radius. He couldn't get his head around the fact that I might be valuing an industrial unit in the morning and a caravan park in the afternoon and a shop on the following day. He couldn't get his head round at all. And consequently, in terms of analysing what we do I mean some valuers within the province will be a little more specialized than others. They would do nothing but shops. But even then, those shops will vary dramatically. There'll be some old ones, some new ones, some in sort of modern development. It is very difficult to identify what it is that you might analyse and relate to value. But we know that if it is an EPC that isn't an E then it would make the property difficult to let and difficult to sale so that will feed through to value. But how it will feed through is altogether another matter. In some instances, it could put off the buyer altogether. In other instances, there will be an adjustment made according to the amount of money that's going to be spent on it. In other instances, it just won't be seen as relevant, particularly if somebody's going to occupy the building themselves.” (Valuer 9)

Therefore, working for a firm big or small can have an impact of the experience valuers can have. The sort of clients' valuers will have the opportunity to deal with also varies quite substantially. Studies have found valuers who work for international corporations with CRS or ESG strategies have better knowledge and skills of sustainability issues and rating systems (Kucharska-Stasiak & Olbińska, 2018), meaning the experience help them to develop better heuristics, which may be happening in the UK too.

5.6.3 Local experience

Valuers from all around the UK were interviewed and various factors were identified that can be referred to as their experience at their local setting. A major part of valuers' experience refers to

being in London and how it is different from the rest of the UK. Valuers from London as well as from other cities and provincial towns have reported on occupiers, institutional investors and corporate giants in London who have shaped the property market in London. The following valuer from London expressed his experience with such clients,

“I think is products of the occupiers. People here (London) you get a lot of big head offices, headquarters. You have a much bigger work for us a lot of the time, so, these factors for the owner-occupier becomes more important therefore, owners of buildings, investors have more of a care. Whereas up north it's often what is the cheapest place I can be.” (Valuer 2)

Prime offices were discussed by several valuers. According to one valuer in London, without a BREEAM ‘Excellent’ or ‘Outstanding’ rating, selling new office buildings in London might be difficult as such requirements have evidently now become the norm for such buildings.

“Well, again, I think that's because there are so many more offices being built here (in London), because there's so much more new stock. They need to have the BREEAM certification in order to sell the building. The occupiers want to see that certification, so it is very important to my agent. They got to make sure that they have a good BREEAM rating, and they use it to let the building and sell the building.” (Valuer 7)

Other than prime office properties, distribution units were also discussed by several valuers which are prime in nature and occupied by corporate occupiers. As occupiers these corporates demand to have efficiency in terms of water, energy as well as proper external environments for the staff to relax during breaks. The understanding of sustainability and the benefit of it appears to be greater among these corporates. Better environmental factors can keep staff from taking more sick leave and efficiency can ensure less usage and consumption of energy, water, both of which can eventually contribute towards lowering running and operating costs.

*“I would say offices and also some of the prime distribution units. It's quite a key factor on prime distribution as well, which are again bought by the institutions. And the tenants are typically key corporate occupiers like, you know, ***. They would want efficient buildings. I've been to one which had water recycling, very good facilities and environments for their staff in terms of breakout areas and external areas...see the two main sort of which again are bigger lot sizes, typically institutional investors rather than the smaller local markets.” (Valuer 8)*

Therefore, these demands from corporate occupiers as well as institutional investors have contributed to the biggest concentration of BREEAM buildings in London. Whereas, in other cities only some city centre offices have a few BREEAM properties. As London achieves the highest rents for these BREEAM rated properties i.e., prime properties, the additional expenses to get the certification can also be justified, whereas in other regions it is not possible to achieve the same rent.

“But also, the rents are so much higher here that you can afford to spend the extra money doing that to achieve that rent, whereas the rents are lower in other regions, so naturally its harder to justify the expense to meet the parameters that say rating.” (Valuer 7)

On the contrary, in other parts of the UK, the BREEAM properties are not that common and as the following valuer suggested there is a lack of new built stock. However, when there is new stock it will possibly have a BREEAM rating as it can create an advantage for marketing and selling.

“At the moment in the regions, there’s a shortage of new stock being built. So there haven’t been so many buildings that have been built and therefore, that’s why it’s not so common. But don’t get me wrong, the agents will still be trying. If there’s a new building to sell, to sell it through the BREEAM rating.” (Valuer 7)

Another valuer pointed out that many of London’s buildings are also quite inefficient, which makes them susceptible to tightening standards such as MEES. The number of high-rise properties in London vs. other cities are also relatively much higher which makes London more vulnerable to climate change factors.

“London has a huge increase in number of poor buildings, large buildings and airconditioned buildings and ones which are more likely to be adversely affected by climate change and tightening standards for energy efficiency. Bath doesn’t have so many high-rise buildings, about five floors or six at the most. So, we do have to come across it, but not in the same way as percentages a city would.” (Valuer 5)

Most of the valuers interviewed undertake valuation for properties which are older in nature and unsophisticated as a majority of the UK’s existing stock is old. Valuers reported that there is a lack of understanding of the risks of sustainability and related legislative changes within the investors and occupiers of such properties.

“The understanding of sustainability with a building I think that there is a distinct lack of it at the moment. It will have to improve because there's an awful lot of secondary and tertiary assets out there, which won't be lettable in a few years' time.” (Valuer 10)

Because of the nature of these properties and the rents they can achieve, sustainability factors do not much factor into the investors or occupiers of these properties. As the income from such properties is low, small businesses occupy them and need these to run cheaply. However, as the MEES regime changes in future these properties need to be upgraded and that may require a substantial capex. To arrange such funding might be challenging for small businesses, hence there is a chance of these properties being stranded.

“if you look at the other end of the scale of tertiary property, a shop with a flat above, you know, the neighbourhood parade on a housing estate, you know, no one in that process at all is vaguely bothered about sustainability.” (Valuer 11)

“I think the ones that I'm looking at are less so because they are small regional properties tend to be small businesses looking for somewhere cheap to run or cheap to rent. Whether they consider the long-term costs is often debatable.” (Valuer 16)

Another valuer explains why small property owners may not always be interested to improve the property in terms of energy efficiency, because the savings in terms of operating costs are not significant enough. Investors would rather spend the money in upgrading property elsewhere that would ensure higher lettable. However, the higher energy prices that have shocked the UK recently may have changed the scenario to some extent.

“It might have some slight impact on it, but very, very minor, because, again, if I take, for example, a pharmacy operating on a high street, that pharmacy may be turning over, one and a half to two million pounds a year. But the difference in operating costs between the B and D might be 500 pounds in extra fuel over a year. In terms of how much effort does the owner want to put into trussing that? Well none. Because, he's going to be much more interested in perhaps to get a new shop front to attract more customers in, and so rather than spending 10000 pounds to improve the energy efficiency of the property to save 500 pounds a year, if you can spend 10000 pounds to get more customers and improve his income by 30000 pounds a year, I know

what he is going to do. That's because small businesses are not incentivized to look at sustainability issues.” (Valuer 13)

Additionally, improving properties to increase energy efficiency and reduce energy cost is not going to impact the landlord, but rather it is a benefit enjoyed by the tenant. Therefore, if landlords can charge higher rents based on better EPC, they may feel that is incentive enough to undertake the upgrade. However, with the proposed MEES changes the risk is not being able to let at all. It appears that investors at this end of the market are not that aware of such risks. As advisors to these investors the question remains as to what extent valuers are informing clients about these upcoming changes and risks.

In contrast, some of the factors matters as another valuer explained that the poor state of properties can have an impact on rent and the capital value.

“It does matter and will have a material effect, I'm looking at the local market towns and individual properties, small industrial units and things like that. And if there's no insulation and it's going to cost the tenant to run, and that generally goes with being in a poor state of repair as well, that will have an effect on the rent that can be achieved, which will then impact on the capital value. And they'll be you know, marginal amounts, not huge amounts, but people have got two units and one new unit up to standards and looking really good. And the other one's a tacky unit that does not have a great EPC and probably a bit tacky as well, in the round it will have an effect on value.” (Valuer 16)

This brings us to an earlier point that investors in such smaller properties will be motivated to improve the properties and spend capex if rents are reflective of it.

Another valuer who mostly values secondary and tertiary properties in Birmingham pointed out that when there is a new trend within the property market it generally starts from London and then it takes some time to take effect throughout the UK. The BREEAM certification is more relevant now in London but has started having some effects within the city centre offices in Birmingham.

“And typically, when we see sort of property trends and cycles, they often start in London and then they gradually work out to the regions. As I say, you know, in Birmingham, I think the sustainability factor is probably most relevant to prime office buildings.” (Valuer 8)

Though some valuers reported on some impacts on value, a majority of the valuers' experience is that sustainability does not feature in the thinking of sellers and buyers of smaller properties that much. As a result of that, there is a lack of evidence.

“I don't think there's strong enough evidence in the market that buyers and sellers are overly influenced by sustainability factors at the moment... where I sit in the northeast of England, the market, I don't think is really affected at all by sustainability factors.” (Valuer 11)

However, this could not be confirmed from the occupiers or investors of smaller properties as the investors and owner-occupiers interviewed do not belong to this category and hence this is a limitation of this research.

5.7 Barriers to include sustainability in valuation framework

Valuers around the UK as well as commissioning clients have talked about some barriers to include sustainability and its factors within the valuation framework. Six barriers were identified, which are discussed below.

5.7.1 Reliance on third parties

Interview findings suggest for a lot of the sustainability factors valuers are required to consult a specialist as they themselves are not experts in these matters, for example, flood or contamination remediation work, cost of EPC upgrade and environmental assessments. Hence, valuers are obliged to rely upon the expert opinions of third-party experts and consultants. In some cases, clients ask valuers to consult specialist, too. For example, for secured lending purposes, banks or lenders often ask valuers to collect an environmental assessment report as a majority of the valuers and lenders have confirmed. One of the lenders mentioned,

“I would say that we aren't relying on the valuers for this, and we feel that we own our own due diligence process and if there are things that we feel are important to us, then we will make sure that, that is included in our instruction letter and guidance notes.” (Lender 4)

Additionally, there is a perception among some of the valuers that it is not the valuers' responsibility to come up with a solution regarding how sustainability and its attributes might be included in the valuation framework. One of the reasons behind this is explained as *“the expertise is not ours”*, as the following valuer said,

“If there was a method that someone came up with of how to do it, if there was an accepted method across the market, you ought to knock five cent off as a standard or something like that, we could do it. But the market does not actually show any difference, your yields are usually reflective of the quality of the building.” (Valuer 2)

The above quote mentioned several issues: 1. there is currently no uniform method to address sustainability factors not even EPC non-compliance; 2. There is a lack of evidence; 3. The all-risks yield considers the building quality and attributes implicitly. Hence, though sustainability factors are being considered as part of the big picture, it is still not considered explicitly as a separate factor.

Another view is to rely on or take note from court cases. As the following valuer explains, valuers are not exactly sure how to handle rent reviews when the EPC is not at a minimum standard according to MEES. The confusion remains as to whether the responsibility to upgrade the property lies with the tenant or the landlord. Some of the valuers mentioned court cases will help them understand how to tackle such cases when they start to appear.

“Technically all the rent reviews are now void if the building's below an E..., because it has to be lettable but it's not lettable, there goes whose responsibility is it to fix, so one of these things are, once we know (what) the court says (about) rent reviews you ignore an EPC or you assume it's okay, it would make our life a bit easier on the rent review surveyors and the minute it's not come up, but depend on if a court ruled one way or another.” (Valuer 2)

Another valuer added,

“One swallow doesn't make a summer.... One case does not set a precedent. If you got three to follow the same arguments and that creates a picture where people have to start to follow it.” (Valuer 10)

Therefore, some valuers would like to have some precedent to understand how they can proceed. Similarly, the Disability Discrimination Act was also mentioned, which forced the market to upgrade properties. The same can happen with sustainability. As legislation becomes stronger, it is expected properties will have to be upgraded to continue to be let.

“It was the same arguments with the Disability Discrimination Act when it came in the late nineties, you'd have to spend lots of money updating properties and the reality of it was, if it was reasonable to do so. A lot of the cases, if you think of the old Georgian and Victorian properties we've got, the idea was to set out to be shops that are accessible, it was the services provided from the property around the property itself, and that's how people got around it. It is to improve the service quality. Will the same thing happen with sustainability? I don't know. Whichever way you go one way or the other there is a counter argument on why it should be done that way.” (Valuer 10)

Other views remain that the RICS is not doing enough to support valuers, or that the commissioning clients are not asking valuers to consider sustainability factors.

“I will try to answer as distinctly as I can, but, unless you get the entire valuation fraternity and the investor fraternity to adopt these things it's pointless for a single valuer to try and box the trend so if I was to say well that the value of the property is well but, I think is not hitting the appropriate criteria so I am going to reduce it by 15%, I won't be reflecting the market opinion. So, it's got to be something that comes in from across-the-board. So ultimately valuers follow the market they don't lead the market, so what we're doing is reflecting as the best we can for particular property in a particular market will hypothetically sale for if it was placed on the market and that opens up a huge amount of variances along with sustainability criteria which is one.” (Valuer 1)

The reliance on third party data (such as rating tool data) for valuation is not uncommon as it was noted by Warren-Myers (2016), however, to consider these data in valuations, valuers need to understand how these data work such as the rating tools to assess sustainability metrics (Warren-Myers, 2016). This was also noted by one of the lenders who thought valuers understanding of various EPCs or what goes behind an EPC rating is currently not great which is prohibiting them to confidently show value impact for various EPCs.

5.7.2 Lack of data

Some of the valuers have reported that there is a lack of data for sustainable attributes in the marketplace. Though EPC data is available online, other data need to be searched individually. Databases such as CoStar can provide access to some data, however not all valuers have subscriptions to such databases. It can become a time-consuming process to search and find all the necessary information as the following valuer explained,

“So for a general example, this case I'm working at the moment, the relevant search I've been put it into place and investigated by the legal team which is part of the acquisition process, which is fine, but in an ideal world, I would have access to that sort of data beforehand and you can look at it and say that there are these things like PROMAT, things like CoStar and other subscription based services that provide some of these information now, but that's fine, or you can spend an awful long time digging it up if you like. If you are lucky, you can access the information online like EPC and things like that, but it's not that easy to access. It's not sort of in a deliverable form.” (Valuer 10)

It was also pointed out by respondents that data on some factors such as health and well-being, waste or water management are not always available to valuers. One of the valuers from a large practice in London mentioned data not being available on these factors and that the health- and well-being-related data are only available from “*more enlightened clients....., but it is a very small minority*”. Similarly, a different valuer working for another large practice in London mentioned, “*it's not necessarily high in the agendas at the moment*”. Similarly, data on climate change physical risks are also not available to valuers. For example, if temperature increases by a certain degree, how is the flood risk of a property should be affected? Valuers do not have access to modelling services or anything similar that will allow them to understand future risks related to climate change. The RICS has thus asked lenders to provide such data where it may be applicable for secured lending (RICS, 2023).

For any valuation, getting comparable information is paramount. To assess the performance of an asset, in this case a property, valuers need to collect consistent data that helps them compare the subject property with comparable properties (IVSC, 2021). However, though some sustainability-related data can be found on the subject property, searching for comparable data on sustainable attributes can be quite challenging. This issue is recognised by the RICS (2021c) as follows:

The ability to distinguish the relative sustainable performance of comparables may be possible in some cases (such as energy efficiency and carbon emissions) but may be far less apparent in others. (RICS, 2021c, p. 8)

The following valuer, along with some of the others, reported,

“You can only use what's been disclosed as information. So, I think that it's not completely consistent when we look at comparables. You don't always have the perfect information, as it were.” (Valuer 6)

When a property is being valued, a lot of data is collected, but as the following valuer explained, these data along with comparable property data are not stored in any comparable database that can be accessed by the next valuer.

“you just don't get the information with it....I'm saying about the lack of that type of information that we just don't get. We wouldn't even get like an EPC or something comparable, you'd have to look out for yourself....in terms of any of those type of information I just couldn't see that you would get that from comparables at all, it's not just there....But that doesn't mean that it wasn't collected when it was done it is part of the set of sale obviously...But it doesn't necessarily mean that it will be then reported for any comparable database at all. I've never seen it reported ever.” (Valuer 3)

Without consistently recorded sustainability data on both the subject property and comparable properties valuers will not be able to assess the performance and characteristics of the subject property (IVSC, 2021). The apparent lack of comparable evidence has been reported in earlier studies too, for example in Australia (Le and Warren-Myers, 2018), in the UK (Michl et al., 2016), in Poland (Kucharska-Stasiak & Olbińska, 2018) and in the UAE (Lambourne, 2020). The lack of quantifiable market data on sustainability that can help valuers determine the impacts of sustainability on market value has made the valuation professionals uncertain (Warre-Myers, 2012). As explained above, the RICS advises valuers to collect data on sustainability even if value impacts are not visible at the moment, so that these data can be analysed over time to figure out the value impacts. However, collecting data may not be enough if these data are not stored or shared in a way that can be useful for valuers to analyse. Most of the valuers reported that they do not store data on sustainability factors in any database that can be shared between valuers within their firms let alone with outsiders. Also, there are challenges regarding the safe keeping of data because

of privacy policies. Therefore, though data is collected on sustainability factors, it is not saved in any central storage system from where data can be accessed for future referencing.

“You're not gonna get any of the sustainability data even if it was collected it's just not put down on paper but anywhere.” (Valuer 3)

Some of the commissioning clients, on the other hand, reported that the valuation reports do not always have a lot of detail on sustainability. The lack of reporting on sustainability factors could mean that the data are not collected by valuers on a regular basis and thus not reported. Data on subject property as well as comparable property might be hard to find.

“No just looking at it they don't refer to sustainability or EPC or anything of that nature.” (Investor 2)

When there are some details of some of the sustainability attributes, such as EPC, it is reported by commissioning clients that the section is small and not many details are provided. The lack of analysis creates problems for the clients, as the following lender explained, in understanding the differences between an A EPC property vs. a D EPC property is important for them, however, it is not something they can get from the valuation reports. In future, they expect valuers to address these differences in valuation reports.

“I think increasingly so of understanding what does it mean in practice? And if something doesn't have a very good rating at the moment, now that they should there should be an output from that relation. So, I'm looking at two things, one is A and one is D and even if they know in layman's terms looks the same and had similar tenants, surely there should be a difference in value between an A and D.... it's a pretty short section and its sort of a tick box exercise...So, I think that's probably the key things that we'll have to see change in the coming months and years. I think it will be quite quick.” (Lender 2)

The lack of reporting on sustainability factors in valuations has been noted in Australian study (Warren-Myers, 2013) where majority of the valuers did not report on sustainability. Those who report on sustainability in valuations are directed to do so by clients and the reporting is kept to a minimum level with generalized statements which is very similar to the findings of this study on EPC reporting (Warren-Myers, 2013). Later surveys in Australia showed reporting on sustainability for valuations improved by 2021 (higher levels of ratings were reported) and the level

of details were more than what earlier studies in Australia found (Warren-Myers, 2013 & 2016), however it was not a common practice among all valuers (Warren-Myers, 2022b). However, the publication of the RICS (2023) advice for considering ESG and sustainability for secured lending valuations may change these reporting issues to some extent. This advice (though not mandatory) asked valuers to report EPCs a lot more methodically by including the ratings, expiry, estimated emissions and material risks along with categorising them into Red (EPC F or G), Amber (EPC C, D or E) or Green (A or B) (RICS, 2023).

Collecting data on sustainability factors is important, however, currently not a lot of data are collected on a regular basis and the data that are collected are not stored or used properly to analyse for value impacts. There is also the possibility that valuers do not proactively seek for data on sustainability features which would be contradictory to the RICS's advice, as the advice is to *make efforts from the evidence available to record and reflect upon ESG and sustainability data relating to comparables* (RICS, 2021c, p. 17) The RICS can tighten the advice to valuers on what data to collect on sustainability and ESG rather than leaving this up to the valuers' discretion.

5.7.3 Time, fee, cost and clients' pressure

Quite a few valuers reported on some challenges related to time, fee, cost and clients' pressure. Valuers need to produce the valuation reports within a short period of time as per their clients' requests. However, within this short time it is not always feasible for them to collect all the data on sustainability factors and as it is not mandatory from the RICS, they continue to value properties even if some data are missing.

“I think we'd be asking for information anyway we have a list. When we do our terms of engagement, we have a whole list of information in our appendix that we request. You won't get it all and you know at the end the day we are under time pressures as well and people, clients want value and therefore, we can only work with what we've been given and so we will go ahead. We can't turn round to them and say actually no, I'm not going to go ahead because you haven't told me how much your electricity bill is for the last three years, because they're just going to go somewhere else.” (Valuer 3)

Collecting additional data on sustainability takes time and valuers do not necessarily get more time or fees for the extra work, as the following valuers explained,

“There's just more and more data to collect these days. And so, it's just in terms of inspections or desktop research there is just more and more data to collect, it means more work. (Valuer 6)

“Yes, it has. I mean, it just makes it more lengthy and time consuming. Yeah, there's more to collect and store. Obviously, you've got to store the data then, which is an issue. So yes, it has some impact.” (Valuer 19)

Additionally, when there are some issues with the property and valuers need an expert opinion to fully address it, they have to ask their client to provide the fees for the expert. However, if the clients do not want to pay for this service valuers are unable to collect the additional expert opinion. So, in such cases valuers would probably highlight the issue and leave it for the clients to deal with it.

“The thing is we'd obviously like but that costs money. So, unless the client is enlightened, no. We tend to highlight that there is an issue. If it's available, but that's it.” (Valuer 7)

Collecting additional data also requires additional time, however, valuers are not paid extra for taking on extra workload. A few valuers added the workload for valuers is increasing without any extra compensation for the work.

“But the problem is that both from banks and from the RICS, the requirement that we get is for more and more information to be collected and considered and to put into a report whilst lenders want valuers to do it for a smaller and smaller fee.” (Valuer 14)

“Well, I think we've got to think about the time and you have got to think about the money, haven't you in the real world?” (Valuer 12)

5.7.4 Education and training of valuers

A number of valuers pointed out that many of the sustainability attributes requires an understanding of a specialist that the valuers do not have and thus, as they do not have the expertise, they cannot comment on that. However, as valuers they are obliged to highlight any issues, they think can impact on the property values.

“It is the valuer's judgment and discretion to know or highlight something that if it does fall outside out of our area of expertise. We are general practice surveyors, not sustainability or environmental specialists. But, you know, if something when you are looking at a property, if

something falls outside your area and you need to understand more about it, and then we have a duty to our clients to highlight that and say, listen, this needs to be looked into more detail.”
(Valuer 8)

Without the specialised knowledge, according to some valuers, it is not possible for them to determine the value impacts. Finding the evidence to support any value impacts is paramount, which is hard to identify.

“without having details, without being a specialist in that industry I don't know the value impact. You know telling me that I need to put up heat pumps in all the new properties, for example, rather than oil boilers or gas boilers, without having specific knowledge, I don't know how that's going to impact on the scheme necessarily” (Valuer 19)

Similarly in Australia several valuers stated they are not sustainability experts and therefore they incorporate a disclaimer stating that (Le and Warren-Myers, 2018). One valuer explained that it is not the job of an individual valuer, rather there needs to be a consensus regarding what data need to be collected and how any value impacts should be addressed. The RICS's advice to collect data on sustainability should help, however, data need to be collected and stored consistently to analyse over time. As more and more data are collected and analysed, gradually value impacts will come to light.

“I don't think it's necessarily the individual valuers that don't know how to do it. I'm not sure that there's a consensus on how you would do it. But I can understand from the RICS point of view, we can't ever work out the value of the data unless we collect it and have the data there to analyse. So, the more we collect over time, it will benefit us in the long run because at some point the market's going to twig, you know, whether it be MEES or something from government coming to make stuff a lot stricter or whether it's just corporate conscience, something at some point surely has got to start putting value in sustainability.” (Valuer 15)

The difficulty to analyse the data that are currently being collected by a majority of the valuers such as flood and EPC was also mentioned by several valuers. Though valuers are collecting these data, currently some of them are collected just to check if certain things pass and the analysis does not go any further. The challenge for valuers is to identify how certain sustainability-related data are going to impact on value and how to translate that in the form of rent or price per square foot. Any value impacts then must be evidenced using comparables. For example, as the following valuer

explained, it is hard to identify whether a sustainability factor is impacting on rent and, if so, to what extent.

“I think most of the information is relatively easy to collect. I think the problem is then what to do with it? I don't know how you get from having collected the data to how you would adjust price per square foot, I think that's very difficult unless you got lucky, and you've got two very similar comparables with very different energy efficiency levels and you have the rent set at a very similar time. I mean, it's extremely difficult to evidence.” (Valuer 15)

The above quote is very similar to the response provided by Australian valuers where they mentioned, it is never precise and very difficult to be able to determine how much of the price per square metre is being affected by sustainability (Le and Warren-Myers, 2018). The difficulty to analyse the data related to sustainability factors was mentioned by several valuers in this study. Some valuers also discussed the difficulties to identify or refer to the sustainability premiums within valuation framework,

...at the moment it is very difficult to show the sustainability premium for those buildings or actually identify how that can be addressed. (Valuer 1)

“I would say and certainly people are talking about a lot more about this thing but is just very hard to quantify and I would imagine that if any data that is collected on that would still be pretty new in terms of analysing on a year-on-year basis or however you'd analyse it.” (Valuer 3)

“Yes, they do come into play, but not in any way that you can very easily be able to analyse.” (Valuer 9)

Again, the above quotes are very similar to what valuers in Australia have mentioned during the interviews for the study by Le and Warren-Myers (2018) where several valuers commented on difficulties to quantify sustainability. It was also confirmed by a valuer/environmental specialist who reviews around 10 valuation reports every week on behalf of his clients (mainly pension funds) to determine the environmental risks. According to him, the analysis is similar to a tick box exercise rather than an actual analysis of the data that could be reflected within the valuation. Moreover, valuers do not question the data or discuss it, but rather generally accept it as it is.

“They have received alongside as part of the report an environmental report from one of the data warehouses. And they haven’t related one to the other. They have not understood that there is an impact. They have ticked the box, that I have done this, but they haven’t actually addressed it. And that is a common issue. In addition to which, even if they have acknowledged that it’s there, they don’t challenge it and don’t discuss it and don’t therefore reflect it in their outcomes.”
(Valuer 17)

Another valuer, with 40+ years of experience, explained that it can be extremely challenging to determine the perceived value impacts for several valuation services when a property has undergone some problems such as recent flood or contamination. Recent cases of flood can have devastating impacts on property value. Though valuers are experts on valuation, they are not experts on sustainability factors such as flood or contamination. Hence, when a property has flooded recently, to understand the impact on value, valuers need expert advice. However, even with the expert advice it gets tricky as the possibility of remediation, cost of remedy. needs to be considered which puts valuation services into some form of specialised service.

“I think the gathering of the evidence does not take a particularly long time. Neither does the assessment of the effect on the value. Where it gets difficult is if there is a perceived likely large effect on value? For instance, if it’s a dated office building that doesn’t offer proper EPC and will require hundreds of thousands of pounds to bring it up to scratch and the value may not be much more than that, then it takes a great deal of consideration of matters involved to surveyors and others before coming to an opinion. So serious cases of serious flood risk where it is known to have happened recently and will therefore happen again, that takes time and consideration and likely some expert advice on how to alleviate the flood risk. Is it possible? What’s it going to cost? The environmental concerns such as contaminations are also will slow one down considerably, because we have to know is it remedial, can you remedy it or not? If you can, then what’s the cost? Is it good? Can you contain it? All those questions coming to play. So, it almost put the valuation into a different class, it becomes specialist, and we involve others, and it will give more run of the mill.” (Valuer 5)

Hence, if valuers are not aware of such issues and how to address these in valuation, it could be extremely difficult to address them while valuing a property. To handle such cases, valuers need to have the knowledge about the factors as well as how to analyse the data that they are collecting. When they are collecting additional advice from a third-party expert, they also require the knowledge to translate that into value. The knowledge development of valuers on sustainability

rating tools were tracked by Warren-Myers (2013; 2016; 2022b) in Australia. The first survey in 2007 found surprising lack of knowledge of valuers on NABERS and Green Star where 80% of the respondent valuers were either unaware or incorrect about these rating tools (Warren-Myers, 2013). Later surveys found limited change in knowledge levels among valuers (Warren-Myers, 2016). The latest survey in 2021 was reported and compared to the earlier survey results in Warren-Myers (2022b) where knowledge on NABERS were found to have developed to some extent. The reason behind these increasing awareness and knowledge development on NABERS was the introduction of mandatory disclosure policies. Similarly in the UAE, it was reported valuers' lack of technical knowledge and awareness were the most likely barriers to include sustainability factors in valuation (Lambourne, 2020). Respondents from the UAE study also revealed that they do not feel confident in their own ability to value sustainable buildings (Lambourne, 2020). Though this study did not track on valuers' knowledge on EPC or BREEAM, the lack of knowledge and expertise of sustainability attributes among valuers were mentioned by several participants as one of the major barriers.

A valuer from London pointed out that the current education system of valuers is probably not covering enough about sustainability. According to him, the RICS and the universities that teach valuers need to make sure that future valuers are receiving good academic teaching to tackle sustainability and its attributes.

“I was interviewed by someone else from another university on Friday. And they covered it in one lecture so one thing that the RICS and the valuation professional needs to do is really academic teaching. Universities should have a module on sustainability that's compulsory.”
(Valuer 7)

It must be noted that the recent education of valuers does include some teaching related to sustainability. However, more experienced valuers who were not trained or taught under the current education system were found to be more knowledgeable on sustainability factors as explained above. Therefore, the post-university training and experience that valuers gather during service can also be important sources for their knowledge.

5.7.5 Traditional methodology

A majority of the valuers interviewed undertake either market valuation or market rent valuation using investment method on a regular basis. Not many of the valuers in the sample undertake investment valuation or worth. However, the small number of valuers who do investment valuation

identified that it is tricky to address sustainability factors within the traditional methodology of valuation. As valuers use comparable property information, there is less scope to individually reflect extra benefits or costs of sustainable factors within this method. Valuers choose like-to-like properties as comparable rather than based on sustainability certification only such as EPC or BREEAM. This has been reported by Le and Warren-Myers (2018) too in their study where several valuers blamed the limitations of the comparable sales to not being able to choose comparable sales based on sustainability rating of properties. Additionally, when works are carried out on a property to make it more sustainable, the value it creates over the life of an asset is difficult to reflect fully using traditional methods. However, when a property is valued using discounted cash flow (DCF) method for strategic review or for some other purposes, it is possible to reflect the additional cost as well as the benefits. There are several opportunities to reflect such as: 1. Cost of retrofitting can be addressed by calculating the end value after retrofitting is complete; or 2. Through the internal rate of return; 3. Or through increase in future rental incomes. The following valuer explained in more detail,

“And that's when you're doing a calculation or work for a discounted cash flow and you're doing a strategic review, but very few valuers are asked to do that. The main method we use in the UK is the investment method which is just rent times yield but it can get more complicated and complex than that. By particularly when you're retrofitting a building, you're looking at what's the end value unless the costs of getting there and that's where you can reflect the extra costs of doing some sustainability fit out or building management systems that help the value of the property. But the issue is that if you're not getting a higher grades development value the cost of getting there it can not necessarily show you much value. but when we're using discounted cash flow methodology, what we're trying to see is what the internal rate of return that comes out of doing a particular strategic valuation on a property. And if you forecast the exit yield and the rents that will occur over that period of the whole period, which might be five years or ten years, what you're trying to say is that by doing the works now over time you will perform better, than if you didn't. So that's why you're trying to compare the IRR to see if they can beat your hurdle rate. And that's where this kind of cash flow methods are much better for analysing sustainability feature than the traditional investment method. But it's also it's not just about saying this is what the value will be. You know, it's this is the return you can get and that's probably more important. That's where the calculation of worth comes in.” (Valuer 7)

A few valuers mentioned the comparable method of valuing a property as a challenge to reflect sustainability factors. As valuers compare between like-to-like properties, how individual

sustainability factors such as EPC of BREEAM rating is affecting property value is difficult for them to determine. Therefore, the consideration is implicit not explicit.

“So, it's implicitly taken into consideration, rather than an explicit calculation of the formal market value calculation and then deducting X percent or X cost to a sustainability or energy efficiency or factors or things like that. It's not really done like that. It's all done implicitly within the analysis of the comparables in the valuation process itself.” (Valuer 11)

The rents or prices that they use as comparable evidence implicitly consider property attributes and quality.

“We do valuation on a traditional method. Our valuations are based on comparable evidence. So, we would see what impact that has on transactions and use our evidence. ... if I was valuing a secondary older industrial property, the comparable evidence I would be using would also be secondary older buildings. And therefore, we would say these are similar comparable assets. I mean, they will reflect a discount to new or modern stock, naturally.” (Valuer 8)

Additionally, the all-risks yield that is used to calculate market value was also mentioned by several respondents. It does not allow valuers to explicitly consider any factors related to sustainability, therefore the impact on value remains implicit while calculating market value. According to the following lender, though there are value impacts, it is commonly implicit within the industry.

“And the all-risks yield kind of focuses on these types of issues without it being explicit, I think it's definitely have an impact on value... I've not seen a kind of black and white valuation where you'd say something was always obsolete because of an EPC and that it was valued after, so what was done and what was the difference. So the direct impact of sustainability, it is not so clear to me that premium and how its values and I would have thought that it is quite common within the industry.” (Investor 2)

5.8 Chapter summary

This chapter reported on the findings from the semi-structured interviews using six themes. It also addressed some of the earlier findings from the online survey such as the impacts of valuers' experience, purpose of valuation and firm size on sustainability consideration.

The implications of the conceptual models have been discussed where findings were found to be relevant. There is a strong impact of legislation or transition risk on the behaviours of all parties (investors, owner-occupiers, lenders and valuers) interviewed as was expected in model 1. However, criticism of MEES must be looked at. The impact of voluntary certification, BREEAM is also visible for prime properties. It was also found experienced valuers are more knowledgeable on sustainability issues as was predicted in model 2. Some good practices were reported by experienced valuers too. Additionally, valuers working for big firms may be at advantage to develop better heuristics on sustainability as they get to work with clients with ESG strategies.

The next chapter, discussion, triangulates the findings from both methods to answer the research questions.

Chapter 6 Discussion

6.1 Introduction

The key objective of this research is to understand how commercial property valuers in the UK consider sustainability while valuing a property. Though there are studies which have found pricing and rental premiums in the UK for sustainable credentials (Fuerst, van de Wetering & Wyatt, 2012; Chegut et al., 2013; Fuerst & van de Wetering, 2015), what has been researched to a lesser extent is whether valuers can observe these premiums and how they analyse and report on effects on value in practice. Demand for sustainable attributes in buildings from investors and occupiers has increased (Jackson & Orr, 2018a; 2018b; JLL, 2020; Ormond, 2021) and legislation related to reducing carbon emissions from the UK economy (such as MEES) could be seen as another driver to move investors and occupiers towards a more sustainable future. The UK is also vulnerable to physical risks of climate change (Clayton et al., 2021; HM Government, 2022; International climate change risk analysts XDI, 2021; Met Office, 2015; van de Wetering, 2019), which could create additional risks for property value. This research is an attempt to address how these changes and transformations in the market, which are commonly captured under the umbrella term ‘sustainable development’, are reported by commercial property valuers in the UK.

This research uses a mixed method approach to address the research questions. Two methods have been administered: an online survey to understand the general practices followed by commercial property valuers in the UK, and semi-structured interviews with valuers and their clients for deeper understanding of the research questions. The findings from the online survey and semi-structured interviews have been presented and analysed in chapters 4 and 5. This chapter will now analyse and interpret the results from both methods to triangulate the results as well as comparing this to existing literature to answer the research questions. Triangulation within this research is not a matter of establishing whether analysis of the data from both methods would lead to the same results (Gliner, 1994); rather the data from both methods are combined in this chapter to develop the understanding of how valuers in the UK address the changing requirements of sustainability in buildings. This chapter then revisits the models presented in chapter 3 to bring together a synthesis of the evidence to establish a deeper understanding.

6.2 Research question 1: the extent to which commercial property valuers see sustainability as influencing the value drivers' spectrum

This research question addresses if and how commercial property valuers in the UK are reflecting sustainability attributes while calculating market or investment value. Chapter 2 discussed six sustainability attributes: certification, energy and carbon, waste and water management, health and wellbeing, quality of external environment and adaptability and resilience to climate change. This section will discuss to what extent these attributes are being reflected by valuers while calculating market or investment value.

6.2.1 Sustainability attributes' impact on market value

Lorenz and Lutzkendorf (2008) suggested sustainability can be reflected using traditional market value methods such as sales comparison, investment method and cost method. In the investment method, valuers can reflect a wide range of sustainability issues indirectly through the capitalisation rate (Lorenz & Lutzkendorf, 2008). For example, if a building is more attractive in the marketplace because of a better certification, that can be reflected while calculating the capitalisation rate. However, the problem is that valuers do not know exactly how to adjust the capitalisation rate to reflect the superiority of a building with sustainable features. Moreover, beyond certification the meaning of sustainability tends to be open to interpretation and its meaning can be very contextual. Therefore, the process is highly subjective and uncertain (Lorenz & Lutzkendorf, 2008). Additionally other studies demonstrated how sustainability might enhance the property value (Chao & Parker, 2000; Robinson, 2005; Bowman & Will, 2008; McAllister, 2009) using the capitalisation approach. Using this approach, adjustments are made to the calculation of net operating income depending on the absence or presence of sustainable features in a property.

Though quite a lot of research have been undertaken to relate sustainability and value of properties, there is still a possibility that there is a lack of knowledge among valuers regarding how sustainability attributes are impacting on value (Lambourne, 2020). Additionally, research has been undertaken for decades to address sustainability within property valuation, however, the extent to which UK valuers are incorporating this in their practices is not well researched. Chapter 3 explained model 1 where it was shown the benefits of sustainability (health, cost, reputational and occupancy benefits) in a property can increase the WTP from occupiers and investors which increases demand for these properties and that this can impact on market pricing. Market price formation on rents or selling prices are then expected to be used as evidence by valuers to incorporate sustainability in valuations. Recent studies have identified that investors and owner-

occupiers' demand has increased for sustainability attributes in properties (Jackson & Orr, 2018a, 2018b; JLL, 2020; Ormond, 2021). However, it has not been researched to what extent valuers are able to gather evidence on demand increases and whether they are reflecting this in valuations in the UK commercial property market. Among risk factors, two risks were considered in the model, physical risk of climate change and legislative risk or transition risk. Plenty of scientific facts are being published to show the impacts of climate change (IPCC, 2021; 2022; 2023). The IPCC (2022) report suggested urgent climate action should be taken as 40% of the world's population is highly vulnerable to the impacts of climate change (IPCC, 2022). The UK being highly vulnerable to natural disasters, especially flood risk, as the International Climate Change Risk Analysts XDI (2021) suggested, climate change could put 1.9 million properties at risk by 2100 in the UK, which will increase the cost of insurance or make buildings uninsurable altogether as well as creating the possibilities to cause physical harm to properties, this will expose them to physical risk of climate change. Moreover, the IPCC (2023) and HM Government (2022) reported that on a global level temperature have already increased by 1.1-1.2 degree Celsius. If temperature increase is not kept within 1.5 degree Celsius, this could have devastating impacts on all aspects of life. Therefore, the question is how valuers have absorbed this wide range of information on climate change-related physical risks from the media, professional bodies as well as from the government and how they consider them in valuations to warn their clients.

The second set of risks is legislative risk or transition risk, that is associated with the implementation of policies or legislations that will help reduce carbon emissions and reach the UK government's zero carbon target by the year 2050. Within the UK, government is implementing the MEES to improve the energy efficiency in buildings and this can be considered as a transition risk. This risk is expected to have wider impacts on the behaviours of other stakeholders in the property market. These changes can be explained through the theory of Smart Regulation (Gunningham and Sinclair, 2017). An enforcement pyramid of smart regulation (Figure 3.1) is shown in chapter 3 where the lower bases are voluntary compliance, self-regulation and co-regulation. It is argued that the UK government has already used these three bases through the introduction of BREEAM, a voluntary certificate. After BREEAM was introduced the industry co-regulated with the government to improve sustainability factors in buildings by setting BREEAM as the industry standard for new build and prime properties. It is one of the important benefits of using smart regulation where government uses businesses as well as third parties to co-regulate and change behaviours of market participants to achieve a common goal. As BREEAM was introduced, it was initially gaining popularity for prime office properties. With time, BREEAM has become the de facto standard for sustainability (Fuerst and van de Wetering, 2015) within the prime new

built property market in the UK. However, regulation and governance are expected to become stricter over time to drive the UK economy towards net zero carbon and reduce emissions not only from prime properties but from all properties including old and tertiary. Voluntary certificates can increase demand and create higher environmental supervision (Gabe, 2016) and can be seen as an encouragement (Bloggs, 2013); however, they will not create the required accountability (Arnold, 2022). Thus, through using voluntary certification, self-regulation and co-regulation alone it is not possible to achieve net zero carbon for the whole property market in the UK. Hence, it is required that the government implement the upper levels of the pyramid that will ensure mandatory disclosure, strengthening of regulation and penalties when necessary. As part of that the UK government introduced the MEES in 2015 and it came into force from April 2018. Since then, a minimum energy certificate of EPC E is required for any properties in the privately rented market. Failure to do so may impose a penalty of up to £150,000 for commercial properties. With time, MEES is expected to become stricter, for example, from 2023 it will be applicable to existing leases whereas it was only applicable on new leases before. The UK government has also proposed that a minimum EPC of B (other than for the properties with exemptions) will be required from 2030 which will have wider social, cultural and behavioural changes throughout the industry. It is expected a minimum EPC of B by 2030 will impact around 85% rented commercial properties in England and Wales (Simmons & Simmons, 2021). In the UK only 5% of buildings have a B rating (BPIE, 2017), which means around 95% buildings may be affected by this stricter version of the MEES. It is expected that investors, occupiers as well as lenders will react to these future changes. They will focus more on building improvement and increasing the EPC rating so that they do not fall under the trap of an EPC below B which will mean not being able to let properties or incur penalty. The tightening of standards is also expected to change the behaviour of professional bodies such as the RICS and IVSC. As MEES was introduced the RICS published guidance on MEES impacts on property management and valuation (RICS, 2018a). Similarly, as MEES become stronger, it is expected the RICS will strengthen their advice for valuers to include any impacts in their valuations. Therefore, the transition risk is expected to not only be considered as a risk factor but also a force that will bring about the much-needed change in the property market in terms of behavioural shifts for a more sustainable and resilient property market. This chapter will now investigate to what extent these factors identified in Model 1 are impacting on valuation practices by triangulating results from two methods along with literature.

The first empirical work for this research was an online survey where valuers indicated that, other than certification, the rest of the sustainability attributes (Energy and Carbon, Waste and Water Management, Health and Wellbeing, Quality of External Environment and Adaptability and

Resilience to Climate Change) are not impacting considerably on market value. Some valuers also reported on premiums and discounts for certification during the interviews, which are discussed further in section 6.3.1. Clearly, the impact of certification is greater than before as the EPC certification is now mandatory for sale or letting and there is a requirement to have a minimum of E EPC for properties being let. Valuers indicated the impact of certification is reflected through adjustment of rental evidence and likelihood of void or capitalisation rate where the majority of the valuers mentioned capitalisation rate (34.07%). This finding is consistent with the last UK study by Michl et al. (2016) where voluntary certifications ranked higher than some of the other attributes, but in terms of impacting on market value, they were not very significant. Within the UK, the impacts of these attributes were found to be more likely to affect all-risks yields than rents as the all-risks yield approach is widely used in the UK where all variables affecting future cash flows are reflected subjectively in the capitalisation rate (Michl et al., 2016). The findings of this study however found a greater influence of certification on market value which can be attributable to the MEES. Also, it suggests the value effects of certification are now being considered through a wider range of factors than before.

The online survey also indicated that energy and carbon, adaptability and resilience to climate change, quality of external environment and health and well-being factors have some impact on market value. The traditional building attributes such as flexibility, adaptability and accessibility of the location that were found to be most important in the Michl et al. (2016) study was partly reflected in two sustainability attributes of the online survey of this study, quality of external environment and adaptability and resilience to climate change. These factors, though mentioned by valuers to make some impact on market value, were not as important as the impacts of certification. Energy and health and well-being factors were found to have low impact on market value in the Michl et al. (2016) study, whereas in this study valuers indicated some impacts. Though a majority of the valuers indicated no value impacts for energy and carbon (39.44%) as well as health and well-being (47.83%), some valuers indicated value impacts through adjustment of rental evidence, likelihood of void and capitalisation rate (see Table 4.22 for detail). For energy and carbon, 25.27% of valuers indicated value impacts through rental evidence, meaning valuers would consider the value impacts through considering comparable properties rental evidence. For health and well-being factors, on the other hand, 20.29% indicated value impacts through likelihood of void which could mean having these characteristics can reduce void. Hence, it is likely that compared to the previous research some valuers are considering these factors more while valuing properties. However, the consideration is most likely an implicit consideration through rental evidence of comparable properties and likelihood of void.

Similarly, during the interviews, many of the valuers explained that the quality of the property will be reflected through either the rent or all-risks yield. Valuers for any valuation look for comparable property information (RICS, 2019b) that allows them to adjust the rental value or yield applied to a subject property. Therefore, whether the subject property is below or above market standard will be reflected through its rent and yield if comparable evidence can be found to support this.

Deeper questioning during the interviews revealed explicit value impacts through considering capex when EPC does not pass, and the property needs an upgrade. The cost of upgrade along with management and time cost is normally deducted from the final value of the property. However, there are some inconsistencies as some valuers reported that they would notify the clients of any non-compliant EPC, but there will be no reported value impacts. Similar inconsistencies were reported by Sayce and Hossain (2020) where some lenders would ask for valuations on the assumption that the property is compliant and lettable even if it had an EPC below E. Risk related to the EPC will be reported in the valuation report but not quantified (Sayce & Hossain, 2020). Additionally, capex requirements can be required for other upgrades or remediation works which can be related to sustainability such as flood or contamination remediation works. This is consistent with the fact that climate change risk is increasing around the globe and the UK is highly vulnerable to flood (HM Government, 2022; International climate change risk analysts XDI, 2021). Hence, valuers have started to factor in the physical risk associated with it. However, only a few valuers mentioned it, and a majority of them have never valued any property with such issues. Though climate change risk is being considered to some extent, it is still not impacting on value very significantly.

Moreover, the cost of improving a property's air conditioning can be another factor where a significant capex might be required, specifically for older office properties. Few valuers mentioned the dilemma regarding air conditioning as adding this facility can decrease the EPC rating for higher energy usage, thus creating a conundrum for investors regarding whether to install it or not. Installing an air conditioner can improve the rental value of the property as well as fix the issue of temperature resilience of buildings, whereas it increases the carbon footprint and energy usage which could decrease the EPC rating. Having a non-compliant EPC could mean not being able to let at all.

One of the major natural disasters that can impact greatly on UK commercial properties is flooding (HM Government, 2022; International climate change risk analysts XDI, 2021). During interviews,

a few valuers mentioned flood risk and the availability of insurance can be a determinant of riskiness. If insurance is available, then there are no further value impacts. Availability of insurance for flood was found to be important for the valuation of commercial properties (Kenney et al., 2006) as it provides reliable compensation, supports recovery and reconstruction for flood (Lamond et al., 2019). Similar findings were also found during the interviews with the valuers of this study who had experience in valuing properties where flood has recently occurred. A valuer from Bath reported recent flooding can have devastating impacts on value. The impacts are considered through looking at comparable properties' rents in that area. However, this valuer also suggested that where it hasn't flooded recently, and/or flood deviation work has been undertaken, value impacts are minimal, and clients can be fairly relaxed about flood risk. These findings are consistent with the finding of Bhattacharya-Mis and Lamond (2015) where it was reported that memories of repeated incidents of flooding can make people view flood risk differently and also with Lamond et al., (2019) where it was reported recency of flood occurrence can change the perception of flood risk. Additionally, it is expected that these risks of climate change will cause increasing insurance excess and additional expenses to secure insurance where buildings are in flood zones (Alzahrani, Boussabaine & Almarri, 2017; The International climate change risk analysts XDI, 2021). However, none of the valuers interviewed in this study talked about these future possibilities of risk. Only one valuer reported that the data currently being used to assess flood risk is backward-looking and some clients, namely lenders, are looking for forward-looking data that will consider the risk of climate change. A lender interviewed confirmed this finding but did not mention what might be the alternative. The data issues for physical risks of climate change have also been reported by Warren-Myers and Craddock (2021) where it was found that there is a lack of information sources for climate change risks that can guide valuers to identify and understand them better. The RICS (2023) in their latest publication for secured lending suggested valuers should check online government sites on flood risk levels specially where specialist flood risk reports are not available. Where specialist flood reports may be necessary to determine risk, lenders are expected to provide it to valuers (RICS, 2023). Another valuer working for a big valuation firm reported that they have a "climate risk modelling service" under their sustainability consulting team which can be used to determine flood risk if temperature rises by a certain percentage. However, currently this is being used for insurance cost calculation rather than valuation services. They are considering offering this service to some of their clients who are interested to have more details on climate change. Where climate change risk is too high and insurance companies deny insuring, academic studies suggest the use of "market based" and "hybrid schemes" (Lamond & Penning-Rowell, 2014) as well as "Bundled system" (Crichton, 2002) that can offer greater diversification and more flexibility for the residential market. The UK government created a 'Statement of

Principles’, a non-legally binding agreement with the private insurance market body the Association of British Insurers. The objective of this agreement was to ensure insurance availability for the residential property market regardless of the risk (Ball, Werritty & Geddes, 2013; Thistlethwaite & Henstra, 2018). As the risk of climate change-related building impacts is going to increase even further, there may be a need to explore these options for the commercial property market as well.

The expectation of this study was that the benefits of sustainable buildings as well as the physical and transition risks of climate change will impact on investors, lenders and occupiers’ behaviour to increase demand for sustainability attributes in buildings. The increasing demand will be reflected through rental and sale prices, that the valuers will be able to use as evidence for valuation reporting. Though some value impacts were reported by valuers during the online survey and interviews, most of it is implicitly considered through capitalisation rate, likelihood of void and rental evidence. The only explicit consideration is considered when there is an additional capex requirement. Though a majority of the value impacts are implicit, this research found evidence of more factors being considered by valuers in the UK to reflect value impacts compared to the previous study by Michl et al. (2016). These results are similar to the findings from other countries such as Poland (Kucharska-Stasiak & Olbinska, 2018), Nigeria (Babawale & Oyalowo, 2011) and Australia (Le & Warren-Myers, 2018) where sustainability considerations by valuers are still questionable. In Poland the main barrier was reported to be the lack of awareness about sustainable buildings among valuers as well as property developers, owners and tenants. Additionally, there is a lack of evidence to support empirical value impacts (Kucharska-Stasiak & Olbińska, 2018). The Nigerian (Babawale and Oyalowo, 2011) and the UAE (Lambourne, 2020) studies also reported on lack of knowledge of valuers as well as lack of reliable market data and clients’ disinterests as the main reasons for less consideration of sustainability issues. Lack of knowledge and data issues were also reported by the Australian studies (Le & Warren-Myers, 2018; Warren-Myers, 2013; 2016). Within this study some of the reasons cited for less explicit consideration of sustainability attributes are a lack of evidence, lack of technical skills/expertise/knowledge of valuers, lack of data collection, as well as lack of time. These are discussed in later sections of this chapter.

6.2.2 Sustainability attributes’ impact on investment value

The sustainable appraisal project developed an appraisal model allowing sustainability to be incorporated into the calculations of investment value or worth by using four key variables: rental growth, depreciation, risk premium and cash flow (Sayce et al., 2004b). Additionally, the IVSC also issued a paper on ESG in valuation to offer a framework to assess ESG value creation (IVSC,

2021). From the conceptual model 1 in chapter 3, it is expected that the increasing demand from stakeholders of property market and the impact of physical and transition risks, will be visible through selling and rental prices. The expectation would be that where valuers identify evidence from the market, they would consequently incorporate this in their valuation reporting.

The Michl et al. (2016) study reported on the findings of the online survey conducted by the RICS in 2012 where it was found the perceived impact of sustainability attributes on worth was variable in Switzerland, Germany and England. However, it was suggested that the valuers were considering sustainability for worth far more than market value in anticipation of future market movement (Michl et al., 2016). Within this study, however, the first empirical method online survey found that only certification is making some value impacts through adjustment of rental evidence, discount rate and exit yield. Other than certification, quality of external environment appeared to have some value impacts again through adjustment to rental evidence and discount rate. Deeper questioning during the interview revealed not many valuers undertake investment valuation on a regular basis. This was mentioned by a valuer during the online survey as well in the following comments:

“Investment Value is something very rare for valuers to provide now, it is usually investment agents who provide that because they do not get sued like we do for providing advice which could turn out to not be good advice.”

There is evidence of that in the interview data as well. Only six valuers out of 21 mentioned undertaking investment valuation, of which two mentioned rarely advising on investment value or worth. The other 15 valuers within the dataset never undertook investment valuation some of whom have an experience of more than 20 years of valuation service. This finding is consistent with the findings of Michl et al. (2016), where the response rate for the question about impact on investment value was lower than the response rate for the question about impact on market value. And it was suggested fewer valuers undertake investment value, hence the lower response rate. Though only a small number of valuers within the interview dataset talked about the impacts of sustainability on investment value or worth, it was suggested by a valuer that there are more opportunities to reflect sustainability costs as well as benefits while calculating worth. It could be done through considering the following:

1. cost of retrofitting can be addressed by calculating the end value after retrofitting is complete or

2. through the internal rate of return or
3. through increase in future rental incomes.

Other studies such as in Poland (Kucharska-Stasiak & Olbinska, 2018), Nigeria (Babawale & Oyalowo, 2011) and Australia (Le & Warren-Myers, 2018; Warren-Myers, 2013, 2016, 2022b) also report on the impact on market value rather than investment value, thus these results are not comparable. There is a lack of research on how valuers are incorporating sustainability while calculating investment values.

6.3 Research question 2: The way commercial property valuers are adapting to the changing requirements of the commercial property market in the UK as a result of increasing demand, legislative and regulative pressure for sustainability

This research question addresses the changes and market transformations that are reportedly happening in the UK commercial market because of the increasing interest in sustainability. Changes that could be found in the literature are increasing demand, legislative changes and regulative pressure to include sustainability in valuation. Model 1 in chapter 3 also predicts behavioural changes among market participants such as investors, lenders and occupiers along with valuers and professional bodies due to the transition risks. This section will address to what extent valuers are aware of such changes and the ways they are reflecting it.

6.3.1 Perception gap between what UK commercial property valuers are reporting in terms of linkages between sustainability certification/characteristics and the price differentials revealed by pricing studies

Within the UK there are some reported premiums for BREEAM properties (Chegut et al., 2013; Fuerst & van de Wetering, 2015) and discounts on D or F EPC ratings (Fuerst et al., 2012). However, none of these studies are very recent. A more recent reporting of premiums could be found for London properties within the grey literature (JLL, 2020). However, although the use of hedonic pricing models shows premiums, they cannot conclusively indicate a relationship between sustainability and market value (Warren-Myers, 2012). For instance, these pricing studies have been criticised for omitted variables (Fuerst & McAllister, 2011c; McAllister, 2012). It was also pointed out that these studies are not very useful for valuers as they use aggregated data, whereas valuers normally value a single asset (Sayce, 2018). Relationships that can be observed across the entire market might not be present or visible within an individual locale where a subject property

might be situated (Warren-Myers, 2022b). Within this research, among the 21 valuers that were interviewed, 10 of them mentioned there could be premiums present. Among these 10 valuers, all reported on premiums for BREEAM certified properties and two reported on EPC A- or B-rated properties. However, only two of them seemed aware of the pricing studies which indicates valuers normally do not follow academic literature.

All of these 10 valuers mentioned BREEAM properties will achieve premiums in the form of rental value. However, they also explained that they do not explicitly consider the premium, but rather it is reflected within the rent as an implicit consideration. This is because the presence of the premium may reflect the overall quality of the building rather than the certification itself and where possible comparables will be selected for valuation that are of similar quality and/or have similar attributes to the subject property. This is consistent with the findings of Le and Warren-Myers (2018) where valuers indicated they choose comparable properties as identical as possible to the subject property and not based on sustainability ratings. Interviewees from this study also added a majority of the new-built grade A office properties will now have BREEAM ratings around the UK which has created a new norm or standard within the prime category. During the interview, a valuer reported it might be difficult to sell or let a property in the prime category if it is not BREEAM-rated, thus he suggested all prime properties, especially offices, will now have BREEAM rating. This finding is consistent with the study by Fuerst et al. (2017) where it was explained that BREEAM certification is becoming a norm for certain markets within the prime category. Additionally, valuers who are not based in London suggested it is harder to justify a premium within a local setting such as Bath or Birmingham as the premiums are not as high as London. Several valuers explained the difficulties to quantify these premiums and consider them explicitly; the reason behind this difficulty was explained by valuers. According to them, valuers consider hundreds of attributes while they look for comparable property information and generally any quality feature of a property will be considered implicitly through rent or all-risks yield, thus eliminating the need for an explicit consideration. Similar findings were reported by Le and Warren-Myers (2018) where Australian valuers reported that sustainability is very hard to quantify, and it is part of the bigger picture rather than a big enough element of valuation.

According to the valuers who reported on premiums, the value impacts of these premiums are mostly implicitly considered either through rent or yield. A lender, on the other hand, explained other forms of value impacts of BREEAM properties that include reduced void and low operating costs which will help achieve better rent and longer-term lease. According to him, all of these benefits will also add to the rental and/or pricing premiums. These benefits (reduced void, low

operating costs) are also reported in many academic literature (Aroul & Hansz, 2012; Fuerst, 2009; Fuerst & McAllister, 2011a, 2011b, 2011c; Eichholtz et al., 2010; Harrison et al., 2011; Pivo & Fisher, 2009; Wiley et al., 2010 etc.). The RICS (2021c) advises valuers that there are several channels through which value impacts may become visible, for example, rental growth, obsolescence and depreciation, risk premiums, exit yields, duration to sell or let and incentives. However, valuers appear to choose less explicit options such as rent and all-risks yields to implicitly consider sustainability where this is possible. There are several reasons for it, first the use of traditional method of all-risks yield is very popular in the UK which implicitly considers many factors. Second, valuers have reported on the difficulties in analysing the data that they collect on sustainability factors and that it can be quite hard to translate these data into value per square feet. The lack of data on subject as well as comparable properties were also mentioned specially on factors such as energy consumption, carbon emission, health and wellbeing, waste and water management as well as on climate change impact. And finally, the lack of comparable evidence that was mentioned by some valuers during the interviews. It is also evident in other studies around the globe. Studies in the UAE (Lambourne, 2020), Poland (Kucharska-Stasiak & Olbińska, 2018) as well as in Australia (Warren-Myers, 2012) reported the lack of reliable market data as a major barrier. Additionally, Warren-Myers and Craddock (2021) reported on the lack of physical risk related data on climate change. Without the market evidence that tenants and investors are making decisions based on sustainability features of properties (Le and Warren-Myers, 2018) valuers are unable to consider sustainability factors for valuation. However, though valuers hardly explicitly consider sustainability or adjust valuations for the absence or presence of it, there are some level of consideration through traditional measures of property value (Le and Warren-Myers, 2018).

In terms of discounts some valuers mentioned it during the interviews explaining older properties will naturally achieve less rents compared to BREEAM properties, which could be explained as a discount. Additionally, if a property is not up to the market standard it will achieve lower rent. Therefore, this possible discount is not necessarily driven by sustainability impact, but rather the age of the building and current market standards. This can be attributable to the smart regulation theory where the industry will automatically regulate itself once legislation tightens. However, there is the possibility of changes to the market standard and further discounting and stranding of assets because of tightening legislation (higher bases of the pyramid), as reported by Sayce and Hossain (2020) and Muldoon-Smith and Greenhalgh (2019). As valuers seemed less aware of the MEES trajectory these possibilities were not discussed to a great extent. This is contradictory to the RICS (2021c) advice of informing and advising clients on sustainability and risks of climate change. Valuers are recommended to continuously improve their knowledge on sustainability

issues including transition and physical risks (RICS, 2017, 2020; 2022). However, within this study there are evidence that not all valuers are abiding by these recommendations and though few of the valuers were aware of the MEES trajectory, most were not. Additionally, valuers did not mention advising clients on future strengthening of MEES.

6.3.2 Legislative pressure

The major risk factor related to the legislative changes in the UK is the introduction of MEES. As explained in the literature review, MEES was made effective from April 2018 and since then to let a property a minimum EPC of E is required. However, existing lettings are set to be under the scope of MEES from 2023 for commercial properties. Since the introduction of MEES it is expected (from model 1 in Chapter 3) that the mandatory disclosure of EPCs along with tightening of standards is expected to change the behaviour of market participants including valuers who would regularly collect and analyse the data on EPCs and reflect the impact of it on value. Results from the online survey suggested a majority of the valuers (86.79%) always collect data on EPC. However, deeper questioning during the interview revealed for a majority of the valuers it is like a tick-box exercise to check if the EPC passes or not. Detailed analysis was reported only by a few valuers. Deeper analysis may include checking expiry dates or recommendations provided by the EPC accessor. These findings are consistent with the findings of Sayce and Hossain (2020) where it was also reported some valuers take the EPC at face value without questioning if it is odd or likely to be inaccurate. Similarly, in Australia it was found valuers report the minimum on sustainability issues with mostly generalised statements (Le and Warren-Myers; Warren-Myers, 2013; 2016; 2022b). Therefore, due diligence within this area (analysis of EPC) still requires deepening (Sayce & Hossain, 2020). The lack of detailed analysis of EPCs could be attributable to the fact that valuers may be confused due to the lack of uniformity in wildly varying disclosures which is creating a hesitancy among professional valuers to wholeheartedly embrace the impacts of sustainability and ESG factors (IVSC, 2021). The hesitancy could also be attributable to the fact that valuers are not too knowledgeable on EPC ratings and what goes behind them. Knowing about the rating and how it is calculated can help them understand the value differences among different levels. As one of the clients' mentioned, "*they would need to understand what the EPC rating is as well*" (Lender 4) to make these comparisons and analysis. This issue is attributable to the barrier of lack of knowledge development among valuers on sustainability factors. The small interview sample size needs to be kept in mind as one of the limitations. This prevents the researcher from drawing definitive conclusions.

Some value impacts for EPC non-compliance were reported where the cost of upgrade will be considered explicitly, effectively creating another route by which less sustainable assets will be discounted relative to more sustainable counterparts. In terms of the capex requirement regarding EPC upgrades, currently, the minimum requirement in the UK is an EPC E to be able to let a property and so upgrades need to be done for G- or F-rated properties. Valuers are not experts to calculate the cost of these updates. They would need to seek expert advice to receive the estimated cost for an upgrade of such nature as suggested by the RICS (2021c; 2020; 2022). Some of the valuers in the sample who had such experience indicated the cost of upgrading a property from F or G to an E is not very significant. Similar findings were reported by Sayce and Hossain (2020) where it was found that the current compliance level of E was too easy, and it was reported to be as simple as changing the lightbulbs. Because the costs are low, some valuers within this sample reported clients are not too worried about it. However, in future it could be quite extensive as from 2030 the minimum requirement could be a B. Muldoon-Smith and Greenhalgh (2019) suggested setting the bar so high could mean value disruption and stranding of assets. Therefore, it is expected as the MEES become stronger over time behaviour of market participants including investors, owners, lender as well as valuers will change to incorporate these tightening of standards as is expected from the implications of smart regulation (the higher levels of the pyramid).

A majority of the valuers or clients interviewed were found to be not aware of the future trajectory of MEES. However, when the interviews were conducted, this trajectory was not finalised by the UK government, but still a proposal. Perhaps because of that, the awareness of this trajectory was not very high, and the related risk was not discussed with clients. Sayce and Hossain (2020) also reported similar findings of valuers not being very aware of the upcoming MEES trajectory. A few valuers were aware of the trajectory, especially those undertaking secured lending valuations. These valuers reported that they needed to flag properties for lenders in some valuations. The RICS recommends valuers to keep updating their knowledge constantly *“to have a working knowledge of the various ways that sustainability and ESG can impact value”* (RICS, 2022, p. 10). However, as the results of this study suggest not all valuers are knowledgeable on MEES trajectory which is arguably essential in coming years. To what extent MEES will be successful in decreasing carbon emission from the UK economy will be dependent upon the UK government’s willingness to ascend to the upper levels of the pyramid for strengthening of regulation and enforcing penalties. Governments using smart regulation has been criticised for not taking the full advantage of the upper levels of the pyramids (Gunningham and Sinclair, 2017). Additionally, MEES has been criticised heavily by participants of this study and earlier studies (Sayce and Hossain, 2020) for not considering carbon emission and actual energy usage in EPC. The RICS’s (2022b) recommendations on EPC metrics upgrade will be helpful to make it more effective in future.

6.3.3 The way valuers are interpreting and implementing RICS requirements in their day-to-day practice and changing their role accordingly

Usage of RICS standards and guidance: The RICS has published several materials on sustainability. However, other than the Red Book (RICS, 2017a, 2020a, 2022), all the other materials are at an advisory level (RICS, 2013, 2018a, 2018b, 2021c). The latest Red Book during the first empirical work was the Red Book 2017. According to the valuers who participated in the online survey, most seldom referred to these publications whereas 20.75–24.53% of valuers mentioned they use them frequently. The most referred publication according to the participants was the RICS (2018a) on MEES impact on property management and valuation. As EPC is mandatory to have for sale or lettings and as MEES is expected to become stronger over the next few years, it is understandable that valuers will refer to this insight paper regularly to understand and reflect the implications on property valuation. It was found that experienced valuers (20+ years of experience) are typically more aware of these publications. Almost all the valuers who referred to not knowing or using these publications were less experienced. This finding is consistent with study in Australia where senior valuers were found to be more knowledgeable on sustainability issues (Warren-Myers, 2011). A few valuers in this study indicated that they do not know about these publications or never use them. The lack of awareness of valuers on sustainability guidance by the RICS have been reported in other studies too, for example the last UK study by Michl et al. (2016) as well as in the UAE (Lambourne, 2020). This indicates there is a lack of engagement from the valuers and the RICS needs to make sure that valuers engage with these guidance. Warren-Myers (2022b) suggested knowledge and awareness of valuers of sustainability is likely to be linked to mandatory disclosure legislation. Thus, in the UK the more frequent use of the MEES guidance note (RICS, 2018a) could be attributable to the implementation of MEES and the fact that it is mandatory for valuers to consider EPC when a property is being transacted.

According to the findings of the survey, it appeared that the usage of these materials published by the RICS has improved since the Michl et al. (2016) study. However, valuers during the interviews admitted most of them do not use it on a regular basis. They also mentioned these are not always very helpful because of not being very clear or prescriptive. For example, valuers are asked to have “*proper regard*” to the relevance and significance of sustainability and environmental matters (RICS, 2017a, p. 51) which can be interpreted variously by different valuers. A few valuers mentioned some of the materials being outdated. The RICS did update the guidance note on sustainability (RICS, 2021c), including some additional factors for valuers to consider such as ESG, carbon emission, net zero, physical and transition risk of climate change which could change the

due diligence process and valuers may start considering these factors more for valuation in future. However, it was published after all data collection was completed for this research. Therefore, this research cannot make comment on the usage of this guidance note. The major concern that was mentioned by some valuers regarding the old guidance note was that it was outdated and not prescriptive enough. Though it was updated recently, the checklist for data collection on sustainability was not updated or included. As it is a guidance note, it is again kept at an advisory level, therefore, it is up to valuers to consider these factors mentioned in the guidance note. Additionally, one of the valuers interviewed, who has been working with the RICS for a long time, also reported on the lack of enforcement by the RICS auditors on sustainability reporting in valuations. A few valuers added that the drive towards sustainability is being led by the lenders, not the RICS. As lenders are increasingly interested to understand the risks associated with climate change, they are considered as pioneers by these valuers to bring in this change. As an example, few findings can be mentioned that are being led by the lenders such as the environmental assessment which is mandatory for most secured lending valuations. Therefore, there are several problems related to the engagement of valuers with the RICS publications. First, they are not used or referred to by many valuers regularly. Second the publications do not currently address sustainability issues in prescriptive manner, for example what data to collect and how to analyse them. Third, at least some of the advice need to become mandatory at some point in future as previous studies have suggested too on enforcing these guidelines through standards (Michl et al., 2016; Le & Warren-Myers, 2018). As the transition risk is becoming a major factor for the property market in the UK for sustainability and climate change consideration it is expected to reshape the behaviour of the professional bodies. Finally, there is a greater need that RICS ensures valuers are educating themselves to keep updating on sustainability and ESG issues as many studies around the world including this one reported on lack of valuers' knowledge on these issues.

Data collection: While at an advisory level, there is a strong recommendation from the RICS to collect data on sustainability even if it is currently not having any value impacts so that it could be analysed over time to understand the value impacts (RICS, 2017a, 2020a, 2022). The first empirical work of this research, the online survey, provided a long list of 23 sustainability factors and asked valuers to respond if they collect data on these factors. It was revealed by the participants that most valuers collect data on the following factors (Table 6.1). However, for some of the factors, data are not collected routinely such as BREEAM, resilience to extreme weather and use of renewables or recyclable construction material.

Sustainability attributes	Data collected	Results from online survey (Routinely/Seldom)
Certification	1. EPC 2. BREEAM	Routinely Not normally
Energy and carbon	1. Energy sources used	Routinely
Quality of external environment	1. Proximity to open and green spaces 2. Any pollution 3. Proximity to public transport	Routinely Routinely Routinely
Adaptability and resilience to climate change	1. Flexibility of internal layout 2. Building component design for reuse 3. Site flood risk 4. Resilience to extreme weather 5. Use of renewables/recyclable construction material	Routinely Routinely Routinely Nor normally Not normally

Table 6.1 Data collection on sustainability factors

Source: Made by the author

A further crosstab analysis revealed that most of the valuers who believe these factors are not going to impact on value do not collect data on them, whereas valuers who think there might be some value impacts of these factors are not collecting data probably because these data are not available to collect. The collection of EPC data is now part of the due diligence process which was also reported by Sayce and Hossain (2020). Like the previous study Michl et al (2016), this study too found valuers collect more data on traditional building attributes such as proximity to open and green spaces and public transport as well as flexibility than health and well-being factors. However, data collection on energy sources has improved since last study (Michl et al., 2016).

During the interviews, valuers reported collecting a lot more data on sustainability than before such as EPC, flood, contamination (See Appendix 5.1). However, data on energy sources was only collected by a few. Health and well-being factors were mentioned by some valuers who collect data on disability access, heating and cooling and natural light. Additionally, accessibility, flexibility, contamination or pollutions of any kind are also reported if present in a property. This is consistent with instructions of the RICS VPGA 8 (RICS, 2017a, 2020a, 2022) where valuers are required to report on characteristics of the property, any natural or non-natural hazards such as flood, contamination (RICS, 2017a, 2020a, 2022). However, there is a lack of consistency in terms of data collection practices among valuers which can be attributable to the fact that there is a lack of a checklist for sustainability data that can be collected. It appeared collection of data is dependent upon availability, cost, and time constraints. The main sources for data collection mentioned by

valuers are through inspection, clients, online sources such as government websites for EPC. If valuers are unable to collect data from these sources within a reasonable time, they will work with what they have. Because of time constraints they cannot keep searching for these data for long as mentioned by several valuers. Therefore, due to the lack of time, valuers are not able to actively search for sustainability data as is suggested by the RICS (2021c).

The RICS checklist for sustainability data collection (RICS, 2013) was mentioned by a few big firm valuers who have reportedly adopted it, though not all of the data mentioned within this checklist may be collected. The amount of data collected by valuers will again depend on the availability of such data and the requirement from the clients. Small firm valuers on the contrary have not adapted the checklist, hence there is a lack of consistency in terms of data collection practices among various organisations.

Additionally, some of the sustainability data needs to be collected from a third party which means additional costs are incurred to collect these data. This could include EPC upgrade costs, environmental assessments, flood or contamination remediation work. However, getting the data would mean paying additional fees to a third-party expert. Therefore, if clients do not agree to pay for this additional advice, valuers cannot collect these data. Generally, lenders and big investors have been mentioned by valuers who are interested to know more about any potential risks associated with the subject property and thus they ask valuers to collect additional data from third-party experts. On the other hand, valuers who undertake valuations for small investors have reported it is less likely for these clients to ask for such data to be considered. This is likely to the fact that climate change physical and transition risks are being seen as threats by big investors and lenders, whereas at the lower end of the property market it is still not understood by the clients. There is, therefore, a need to create awareness of these risks within this level. Valuers can do that, if they are knowledgeable enough to do so, as the RICS (2021c) suggests them to advise and inform clients on sustainability and ESG issues. This can also be attributable to the social and cultural role as part of the public service professional valuers are required to play as part of the RICS rules of conduct (RICS, 2021c). The limitation of small sample size and the difficulty to generalize must be considered here as the number of clients interviewed was small and small investors or owner-occupiers were not interviewed, therefore this finding was not entirely possible to confirm.

Some problems related to storage and sharing of these data were also shared by interviewees. Though valuers are advised by the RICS to collect data to analyse it to understand the value impacts over time, data are not stored in any central database from where all valuers can access it for

comparison. Valuers also added that sustainability data in terms of comparable properties are required to understand the value impacts and to evidence sustainability in valuation. This is also advised by the RICS (RICS, 2018a) to understand the varying degree of impact on value based on individual EPC ratings. However, data are normally stored in property files, which are not shared between valuers within the same firm, let alone with outsiders. Privacy policies and clients' instructions create additional barriers for sharing data as valuers are not normally allowed to share these data with others because of these policies and instructions. The lack of reliable market data to evidence sustainability factors have been mentioned in many previous studies such as in the UK (Michl et al, 2016), Poland (Kucharska-Stasiak & Olbinska, 2018) and UAE (Lambourne, 2020). This information asymmetry is creating an additional constraint for the valuers (Bartke & Schwarze, 2021) that needs to be addressed by the professional bodies. Professional bodies therefore need to come up with solutions to this problem and ask data service providers such as CoStar and EGI Radius to start storing sustainability data so that valuers can access it for comparison. Additionally, some valuers working individually or for a small firm may not have access to this subscription services. Hence, the RICS needs to find ways to share data with all valuers, not only valuers belonging to bigger firms. The RICS can also encourage valuers to start recording information consistently by providing them prescriptive guidelines on data collection and storage.

Analysis and reporting: Though valuers reported collecting some data on sustainability, many of them also noted the difficulties with analysing these data. These difficulties were mentioned during the online survey as well as the interviews. A few valuers commented during the online survey that valuers are not sufficiently equipped or trained to consider sustainability. They also noted the difficulties faced to assess if one property is greener than others. These difficulties were also echoed in the interviews. This apparent difficulty may be because of lack of common benchmarks that has been noted and reported by the IVSC (2021); however, no solution is available yet from the regulatory bodies.

As valuers try to find like-for-like comparable properties, a majority of the features of a property are considered implicitly within the rent or yield. Drawing out quality features such as EPC or energy efficiency and quantifying the differentials is quite hard for them. As valuers explained, when they look into comparable data, rents and yields are generally reflective of the quality of the property. To what extent one investor is paying more or less for one quality feature is very difficult to differentiate. Similar conclusions were reached by Warren-Myers (2013) where it was found that valuers had limited knowledge on sustainability and questioned their own capacity to consider the

impacts of sustainability in valuations. Warren-Myers (2009) also identified that Australian valuers were not well equipped to identify the relationship between sustainability and market value. Additionally, Warren-Myers (2013) reported on Australian valuers' lack of knowledge, skills and ability to incorporate or consider sustainability. This raises an earlier question regarding the education and training that the valuers are currently receiving and whether that is preparing them enough to deal with changing practices. As mentioned before, level 1 competency on sustainability is mandatory but to provide specialised advice on sustainability, valuers need level 2 and 3 competencies. Having level 2 and 3 competencies will allow valuers to interpret BREEAM or EPC reports, analyse energy efficiency measures, provide advice on the financial and legislative impact of sustainability, and provide long-term strategic advice. Commissioning clients participating in this research, notably the lenders, have mentioned the sustainability sections in valuation reports are generally very small. For example, several lenders mentioned EPC is treated as a tick-box exercise rather than an analysis on how value might be affected based on varying level of EPC rating. This analysis could be very useful for clients, however, to do such analysis valuers will require adequate understanding of the ratings and how they are being calculated. Level 1 competency in sustainability will probably not provide that understanding as it only covers the basics of sustainability (see Table 2.3). Therefore, the current mandatory requirement of level 1 competency in sustainability needs revising.

Warren-Myers (2009) predicted that as market develops further, sustainability will become an important part of consideration in valuation practice. The research by the same author presented the results of a longitudinal survey conducted since 2007 to 2015 where it was reported that though growth of sustainability in the property market has been significant during this period, valuers' knowledge and reporting were not demonstrating the same level of development in Australia (Warren-Myers, 2016). Similarly, studies in UAE (Lambourne, 2020), Nigeria (Babawale and Oyalowo, 2011) and Poland (Kucharska-Stasiak & Olbińska, 2018) also reported on valuers' lack of relevant technical skills and the need to improve knowledge on sustainability to effectively reflect sustainability factors in valuation. The lack of knowledge was reported as a significant barrier in the latest Australian study too (Warren-Myers, 2022b). Therefore, the lack of knowledge and expertise among valuers on sustainability factors can be seen as a major barrier which is evident in many studies including this one.

Valuers are required to continuously develop their knowledge on sustainability to keep themselves updated (RICS, 2022). However, it is not clear to what extent they are following this advice. Valuers are taught in academia before they become practicing valuers where they learn about

sustainability. Then they work under senior valuers before taking APC. Additionally, after they pass the APC, they have to take 20 hours of CPDs every year (Lambourne, 2020). However, the RICS does not mandate the topic of the CPDs, therefore valuers are not required to take regular CPDs on sustainability. The RICS also publishes guidance notes and information papers on sustainability which are not always read or used by valuers, as identified through the interviews. The knowledge around academic literature on sustainability pricing studies also appeared very limited among valuers of this research. Hence, there is a possibility of lack of active participation by valuers to develop their knowledge and consequently their ability to consider sustainability, which might be one reason for not being able to analyse the data they collect on sustainability. Despite being taught in universities about sustainability, being trained under senior valuers as well as learning from CPDs and guidance from the RICS, several studies have reported on valuers' lack of knowledge and technical skills to assess sustainability factors in valuations (For example, Kucharska-Stasiak & Olbińska, 2018; Lambourne, 2020; Warren-Myers 2009; 2013; 2022b) Therefore, there is a need that professional regulatory body of the valuation professionals, the RICS, investigate what is being taught to valuers in universities and thorough CPDs and whether that is enough in the current economic and social circumstances.

Valuers are generally known to be slow to incorporate market changes (Wyatt, 2013; Baum et. al., 2000) due to the process of using comparable property information which is recent but backward-looking. Within this research valuers explained finding data on sustainability for comparable property can be quite challenging due to the lack of central storage of data, time and cost constraints. Without analysing the data for comparable properties on sustainability, it is impossible to quantify the differentials on any sustainability attribute for the subject property.

Therefore, sustainability factors are affecting the due diligence process of valuers by the means of collecting data but not in terms of analysing them for valuations. Lenders for example are increasingly interested to understand what it would mean to have various EPCs for the value of properties, however, valuers are not known to make this analysis within a valuation report. As one lender mentioned, *“So I'm looking at two things, one is A and one is D and even if they know in layman's terms looks the same and had similar tenants, surely there should be a difference in value between an A and D.”* (Lender 2). The RICS has recognised this need of lenders and published an ESG and sustainability framework for commercial secured lending valuation in July 2023 (RICS, 2023) which includes a table to present EPC data with property details, EPC and RAG (green, amber and red) ratings, EPC numerical score, estimated building emission rate and primary energy use numbers (where available), floor area, material risks identified in EPC recommendation report

and actions to be taken by the borrower to address them and reporting exemptions. Including this additional information will possibly make the analysis stronger as per the lender's need. Moreover, properties are to be categorised in green (EPC A or B), amber (EPC C, D or E) and red (F or G) to show risk profiles in terms of EPC ratings. Valuers are also supposed to consider cost data for EPC upgrade where it is considered material along with business plans to improve EPC ratings where it is available (RICS, 2023). However, the RICS also stated that these are not prescribed or mandatory, professional judgement should be applied by valuers to consider the applicability and materiality of these advice for individual property.

Some valuers, on the other hand, added data on sustainability are being gathered for future use and it is still not time to reflect this in valuation. As the Red Book explains, a valuer's role is to "*assess value in the light of evidence normally obtained through analysis of comparable evidence*" (RICS, 2017a, page 138). They should reflect the markets and not lead them, hence if they cannot evidence a differential, it cannot be reflected in valuation. As the Red Book suggests, "*only where market evidence would support this, should sustainability characteristics be built into a report on value*" (RICS, 2017a, page 138). Currently, valuers have expressed the difficulties to find evidence to support explicit value impacts for sustainability factors. Hence, they consider a majority of the sustainability factors implicitly through rent or yield rather than explicitly.

6.4 Research question 3: Other valuation factors affecting sustainability consideration

This research question explores the possibility of other factors such as purposes of valuation, clients' demands and valuers' experience impacting on sustainability considerations by valuers. One such factor is the purposes of valuation. Purposes of valuation is fundamental to all valuation activity (RICS, 2021c) and it sets the ground for any valuation. Wyatt (2013, p. 63) listed the purposes of valuation for commercial properties as development appraisal, transfer of ownership, monitoring the value of property assets held by companies or individuals, loan security, tax and insurance risk assessment. It was found through both the online survey and the interviews that, based on the purpose of valuation, consideration of sustainability may vary. The online survey results revealed EPC data is collected regardless of the purpose of valuation, but BREEAM data is mostly collected for investment advice and company accounts valuations. During interviews, valuers mentioned the highest amount of data on sustainability is collected either for secured lending purposes or acquisitions for investments. As lenders are interested to understand the future risks associated with the subject property for the period of the loan, they include instructions for valuers to check for EPC, flood and contamination.

Most of the valuers undertaking secured lending valuations also mentioned collecting a third-party environmental assessment on behalf of the banks. Several valuers mentioned for acquisition of a property generally more data are available for valuers to use. One valuer from London mentioned,

“When you're working with legal teams who will be doing their own due diligence and there's a lot of data available through data room entries...they will get into the information of the company that they're purchasing, and a lot of information will be provided on data rooms”
(Valuer 3)

For new acquisitions these sorts of facilities may be available, however the same valuer mentioned valuation for account purposes for which these sorts of data are generally not available.

Lenders confirmed during interviews that their instructions provided to valuers for secured lending will ask them to consider EPC, flood risk, contamination, and environmental assessment of a property. Investors and owner-occupiers also confirmed more data are considered during an acquisition such as environmental assessment, flood risk, and contamination. However, once a property has been acquired, regular valuations are required for financial reporting during which not all of the above-mentioned data are included. An investor added that the first valuation for financial

reporting would include flood, EPC, contamination but subsequent ones will not necessarily do so. Similarly, where regular valuations are undertaken for loan monitoring purposes (as opposed to origination), all the above-mentioned data will not be considered again.

Clients' demand is another such factor that may impact on sustainability considerations. Valuers were asked about three types of commissioning clients – investors, owner-occupiers and lenders – and the extent to which sustainability attributes might be important to them. During the online survey, valuers indicated certification such as BREEAM and EPC as being the most important factor for all three types of commissioning clients. Because of MEES, EPC is now considered at all levels by investors and vanguard investors were reportedly aligning their portfolios before MEES came into force (Sayce & Hossain, 2020). The research undertaken by Jackson and Orr (2018a) identified that among investors, BREEAM rating has gained more importance (the third most important factor at asset acquisition stage) compared to the research undertaken by the same team in 2008 and 2011 (Jackson & Orr, 2008; 2011).

Additionally, it was reported by the valuers during the online survey that sustainability considerations are more important for owner-occupiers than investors or lenders. The possible reason for that could be many of the sustainability attributes such as operational cost savings, energy efficiency, health and well-being factors are directly enjoyed by occupiers rather than investors or lenders (Aroul & Hansz, 2012). During interviews, several valuers agreed to this, however high street occupiers were mentioned by several valuers who do not have sustainability high on their agenda. One valuer mentioned not being able to get any data from them, not even EPC. Earlier research (Aroul & Hansz, 2012) assumed that it is difficult to quantify the health and well-being benefits in monetary value, however, recent studies have showed that several companies around the globe are able to quantify these benefits (UKGBC, 2018; WGBC, 2018). Valuers, on the other hand, indicated limited value impacts for health and well-being factors during the online survey.

During interviews, valuers indicated lenders are leading and paving the way to include more and more sustainability factors within their instructions to valuers. A few valuers even mentioned that the RICS is following some of the big lenders. As explained above, lenders instruct valuers to collect the most data on sustainability and expect valuers to identify and highlight any risk associated with the subject property during the loan period. As part of that sustainability, factors such as EPC compliance, contamination, flood risk and any other such matters need to be addressed by the valuers. This finding was confirmed through the interviews with lenders. The previous UK

study by Michl et al. (2016) reported investors demand being the highest for sustainability integration whereas this study found lenders demand to be the highest.

Investors' demand, on the other hand, depends on the type of investors. Big investors or institutional investors or pension funds were mentioned by several valuers as clients who (like lenders) would ask to investigate sustainability when acquiring a property. Similar factors are generally asked to be checked as for secured lending valuation such as flood, contamination, EPC, BREEAM. This is consistent with the findings of Sayce and Hossain (2020) and Jackson and Orr (2018a, 2018b). Additionally, valuers mentioned these investors have ESG requirements that place sustainability on their agenda. Moreover, reputational benefits are very important for these investors, as mentioned by several valuers during the interviews. They want to present themselves to the public as socially responsible. This is a way for these investors to demonstrate good practice across their businesses. Various motivational factors can lead to such practices such as traditional corporate philanthropy, risk management and value creation (The Economist, 2008; van de Wetering, 2018).

On the contrary, small investors (especially in the retail sector) were mentioned by several valuers as not having ESG considerations. Therefore, sustainability does not much feature in their thinking. At this level, investors and occupiers are only interested about the income that the property can produce. Sustainability is seen by many as an extra cost, as mentioned by several valuers, and investors at this end will do the bare minimum to keep letting the property. However, to keep letting a property, a minimum EPC level needs to be maintained; MEES thus has created a basic awareness around energy efficiency and these small investors are forced to upgrade their properties to a minimum of E to keep letting. This apparent disinterest of clients at this level is very similar to the findings from less developed property markets, such as the UAE (Lambourne, 2020) and Poland (Kucharska-Stasiak & Olbińska, 2018). As MEES is going to impact on existing leases from 2023 (for commercial properties) and the minimum EPC is set to become B from 2030 it will have wider implications in terms of capex requirements. However, there is a lack of awareness of this trajectory among both valuers and clients. This finding is again similar to the findings from Poland (Kucharska-Stasiak & Olbińska, 2018) where property developers, owners, tenants as well as valuers' knowledge around sustainability was found to be very limiting. MEES will not affect owner-occupiers to that extent as it is not mandatory to have the minimum EPC for owner-occupied properties, but this could change as recommendations from CCC (2023) to the UK government has been presented to bring in policies to make the owner-occupied properties carbon neutral and energy efficient. During the interviews with owner-occupiers and investors, both clients explained

cost efficiency, renewable sources, and reducing emissions as important factors which valuers did not seem to pick up on. These interviewees mentioned installing smart meters to reduce and monitor utility cost. Also, they are installing solar panels and checking for other renewable sources to reduce carbon emissions and cost of energy. As a majority of the commissioning clients have targets to go zero carbon, reducing carbon emissions and monitoring it has become crucial practice. The last checklist on sustainability data collected by RICS (RICS, 2013) did not include these factors, and none of the valuers reported collecting data on these factors. However, the latest RICS Red Book (RICS 2022) as well as the guidance note (RICS, 2021c) has added some of these factors for valuers to consider which might change the due diligence practice in future. Further research will be required to understand the implications of these updates by the RICS. The expected behavioural changes from commissioning clients from model 1 are somewhat found. Lenders, Investors (institutional and big) and owner occupiers have been reacting to the voluntary certification as well as mandatory certification. For all three client groups BREEAM has been identified as an important factor through both online survey and interviews. Additionally, the impact of MEES is visible through the interviews with investors and lenders. Owner occupiers are not so concerned about MEES as it is not impacting them directly. Another important finding is, in terms of small investors only mandatory certification is changing behaviour to some extent. Voluntary certification has no effect at this level as BREEAM is not available for secondary or tertiary properties.

Valuers' experience is another factor that was found to have some impact on consideration of sustainability. The online survey revealed it is more likely that an experienced valuer would collect data on BREEAM, probably because experienced valuers are more likely to value higher value properties with BREEAM ratings. This possible explanation was supported by Warren-Myers (2011) where senior valuers were found to be marginally more experienced in valuing sustainable properties. Additionally, it was also found that more experienced valuers are more likely to collect data on energy sources, flexibility and building component design for reuse which could mean experienced valuers have started to observe the importance of these factors and they are trying to factor that into valuations. During interviews, experienced valuers mentioned collecting more data on sustainability (see Appendix 5.1). The overall awareness of sustainability and its link to climate change and reduction of carbon emissions were also found to be greater among experienced valuers. The interview findings suggest that the social and cultural responsibilities that valuers have to the wider public for being a professional may be understood better by the senior valuers than by valuers with less than 10 years of experience. Some of them revealed their interest to do more to incorporate sustainability factors in valuations, however, they seem to be at a loss regarding what it is that they should be doing to help reduce emissions and contribute to a zero-carbon economy.

Hence, more prescribed instructions from the RICS and more training and education on sustainability is required so that valuers are able to make the connections between carbon emission and value. The interview findings therefore suggest that experience has an important role to play in developing heuristics among valuers on sustainability as was predicted in chapter 3, model 2. The interviewed senior valuers were found to collect more data on sustainability as well as attempt to analyse them. However, some of the challenges valuers are facing in terms of education, training and knowledge development were also noticeable during the interview stage which was also reported by plenty of studies before, for example UAE (Lambourne, 2020), Poland (Kucharska-Stasiak & Olbińska, 2018), Nigeria (Babawale and Oyalowo, 2011) and Australia (Le and Warren-Myers, 2018; Warren-Myers, 2013; 2016). This barrier is possibly hindering valuers' heuristics development on sustainability.

For valuers with less than 10 years of experience, sustainability is merely the certification EPC or BREEAM. As Warren-Myers (2011, p. 503) explained, *“The requirement of market knowledge and experience is fundamental to valuation, and younger valuers are at a disadvantage as their development of strategic knowledge and heuristics is less than senior valuers.”* This was found to be true in the UK market as well. Senior valuers undertake valuations for a lot more varied purposes and properties whereas junior valuers with less than five years of experience only undertake secured lending and accounts purposes valuation. It is vital for valuers to have the experience of valuing various properties and for a variety of purposes, which will help them build their heuristics that will flow through into valuations.

One of the other factors mentioned by valuers was the size of the firm that a valuer works for. The online survey revealed valuers from bigger organisations are more likely to collect data on BREEAM, probably because larger firms are more likely to value higher value properties with BREEAM ratings. On the other hand, valuers from smaller organisations were found to be more likely to collect data on energy sources used. The reason behind this was not clear. During interview, it also came to light that a majority of the big firm valuers receive CPD training on sustainability within their organisation, whereas small firm valuers or independent valuers have to rely on the RICS or external sources for such trainings. Some challenges faced by small firm valuers were revealed who feel not being represented much by the RICS and described the institution as “outdated” and “ineffective”. Additionally, big firms generally have in-house experts such as environmental specialists who valuers can consult if required, whereas small firm valuers do not receive such advice for free. Big firm valuers thus have better opportunities to develop heuristics on sustainability.

The local setting from which a valuer is working can also impact on sustainability considerations. Though valuers across the UK talked about premiums for BREEAM properties, valuers outside of London also added that it is very hard to justify that premium within their local settings, mainly because of lack of evidence. Additionally, big investors and corporate giants are focused on big cities such as London that created a demand for BREEAM properties, because of which the premium is present in this market.

Based on the type of asset, sustainability considerations can again be varied. The online survey indicated sustainability is only relevant for higher value stock. For the majority of the stock which are old, sustainability is not currently being considered. *“Outside the Grade A office market, the market does not seem to apply any real science to this”*, explained one of the respondents from the online survey. This was confirmed through the interviews. Certain sustainability factors such as BREEAM rating, electric car charging points, health and well-being factors are far more important for prime office properties. These is driven by the demand of the occupiers of such properties. Additionally, during interviews, valuers explained the focus is currently on the office market rather than retail. As the retail market in the UK has been struggling for some time, it is currently focusing on survival. This is confirmed by an investor who has invested heavily in the retail market. On the other hand, some valuers mentioned adaptability/mixed use/alternative use is becoming important for retail property’s survival. The model 1 explained in chapter 3 predicted behavioural changes of market participants due to the benefits of sustainable buildings as well risk generated from climate change. Though some behavioural changes are noticeable among institutional investors, pension funds and lenders, for some of the other market participants it is less noticeable. For example, among small investors, owner occupiers as well as valuers.

6.5 Revisiting model 1 and 2

Model 1: As the impacts of all factors of Model 1 has been discussed in section 6.2 and 6.3, it can now be revisited to find out how these factors are impacting on valuation practice. The major findings are presented below in figure 6.1. The factor demand drive was found to make some impact on valuation practice as lenders and big investors or institutional investors were found to ask valuers to consider several sustainability factors such as EPC, BREEAM, flood, environmental assessment and contamination. Therefore, behavioural changes among these clients can be confirmed as the model predicted. However, small investors and owner occupiers were not found to create any such pressure on valuers. There is possibly a need to create more awareness among these clients to educate them about the impacts of climate change risks that includes the transition

risk. Valuers have an important role to play to create such awareness as the RICS (2021c) advice valuers to inform their clients of the physical and transition risks. Moreover, from the clients' side interviews it was found that investors and owner occupiers are increasingly interested to find more cost-efficient energy sources, renewable energy sources and reducing emissions to reach their zero-carbon target. However, not all valuers appeared aware of these issues. This finding proves that commissioning clients are changing their behaviours to adopt to the tightening of standards and reach the target of zero carbon by 2050. On the contrary, valuers' behaviour is not responding to these changes yet as it should. Valuers are supposed to get informed by the RICS as well as from their clients on the demand of the market, which they are required to reflect in valuation. They are however, yet to pick up on these factors.

In terms of the debate between mandatory vs. voluntary, the first is impacting on all properties and behaviours of market participants as it should create the required accountability in the market. The second on the other hand, is impacting on the behaviours of lenders, institutional investors and occupiers of similar nature but not small investors or occupiers. Valuers' behaviours or due diligence are affected by both. When clients, such as lenders or pension funds or corporate giants are asking valuers to consider voluntary rating (BREEAM), it is making them include BREEAM within the building attributes that they will consider for valuation. On the other hand, MEES is making it mandatory for valuers to consider EPC for lettings and sale.

In terms of the transition/legislative risk, MEES has clearly made an impact by creating the much-needed awareness among all market participants and it was found to change market participants behaviour such as investors, lenders as well as valuers. However, valuers' due diligence should deepen to understand the impacts of various EPCs on value which could be helpful to clients. Additionally, valuers' knowledge on MEES trajectory needs to improve. There is a lack of response from the valuers' side. Additionally, MEES's success will depend on the UK government's ability to successfully implement enforcement and penalties. There is a reported lack of enforcement at the moment in terms of MEES that needs to be addressed (Sayce and Hossain, 2020). Governments using smart regulation has been criticised for their lack of willingness to ascend to the upper levels of the pyramid (Gunningham and Sinclair, 2017). However, without doing so, the target of zero carbon will not be achieved. As explained before, voluntary certification and self-regulation cannot create the needed enforcement and accountability (Arnold, 2022) that is required to achieve the zero-carbon target. Additionally, MEES has been criticized for several reasons. First of all, achieving E is too easy (Sayce and Hossain, 2020). Secondly it is tied to EPC which does not look into actual energy consumption and carbon emission. It has been recommended that these issues

are fixed by the government to make EPC fit for purpose (RICS, 2022). Moreover, MEES does not have owner-occupied properties under its scope, regarding which the CCC (2023) has recommended the UK government to create and implement new policies. To make the enforcement pyramid a success the UK government needs to make these changes.

In terms of physical risk of climate change, flood can make a huge impact on property value, however several problems related to the data is currently prohibiting valuers to fully understand the risk associated with it, such as the use of backward-looking data and lack of data on climate change and how it may impact value in future when temperature rise. The risk of climate change is becoming more apparent with recent publications by the IPCC (2023) and the UK government (HM Government, 2022). Both publications have reported on global temperature increase and have warned about increasing risks from floods, wildfires, cyclones and other natural disasters. Without proper data on these, valuers are not able to understand these risks let alone reflect them in valuations. Professional regulatory bodies as well as the government has a responsibility to make such data available to professionals so that they can make the public aware of such risks and fulfil their social responsibilities to the wider public (RICS, 2021c; 2022).

Finally, the professional regulation from the RICS has definitely made an impact, as a result of that valuers are now collecting a lot more data on sustainability than was previously reported by Michl et al. (2016). However, there is still a lack of clear instruction from the RICS on what data valuers should collect related to sustainability and how to analyse it which is creating inconsistencies in valuation practices. Valuers need a lot more clear and prescriptive instructions to properly address the sustainability issues. Additionally, valuers revealed during the interviews that not all of them regularly use or read the RICS publications, therefore just publishing these guidance notes and information papers is not enough, the RICS needs to ensure the usage of them among valuers. It was expected that the transition risk will make the RICS change its behaviour to some extent. Though the RICS has included more instructions over time on sustainability, they are still kept at an advisory level. It is expected at some point in future the transition risk will have higher influence and the RICS will make these instructions mandatory for valuers to consider. The following figure summarizes the findings relevant to model 1.

Demand drive	Legislative/Transition risk	Physical risk	Professional regulation from RICS
<ul style="list-style-type: none"> • Pressure from mainly lenders and big institutional investors and pension funds • Not present for small investors and owner occupiers • Investors and owner occupiers have increasing demand on renewable energy sources, reducing emissions and increasing cost efficiency. 	<ul style="list-style-type: none"> • Created awareness • Valuers lack knowledge on MEES trajectory • Valuers' due diligence need to improve on EPC • Analysis on EPC needs to be deepened • enforcement and penalties are expected in future • the risk of penalties will further change behaviour of market participants • issues with EPC needs to be addressed to make MEES effective 	<ul style="list-style-type: none"> • Flood risk • Lack of data on impacts of climate change that needs to be addressed • Professional bodies and government have a huge role to play to make these data available to professionals 	<ul style="list-style-type: none"> • Professional regulation is making an impact but could be stronger by making advices mandatory • RICS needs to make sure their publications are read and used by all valuers regularly • Valuers need clear and prescriptive information on data collection on sustainability and how to analyse them • better education and training on sustainability is required for knowledge development of valuers

Figure 6.1: Impact of model 1 factors on valuation practice

Source: Made by the author

Model 2: Chapter 3 discussed this model where it was suggested that though sustainability has been studied and researched for quite some time, valuers may still treat it as an unfamiliar market factor. Literature suggests that within an unfamiliar market, more experienced valuers are likely to be better equipped to use heuristics for effective decision making (Holyoak & Nisbett, 1987). Therefore, it was assumed in model 2 (in Chapter 3) that experienced valuers will be able to identify sustainability attributes and its value impacts better than less experienced valuers by using their heuristics. The findings from this research are consistent with this assumption in a number of ways. First of all, both methods (online survey and interviews) have identified that senior valuers consider more factors in terms of collecting data on sustainability (see Appendix 5.1) and the overall awareness of sustainability is better with senior valuers. This is consistent with the findings of Warren-Myers (2011) where senior valuers appeared more knowledgeable about sustainability, sustainability assessment and market dynamics for commercial properties. Within this study, it was also found during the interviews that younger valuers with less than five years of experience only undertake secured lending and/or accounts purposes valuation whereas more senior valuers undertake valuations for a variety of purposes such as adaptation valuations, planning purposes, viability or extension purposes, compulsory purposes, acquisition, disposal, witness requirements. Moreover, where valuations become more complex, they may be less likely to be given to younger valuers. This allows experienced valuers to handle various scenarios which will help develop better heuristics.

Additionally, senior valuers are more likely to undertake valuations for high value prime properties (with BREEAM rating) which makes them more experienced to value properties with sustainability features. This is consistent with the findings of Warren-Myers (2011) who found some marginal differences in terms of experience and opportunities to value sustainable buildings. Though the difference was not significant, it was proposed that senior valuers are more likely to be asked to value sustainable buildings because of the complex nature of these properties. The interviewees of this study suggested similarly that these properties are more likely to be purchased by institutional investors or pension funds or corporate giants who have ESG requirements. Having ESG requirements means these clients are more likely to ask valuers to consider sustainability features in valuation which again helps them develop their heuristics around sustainability. Moreover, one valuer added, some of the young valuers' motivation and commitment to the profession may not be the same as senior valuers because a young valuer may consider changing his/her profession in future. These factors contribute to build effective sustainability-related heuristics in valuers. During interviews it was also found senior valuers are more likely to consider their social, cultural and professional responsibilities.

Another factor that could put some of the valuers in an advantageous position is the accessibility to training and CPDs on sustainability. A majority of the big firm valuers reported they receive regular internal training of such nature which is not always available for small firm valuers. They also reported on having in-house experts on sustainability whom they can consult if required. Valuing for a big firm could also allow access to more sophisticated clients with ESG requirements which will influence valuers to learn about these factors and consider them in valuation. Additionally, big firm valuers may also be asked to value high value prime properties with sustainability features more frequently. Therefore, working for a big firm can put valuers in an advantageous position which can help them understand sustainability better and build their heuristics.

From the online survey and semi-structured interviews several challenges or barriers that valuers are facing were revealed. These challenges are prohibiting them to fully incorporating sustainability in valuation and further develop their heuristics. These are listed below in figure 6.2.

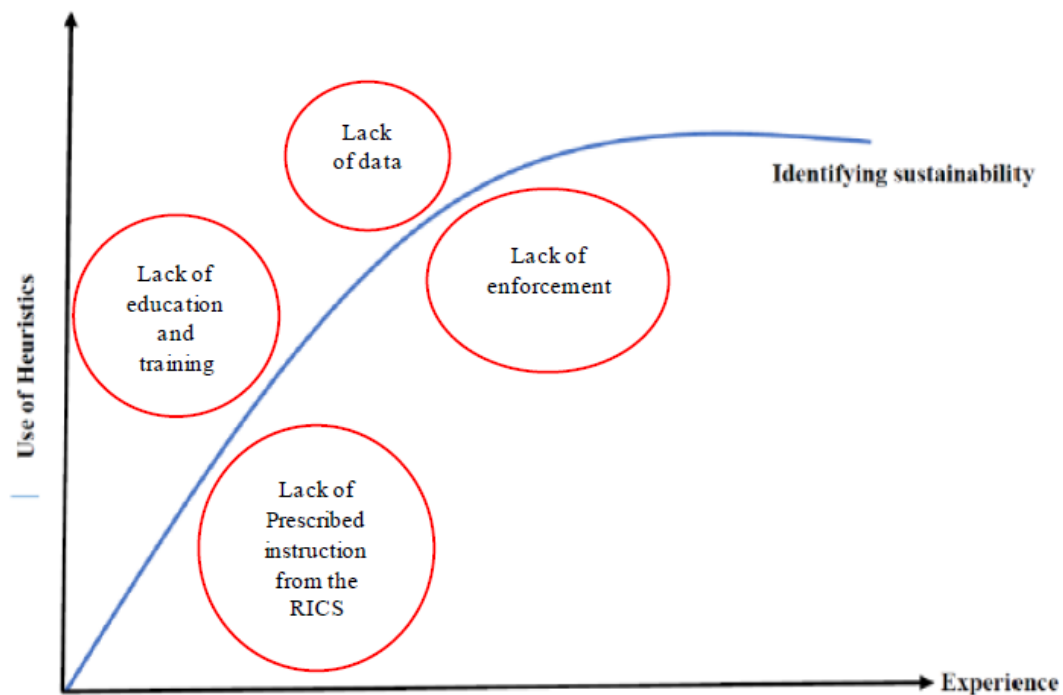


Figure 6.2: Challenges faced by valuers that are potentially hindering heuristics development on sustainability

Source: Made by the author

The lack of education and training on sustainability and the consequent lack of knowledge of sustainability issues among valuers have been a topic of discussion for quite some time in the academic world. Many academic studies including this one has found the evidence of that such as in Australia (Warren-Myers, 2013; 2016), Poland (Kucharska-Stasiak & Olbińska, 2018), the UAE (Lambourne, 2020), Nigeria (Babawale and Oyalowo, 2011) as well as earlier study in the UK (Michl et al., 2016). Additionally, the lack of prescribed instructions from the RICS is creating confusions among valuers and inconsistencies were found in terms of data collection and analysis on sustainability. The RICS also needs to place some sort of enforcement to ensure all of their publications on sustainability are being read and used by valuers as there is evidence that these are not read by all valuers or used by all valuers regularly. Some are not even aware of them. There is also a general lack of data on subject property that are mainly reported on factors such as energy and carbon, health and well-being, waste and water management. However, gathering data on only subject properties are not enough, valuers need to be able to see comparable property data on sustainability as well to understand the value impacts and compare it with subject property. These challenges need to be addressed immediately as currently these are prohibiting valuers from developing effective heuristics on sustainability.

6.6 Chapter summary

This chapter has triangulated the findings from both methods – online survey and semi-structured interviews – and used the literature as supporting evidence to answer the research questions as well as addressing the conceptual models proposed in chapter 3. Additionally, models discussed in chapter 3 were revisited to discuss the implications of each of the factors within these models and how findings from this research have informed them.

The findings from both methods as well as the literature suggest sustainability is considered by the UK valuers mostly implicitly rather than explicitly. Though there are some reported value impacts, the only explicit consideration was found to be where there are requirements for capex. It was also noted that a majority of the value impacts reported are related to market value rather than investment value, as a majority of the valuers are not asked to calculate investment value on a regular basis and thus could not comment on that. Some of the other factors influencing sustainability considerations were purposes of valuation, experience of valuers, firm size, type of asset and local setting.

The usage of RICS standards and guidance has improved since the last study by Michl et al. (2016) and so has data collection on sustainability. However, analysing the data related to sustainability has been disclosed as the main challenge for valuers due to lack of knowledge on sustainability factors.

The perception gap between sustainability pricing reported by the pricing studies and values reported by valuers is also addressed. It was revealed that, although valuers reported on premiums for sustainability credentials for prime properties, they struggle to quantify these and thus consider the premiums implicitly through rent and yield. Additionally, other challenges include time and cost constraint and lack of client demand for sustainability for some properties. Among clients, lenders were identified as the pioneers to change their instructions to include sustainability. Among others, corporate giants, pension funds and institutional investors were also mentioned.

The next and final chapter, conclusion, will summarise this research and discuss the implications and limitations of this research.

Chapter 7 Conclusion

7.1 Introduction

This chapter reviews the purpose of this study, the research questions, selected methodology and interpretations of the key findings. A detailed interpretation of the key findings is presented to highlight the relationship of the concluding remarks to the established body of literature. The chapter ends with an analysis of the contributions of the findings followed by the limitations and recommendations for further research.

7.2 Research summary

The purpose of this thesis is to understand UK commercial property valuers' perception of sustainability and its impact on value. Because of increasing demand for sustainable features in properties, legislative changes, and the increased physical risks presented by climate change, it is widely believed that changes have occurred in the UK market pricing and practices, and prior literature has provided evidence of this (Fuerst, van de Wetering & Wyatt, 2012; Chegut, Eichholtz & Kok, 2013; Fuerst & van de Wetering 2015). Hence, it is predicted that the UK valuers have started to identify these changes in the market and started reflecting them in valuations and appraisals. Additionally, it is also assumed because of stronger legislative forces compared to industry self-regulation, defined through the theory of smart regulation, behaviour of market participants will change. This thesis is an attempt to investigate to what extent these changes are being reflected in valuation practices in the UK.

Chapter 1, introduction, provided an outline of the research to be reported in this thesis. Chapter 2 provided an understanding of the literature that is relevant for this research. The literature review started by first discussing the definitions of sustainable buildings and their attributes. Then it discussed market pricing of sustainability that have been reported in various literature from around the globe. It then moved on to discuss some value implications for sustainable buildings. The main value implications found in literature were increasing demand for sustainable attributes in buildings and legislative or transition risk associated with climate change. Additionally, the physical risk of climate change is also considered as one of the risk factors.

A second strand of literature is then discussed to explain the role of valuation professionals and the RICS standards and guidance related to sustainability. It discussed the background of valuers and how this may impact on their behaviour. Finally, gaps in the literature were identified that helped to develop the research questions for this study. The main gap relevant to this research is, there is

a general lack of research on valuers' perception of sustainability in the UK. Though some research has been undertaken in the Australian market (for example, Le & Warren-Myers, 2018; Warren-Myers 2013; 2016; 2022b), Poland (Kucharska-Stasiak & Olbińska, 2018), the UAE (Lambourne, 2020) and Nigeria (Babawale & Oyalowo, 2011), in the UK commercial property market research on valuers' perception of sustainability is relatively slim. The only empirical research in the UK is the Michl et al. (2016) study which reported on the findings of an online survey conducted by the RICS in 2012. Other than this, no other quantitative or qualitative research could be found in the UK that addresses valuers' perception of sustainability for the commercial property market. This study (Michl et al, 2016), however, predates the current legislation related to climate change as well as RICS standards and guidance. The legislation MEES came into force in April 2018, whereas the RICS has updated their Red Book (RICS, 2017a, 2020a, 2022) several times since then. It has also published several guidance notes on sustainability (RICS, 2013; 2018a; 2018b; 2021c; 2023). Additionally, the demand for sustainability in the built environment has been increasing since then (Jackson & Orr, 2018a, 2018b, JLL 2020). Scientific evidence has been published that proves climate change is real and it can have a devastating impact on all aspects of our lives (IPCC, 2014; 2018a; 2021; 2022; 2023). Therefore, a lot has changed since the 2012 research by the RICS and there is a need now to address how commercial property valuers in the UK are adapting to these changes and reporting them in valuation reports.

Chapter 3, research framework and methodology, started from the research questions that were drawn from the gap in the literature reported at the end of chapter 2. Though valuers calculate many values, for the purpose of this research the focus was on market and investment value only. The Michl et al. (2016) study reported limited impacts of sustainability features on market value and investment value. The first research question focuses on the extent to which valuers see sustainability attributes influencing the spectrum of value drivers for both market value and investment value.

Demand for sustainable properties is reportedly increasing as demand from both investors and occupiers has increased for sustainable credentials (Jackson & Orr, 2018a, 2018b). This demand is driven by the fact that sustainable buildings can provide many additional benefits to their occupiers and investors such as operational cost efficiency (Aroul & Hansz, 2012; Fuerst, 2009; Fuerst & McAllister, 2011a, 2011b, 2011c; Harrison et al., 2011; Pivo & Fisher, 2009), reputational benefits (Eichholtz et al., 2010, 2015; Fuerst, 2009), health benefits (Aroul & Hansz, 2012; UKGBC, 2018, WGBC, 2018) and higher occupancy rate (Wiley et al., 2010; Eichholtz et al., 2010). Additionally, changes in legislation are creating additional risk for properties being let such as the introduction

of MEES (Muldoon-Smith & Greenhalgh, 2019; Booker, 2019; Sayce & Hossain, 2020). Moreover, valuers are encouraged by the RICS to collect data and report on sustainability (RICS, 2013, 2017a, 2020a, 2022). Additionally, climate change poses physical risk of increasing natural disasters that can physically harm properties (Clayton et al., 2021). Yet, it is not known or reported to what extent valuers are adapting to these changes or reporting them in valuation. This research is an attempt to address this gap. Therefore, the second research question focused on the way valuers are adapting to the changing requirements of the commercial property market in the UK as a result of increasing demand, legislative changes and regulatory pressure. It also addressed the perception gap between values being reported by valuers and premiums being reported by pricing studies.

Finally, the third research question is an attempt to investigate if there are other factors impacting on sustainability considerations such as purposes of valuation, client influence or demand, valuers' experience and size of organisation.

Chapter 3 then discussed two conceptual frameworks that were derived from the literature review to explain the:

1. Combined impact of demand drive, legislative risk and physical risk of climate change on market pricing and the way it could impact on valuation reporting. Additionally, professional requirements from the RICS can also impact on valuation reporting. This model is discussed with the implication of the theory of smart regulation.
2. Relationship between valuers' experience and use of heuristics and how it could impact on identifying sustainability for property valuation.

Chapter 3 then discussed the mixed methodology design for this research. It discussed two methods, online survey and semi-structured interviews, and the rationale for using these methods. The chapter also set out how participants for these exercises were identified and selected. The first phase data collection was conducted in July–September 2019 as a form of online survey where a total of 53 responses were received. After carefully analysing the first phase data, the second phase was conducted as a form of semi-structured interviews where a total of 32 participants were interviewed (21 valuers, 11 commissioning clients). The interviews were first initiated during December 2019. After conducting nine interviews (all valuers) the researcher had to stop collecting data because of the COVID-19 pandemic and the resulting lockdown. Interviews were resumed in September 2020.

Chapter 4 reports on the findings from the online survey. The major findings included the issues of data collection on sustainability and usage of RICS standards and guidance, both of which appear to have improved since the Michl et al. (2016) study. Valuers also indicated sustainability attributes are more important for owner-occupiers than for lenders and investors. The possible reason could be that owner-occupiers can directly enjoy a lot of the benefits of sustainability such as cost efficiency, health and well-being factors (Aroul & Hansz, 2012). It was found that more experienced valuers are more likely to collect data on BREEAM as well as valuers belonging to bigger organisations. The possible reason could be that experienced valuers and bigger valuation firms are asked more often to value a property with such certification. This finding is similar to the findings of Warren-Myers (2011) where experienced valuers were found marginally more likely to value sustainable buildings. Value impacts of sustainability attributes on market and investment values, on the other hand, were reportedly limited to certification such as EPC and BREEAM. Other sustainability attributes such as health and well-being, waste and water management have reportedly limited value impacts as indicated by the valuers. This indicates that though data collection has improved, not much has changed since the Michl et al. (2016) study in terms of value impacts of sustainability. The qualitative part of the online survey shed light on some challenges valuers are currently facing. According to the valuers who left comments during the online survey, sustainability is only relevant for higher value assets which are being occupied or bought by corporates or larger funds because of the demand increase of sustainable properties among these investors and occupiers. For the rest of the built stock, sustainability does not feature in valuation to a great extent other than finding about EPC and flood risk. This proved the behavioural change expected from market participants due to the physical and transition risk of climate change, are only visible among big investors and lenders but not small investors. A few valuers also noted the difficulties to assess sustainability in properties and the lack of a realistic benchmark. These difficulties were later echoed during the interviews and similar findings were reported by Warren-Myers (2013; 2016) where valuers reported on their inability to analyse sustainability factors. Similarly, lack of knowledge on sustainability factors was found to be a barrier in the UAE (Lambourne, 2020), Nigeria (Babawale and Oyalowo, 2011) and Poland (Kucharska-Stasiak & Olbińska, 2018).

A second phase of data collection was then conducted in the form of semi-structured interviews. The results from these interviews were presented in Chapter 5. The idea was that qualitative data from the interviews would allow the researcher to have deeper understanding of the research questions. Additionally, it will help triangulate the results. It was established that data collection

on sustainability has improved compared to the 2012 study (Michl et al., 2016). Valuers now collect a lot more data on sustainability than what was reported by Michl et al. (2016) (see Appendix 5.1). Regularly collected data include EPC, flood and any contamination. Additionally, several valuers mentioned energy sources, quality of external environment, adaptability, health and well-being factors; a few valuers working for bigger valuation firms also mentioned waste and water management. However, none of the valuers reported collecting data on carbon emissions, though commissioning clients reported having this data. Furthermore, commissioning clients reported on their interest to reduce operating cost, increase renewable energy sources and reduce carbon emissions. These factors were not mentioned by valuers; however, these are important factors to be considered to reduce carbon emissions and tackle climate change. To reach the UK government's zero carbon target by 2050, these factors can play a vital role. Consequently, the RICS (2021c) has recently asked valuers to have regard for these factors in their latest information paper on sustainability, which will possibly change valuers' behaviour in future.

Some explicit value impacts were reported for EPC non-compliance where the cost of EPC upgrade will be deducted from the final value. However, there are inconsistencies found where some valuers reported they will show no value impacts even if EPC is non-compliant. This inconsistency was also reported by Sayce and Hossain (2020) for their MEES study. Additionally, other value impacts were reported which are mainly reflected through looking at the comparable properties' rental value and yield. For flooding, valuers reported checking for insurance, however if insurance can be secured no more value impacts are considered. Some premiums were mentioned by several valuers for BREEAM properties, yet these valuers also added it is hard to quantify these premiums and therefore valuers consider them implicitly through rents and yields. Similar findings were reported by Le and Warren-Myers (2018) where valuers expressed it was difficult for them to quantify the benefits of sustainability. Several problems related to data on sustainability were also reported. For example, data for flooding that is being used currently is backward-looking and considers historical occurrence of floods in the UK rather than the risk of climate change. Moreover, data on sustainability factors for comparable properties are not usually available according to valuers. There are also challenges related to time and cost which prohibit valuers to actively search for data. Valuation reports are to be submitted within a small-time window, which does not allow valuers to keep searching for data; they have to work with what they can gather within the limited time. Also, for many of the sustainability attributes, valuers require third-party assessments as they are not experts on these factors (for example, environmental assessments) which incur additional cost. If commissioning clients do not want to pay for these additional services, valuers have no choice but to work without these additional data.

Several valuers during the survey as well as the interviews expressed their inability to analyse the data related to sustainability. It is also mentioned by several commissioning clients who reported that the section on sustainability in valuation reports is generally very small and does not include many details or analysis. This raises two questions: whether the training and education valuers are receiving on sustainability is enough and if valuers are actively participating in developing their knowledge to deal with the changing requirements of the market. The lack of training and education of valuers on sustainability have also been evidenced and discussed in prior academic studies as mentioned above.

Similar to the results of the online survey, experienced valuers reported on collecting more data on sustainability and their awareness on sustainability and climate change appeared better than valuers with less than 10 years of experience. This is consistent with the findings of Warren-Myers (2011). For younger valuers, sustainability is merely a certification such as EPC or BREEAM. Therefore, there is a need for increasing awareness among valuers regarding sustainability and how it could be reflected in valuation. Though the RICS has published several guidance notes and information papers to help valuers address sustainability, it was found that not all valuers use or read them regularly. Hence, there is also a lack of engagement between valuers and the RICS.

Chapter 6, discussion, triangulated the results from both methods and reported on how these two methods have facilitated in answering the research questions. To address the first research question, the impact of sustainability attributes on market value is still limited to some explicit consideration for EPC non-compliance. The rest of the impacts are mostly implicit. Valuers implicitly consider sustainability by looking at comparable property rent and yield. Additionally, the impact on investment value did not come out very clearly, as it was revealed during the online survey and the interviews that a majority of the valuers are never asked to do an investment valuation. This could be a limitation of this research where the sample that was selected did not have much experience in investment value. The few valuers who undertake investment valuation expressed that when using traditional methodology of valuation, it can be challenging to reflect sustainability factors, whereas using discounted cash flow method there are more opportunities to reflect sustainability. It could be done by addressing the cost of retrofitting by calculating the end value after retrofit is complete, through the internal rate of return or through increasing future rental incomes. A sample with valuers who have experience in investment valuation could shed light on if and how these are being done by valuers.

To address the second research question, it was reported by some valuers that premiums and discounts are present for respectively superior rating or because of the absence of it. However, valuers also reported the hardship to quantify these premiums and discounts. Legislative changes such as MEES have changed the due diligence process of valuers quite significantly. Valuers regularly check for EPC ratings for all properties because of MEES. However, more changes are expected as MEES is still not fully enacted. From 2023, existing leases will be affected; from 2027 the minimum standard could be an EPC C and from 2030 it could be B. These changes will have wider impacts on due diligence practices in due course.

On the other hand, though the RICS is providing standards and guidance in relation to sustainability, the impact of these is still not very strong as a majority of these are at an advisory level and not all of these are regularly used or read by all valuers participating in this research. There is also a disconnect between the RICS and small firm valuers as well as independent valuers who do not feel represented by the organisation and described it as “*outdated*” and “*ineffective*”.

The third research question addressed the impact of any other factors that may impact on valuers’ sustainability considerations. Notable factors found were purposes of valuation, clients’ demand, valuers’ experience, size of the valuation firm a valuer works for, local setting and type of asset. According to valuers, sustainability is considered more for secured lending purposes and acquisition of assets. This is partly because of the demand from commissioning clients. Lenders are increasingly interested to understand the risk factors associated with the subject property during the term of the loan, hence they ask valuers to check for flood risk, contamination, certification and environmental assessment. Similarly, pension funds and institutional investors want to be seen as socially responsible and hence ask valuers to consider sustainability. As discussed above, experienced valuers were found to be more aware of sustainability, thus reported collecting more data. Moreover, big firm valuers enjoy in-house experts on sustainability as well as in-house training and CPDs on sustainability. Some of them also reported on adopting the sustainability checklist by the RICS (2013) unlike small firm valuers or valuers who are working as an independent. Valuers’ local setting can also have an impact on sustainability as big cities such as London have more focus on it rather than provincial towns and cities. In terms of the type of asset, prime assets (mainly offices) were mentioned by multiple valuers where sustainability considerations are more apparent than secondary or tertiary properties.

Additionally, two conceptual frameworks discussed in chapter 3 were revisited here where it was found that legislative changes are making the strongest impact on market participants’ behaviour.

Some increase in demand was reported by valuers, yet it is limited to corporate, institutional investors or pension funds. Physical risk of climate change, on the other hand, does not feature much in valuation other than reporting on the flood risk. There are reported lack of data on climate change risk factors that includes flood.

7.3 Contribution and implications

This research was carried out to understand UK commercial property valuers' perception of sustainability. The results of this research constitute an original and unique knowledge of the UK commercial property valuers' perception of sustainability inclusion for commercial property valuation. Up until now, research to understand valuers' perception of sustainability has been limited in the UK. As discussed above, the last research conducted by the RICS using an online survey was undertaken in 2012. Since then, legislation and regulatory advices have changed along with demand. Moreover, the impacts of climate change are more apparent now with current research (IPCC, 2014, 2018a, 2021, 2022; International climate change risk analysts XDI, 2021). This research is an attempt to investigate the impacts of changes in demand, legislation and professional standards and guidance on valuation practices for the inclusion of sustainability. This section comprises of two subsections: 7.3.1 discusses the significance of the contribution of this thesis to existing knowledge, whereas section 7.3.2 discusses some practical implications of this research.

7.3.1 Significant contribution to the existing knowledge

The research contributes to the growing literature of sustainability in general as well as in the UK. This research contributes towards the lack of research on valuers' perception of sustainability in the UK market using empirical data from two methods: online survey and semi-structured interviews. The thesis contributes to the literature in the following ways:

- i. Identifying relationship between market drivers and sustainability and the impact on valuation practices.**

The research provides an understanding of commercial property valuers' due diligence practices for the inclusion of sustainability in valuation methodology. The theory of smart regulation has been administered to explain the relationships between various drivers and how the use of mandatory and voluntary certifications can make an impact on behaviours of market participants. It is believed to be the first real estate study that have used the theory of smart regulation from a valuation perspective. Therefore, this research not only contributes towards a more recent reflection

of valuers' perception of sustainability in the UK, but it also contributes towards moving the discussion forward through the use of a new theoretical framework.

It also contributes towards establishing the relationships between several drivers for market pricing and sustainability and how that could impact on property valuation. These drivers include increasing demand for sustainability attributes in property, legislative changes as well as increasing risk from climate change. Additionally, the impact of changes in RICS standards and guidance are also discussed. Establishing these relationships is important as it shows how the market has moved since the last study (Michl et al., 2016) and how it is contributing to market pricing. If there is evidence of market pricing that valuers can identify, they can later use it as evidence for valuation reporting.

The thesis discusses the extent to which each of these drivers is impacting on the behaviours of commissioning clients of valuers such as lenders, investors and owner-occupiers as well as how it is changing the behaviour of commercial property valuers and their due diligence process to adapt to these changes. Legislative changes were found to have the strongest effects in terms of changing due diligence for valuers. The increase in demand from the commissioning clients such as lenders and investors to consider legislative changes by valuers has also contributed to this change in due diligence. Lenders as well as institutional investors, pension funds and corporates are interested to understand the risk factors associated with MEES and how they may impact on property value now and in the future. Because of their interest to understand MEES and its impact as well as the legislative pressure, valuers have included EPC check within their due diligence. However, awareness of future legislative changes among valuers can be questionable. Value impacts of future changes to MEES are not currently considered because of lack of awareness on MEES trajectory among valuers as well as commissioning clients. The government estimation is that the minimum EPC of B by 2030 will cover 85% of rented commercial properties which is approximately 1,000,000 buildings across England and Wales (Simmons & Simmons, 2021). More than 65% of the buildings in the UK are reported to have an EPC rating of D or less (BPIE, 2017), therefore, setting the bar to a B will have wider financial and social impacts that need addressing by valuers. However, it is appreciated that during the data collection phase, the MEES trajectory was still not finalised by the UK government. Similarly, as the theory of smart regulation showed, there are impacts of industry self-regulation through voluntary certification, BREEAM. Investors, owner-occupiers and lenders all mentioned it is important for them to understand if a property is BREEAM rated and for some investors and owner-occupiers there are targets to reach a BREEAM rating.

Similarly, valuers valuing for institutional clients or big corporates or lenders seek to check if subject property is BREEAM rated, some reported on premiums too.

Among commissioning clients, lenders were found to have made most changes in their instructions for secured lending valuations and they have been identified by valuers to drive these changes in the due diligence process. Lenders' interest to understand the risks associated with climate change and sustainability has led them to ask valuers to include sustainability factors in valuation. Increase in demand for sustainable properties is also making a shift in the due diligence process. The demand can be categorised into investors' demand and occupiers' demand. Investors, especially institutional investors, pension funds as well as corporate giants have been mentioned by valuers who are driving these changes to include sustainability within valuation reporting. This segment of clients has started to identify the benefits of having sustainable attributes in their properties, hence it has started to be reflected in transactional prices. Valuers thus reported on premiums on BREEAM properties, though this is currently not being considered explicitly. Occupiers' demand has shifted too as several valuers reported that if a property is not up to the market standard such as if it does not have LED lighting, it is likely to have a discounted rent. Additionally, though the climate change risk could be quite significant for the property market of UK, it does not feature in valuation to a great extent other than looking into the flood risk of the property and if insurance can be secured. Including climate change risk in property valuation is currently problematic due to lack of forward-looking data. The data currently used to assess flood or environmental risk is backward-looking and does not account for increase in global temperature. Thus, there is a need in the market to create such data that can factor in climate change risks accurately; without that, investors, lenders and occupiers will not be able to understand the future risks associated with their property. And valuers will be unable to incorporate the risk into valuation.

The RICS standards and regulations, though followed by valuers, do not seem to be making any significant changes to due diligence for several reasons. A majority of the valuers admitted during the interviews that they do not use or read these guidelines or standards regularly. Valuers from small organisations have been facing a disconnect with the RICS and do not feel represented by the organisation. Therefore, there is a lack of engagement with the RICS. The organisation needs to be more active to engage small firm valuers as well as independent valuers. It also needs to ensure that the guidance and standards are used and read by all valuers and that valuers follow them to keep exercising best practice. The auditors auditing valuers can help with that. Additionally, valuers are advised to continuously update themselves, however their knowledge and awareness on sustainability appeared varied. The RICS needs to ensure that valuers are updating themselves on

sustainability factors. It can mandate some training and CPDs on sustainability. Currently the education and training that the valuers are receiving is not allowing them to fully incorporate sustainability as a high number of valuers have expressed their inability to be able to quantify and analyse the data they collect on sustainability.

ii. Valuers' behaviour and heuristics and its relationship to experience

This thesis is an attempt to understand to what extent commercial property valuers' experience plays a role in sustainability considerations for property valuation. It was assumed that experienced valuers will have better understanding of sustainability and will be able to identify the relationship between sustainability and value. The development and use of heuristics is dependent upon valuers' experience. Results from the online survey as well as interviews suggest experienced valuers are generally more aware and knowledgeable on sustainability factors which proves the above assumption. In terms of data collection too, experienced valuers reported on collecting more data on sustainability. Additionally, it is expected that experienced valuers are more likely to value higher-value assets, which exposes them to better quality properties with sustainability credentials such as BREEAM, which in turn helps them to develop their heuristics further. They also reported undertaking valuations for a wider variety of purposes, which could contribute further to develop their heuristics. However, several challenges were reported by valuers such as lack of education and training on sustainability, lack of data on sustainability for subject and comparable property, lack of prescribed instruction from the RICS and lack of enforcement which are possibly hindering the process of valuers' heuristics development on sustainability issues.

iii. Using of mixed methodology

This is the first attempt to use a mixed methodology by combining a quantitative method, online survey, and a qualitative method, semi-structured interviews to understand the UK valuers' perception of sustainability. Previous research has used only online survey (such as Michl et al., 2016)) or semi-structured interviews (such as Le and Warren-Myers, 2018). However, combining the methods has allowed the researcher to triangulate and expand the results. Moreover, this research has also attempted to understand the commissioning clients' side of the story by interviewing them and comparing their views on how sustainability is perceived by professional valuers with the views of valuers themselves. It was identified valuers are not always able to analyse sustainability related data or even collect data, which were identified as barriers. By identifying these barriers this research will help solve them. A potential way to solve these barriers is by bringing in clients, professional bodies and academics together.

7.3.2 Practical implications

This research is an attempt to understand UK valuation professionals' perception of sustainability and to what extent they are collecting data on sustainability, analysing and reporting it. As such, it will be useful for valuation professionals as well as commissioning clients, relevant professional bodies and policy makers.

7.3.2.1 Implications for valuation professionals

The research will help valuation professionals to understand the barriers faced by other valuers as well as to learn about the good practices undertaken by some valuers. It reveals significant findings in terms of sustainability considerations in valuation practices. It identifies barriers and challenges faced by valuers. Such barriers include reliance on third parties for sustainability data and the cost associated with it, lack of data on comparable properties, time limitation and lack of education and training on sustainability. It is explained that though valuers are collecting some data on sustainability because of the changes in legislation, pressure from commissioning clients as well as instructions from the RICS, the main challenge includes analysing these data and reporting value impacts. The challenge valuers face to analyse and interpret sustainability data is due to their lack of understanding and awareness of sustainability issues. Valuers mainly rely on third-party data for sustainability factors; however, a majority mentioned they do not know how to interpret these data. There needs to be additional training for valuers to create such awareness to overcome this challenge. The current education that the valuers are receiving on sustainability needs careful consideration and updates. Though experienced valuers did not receive such education, they were found to be more aware of sustainability issues. They understand the link of sustainability to carbon reduction and climate change. Experienced valuers tried to offer solutions in some cases, for example, where EPC upgrade cost is unavailable, rather than showing no value impacts whatsoever, one valuer mentioned estimating the cost from experience to provide the clients with some idea of the cost. These valuers who have 20+ years of experience working in various markets around the UK could be consulted by the RICS to produce guidance notes and information papers for valuers that could offer solutions to the above-mentioned barriers. Additionally, as sustainability is an accumulation of a lot of concepts such as energy, carbon, waste, water, health and well-being, the RICS can design joint research teams with valuers as well as experts from other fields to develop contents for valuers.

There is also a lack of a central storage system for data, thus valuers cannot find comparable data on sustainability, which is prohibiting them from comparing and analysing the subject property's data with comparables. Databases that are currently being used by valuers such as CoStar do not

include sustainability data on comparable properties. This practice needs to change to overcome this challenge.

7.3.2.2 Implications for investor, owner-occupiers and lenders

The research reports on findings from the commissioning clients, investors, owner-occupiers and lenders and their take on sustainability and ESG considerations. It reports on changes in behaviours of these commissioning clients of valuers because of which the due diligence practices for valuation are being changed over time. The findings will be useful for these commissioning clients to understand the changes that are occurring in the market for the inclusion of sustainability and climate change. Commissioning clients reported on behavioural changes related to finding cost efficient measures for energy, finding renewable sources as well as reducing carbon emissions. However, valuers did not appear to be collecting data on these or to reflect these factors in valuation reporting. This research will inform valuers of the changing needs of commissioning clients. Valuers can then use it to be aware of such issues and start reflecting it in valuation. Commissioning clients also talked about their increasing interest to understand how MEES might be impacting on property value and that the impact of it is currently considered by valuers as a tick-box exercise rather than an analysis of how value is affected. To help commissioning clients understand the future value implications of MEES, valuers themselves need to understand the MEES trajectory as well as the EPC rating. This research can provide that information and help valuers serve their commissioning clients with better analysis. It also reports on the reasons for which valuers are sometimes not being able to fully reflect sustainability in valuation. Sharing these reasons with commissioning clients might be useful to solve some of it such as lack of data. For example, clients can make sure building management data such as energy sources, energy usage or carbon emission data be provided to valuers when valuing their properties. Over time valuers will be able to analyse these data and start reflecting value impacts.

7.3.2.3 Implications for professional bodies and policy makers

The research reports on the impact of changes in policy and legislation such as MEES. It reports on the effectiveness of MEES in creating an awareness as well as some problems related to the use of EPC. The first question raised regarding MEES is the effectiveness of the EPC rating. EPC does not measure carbon emissions; therefore, it raises the concern of whether it will be able to reduce carbon emissions and tackle climate change. Similar concerns were raised by practitioners during the Sayce and Hossain (2018) study and some participants proposed the use of NABERS and DEC instead of EPC. This issue needs to be addressed by policy makers to ensure that the ultimate target to reduce carbon emissions can be met using EPC as an energy efficiency measure.

Valuers mentioned lack of cost data on EPC upgrades which is prohibiting them to fully reflect the value implications. These cost data need to be made available to valuers as well as commissioning clients so that the market understands the implications of the cost on value. It will also help small investors and occupiers to start getting ready for the future tightening of MEES.

Related to MEES another issue is the lack of clarity, certainty and consistency on the trajectory from the UK government (CBRE, 2023). The availability of a proper plan around MEES can help the industry plan ahead and get ready to fund the additional CAPEX that will be required to improve building quality. Additionally, a clear trajectory on MEES may also improve valuers' awareness on mandatory legislative certification as was found in Australia (Warren-Myers, 2022b).

7.4 Limitations of research

Despite careful planning and effort to provide a constructive understanding of UK valuers' perception of sustainability, the research is not without its limitations. The research focuses on valuers' perception of sustainability in the UK commercial market; thus, it does not report on the residential market. The researcher focused on office and retail properties, therefore other commercial properties such as hotels, pubs are underrepresented in this research.

Another notable limitation is the small sample size of the online survey. A total of 53 responses were received. Though the researcher could have kept the survey online longer for a bigger sample size, it was critical to complete this stage within a reasonable time so that analysis could be done, and the further stage of data collection could be undertaken. Additionally, the survey was conducted during the pre-pandemic period. During the pandemic, the work from home setup became quite popular and many corporates are still following it or offering hybrid working methods. This could impact on the demand for offices, which was not captured through the survey. The awareness around sustainability and well-being may have shifted too due to the pandemic, which was also not captured during the first phase.

Additionally, another notable limitation is the smaller sample size of the commissioning client sample during the second phase data collection, the semi-structured interviews. Only three investors, four owner-occupiers and four lenders were interviewed, which made it difficult to disaggregate between client types. It also made it difficult to draw firm conclusions about one client type. The focus of this research was to understand valuers' work and practices; therefore, a bigger sample was chosen for valuers. On the other hand, all the investors and owner-occupiers within this sample can be described as big investors or owner-occupiers. No small investors or owner-occupiers were interviewed, which made it challenging to confirm some findings about secondary and tertiary properties that were mentioned by valuers. Despite attempts, the researcher could not find any small investor or owner-occupier to include for this research. The lack of willingness of small investors and owner-occupiers to be included in this research on sustainability suggests their lack of interest in the topic. Moreover, occupiers who are renting from investors were not included in this research. Therefore, this research cannot help to understand the importance of sustainability from their perspective and whether it would affect their rental levels for the presence or absence of sustainability. On the other hand, there is a chance that the interviewees who agreed to be interviewed were interested in sustainability and they agreed to be interviewed because of their bias on this topic. This potential bias could have skewed the results of this research.

7.5 Suggestions for further research

Given the limitations of the research, recommendations for future research are now considered. This research has produced useful findings on valuers' perception of sustainability. Additionally, it also provided insights into some barriers and challenges faced by valuation professionals. It is hence recommended that the following future research be considered.

The first recommendation for further research is to undertake this research using a bigger sample size to eliminate any possible bias of the participants; in particular, a bigger sample for commissioning clients should be included. Occupiers renting properties can also be considered. Future researchers should also consider interactive sessions in between participants to work on the barriers and challenges identified in this research. For example, focus group discussions or Delphi technique could be used to have some interaction in between valuers and clients that could possibly be helpful to overcome some of the barriers.

Second, it is recommended that future research includes a content analysis of valuation reports to better understand how valuers are analysing the data on sustainability and reporting it in valuation reports. It is suggested that future researchers consider collecting valuation reports for commercial properties to undertake a content analysis to determine the extent of valuers' analysis of sustainability data and report it.

The third recommendation is to look closely at the findings of this research, specifically the barriers faced by valuers to develop contents that could help them move forward. For this research, a collaboration with the RICS is suggested. Additionally, participants within this research have identified the lack of education and training of valuers on sustainability issues. This barrier was found in prior research too (see for example, Warren-Myers, 2011; 2012; 2013; Le & Warren-Myer, 2018; Warren-Myers, 2022a; Babawale & Oyalowo, 2011; Kucharska-Stasiak & Olbińska, 2018). Thus, it is recommended that research on valuers' education and training should be undertaken to investigate the extent to which valuers are being taught on increasing demand of sustainability, future legislative changes as well as the impacts of climate change and finally how to incorporate these factors into valuation methodology. There are plenty of academic and professional research that is present on these topics, however, valuers' awareness on them was found to be limited. Thus, professional bodies such as the RICS needs to ensure that valuers are keeping themselves updated and aware of such research. Other than professional bodies, valuers are being educated at universities and through private educators. These educational institutions also have a responsibility to ensure that valuers are being taught on sustainability and climate change

issues that are updated and addresses current issues. Moreover, the RICS is keeping advice on sustainability as advisory rather than mandatory, however, it was found from this research that valuers do not always read the publications by the RICS let alone use them. Hence, there is a need for better enforcement from the RICS to ensure valuers are reading and using these materials. The enforcement should also ensure some sort of regular mandatory training modules or CPDs on sustainability that could ensure that valuers are regularly updating their knowledge on the most important issues. To ensure enforcement the RICS could also update the sustainability checklist for data collection and ask valuers to incorporate it within their pro-forma. The overall instruction from the RICS on sustainability is currently not prescriptive which is creating further confusions, this problem needs to be addressed for consistent reporting and analysis.

The other significant barrier that was mentioned by many participants is the lack of data on sustainability for both the subject property as well as comparable property. This issue needs to be resolved by the professional bodies. Without data on sustainability valuers are unable to analyse the impacts on value. Additionally, there is a lack of data on climate change and global warming and how that may impact on property value through flood or other natural disasters. Thus, valuers are unable to forecast the physical risk of climate change. The RICS needs to make sure that these data are made available to valuers. Some of the data related issues might be solved by incorporating building passport (Hartenberger, Ostermeyer & Lutzkendorf, 2022) widely by making it popular, however, other issues related to data such as lack of data on climate change, cost of EPC upgrade and data on comparable properties need to be addressed separately.

The fourth recommendation is to extend this research in other markets. Australia and UK have now been studied, this could be repeated in North America or continental Europe or Asia.

The final recommendation is for policy makers and the UK government to ensure MEES is being used effectively to gradually decrease carbon emissions from the UK property market. Lack of regulation can be a barrier (Kucharska-Stasiak & Olbińska, 2018) and the UK government has been criticised on a number of issues related to MEES. First of all, MEES is using EPC as a rating tool which is not incorporating carbon emission or actual energy usage. These issues need to be addressed within the EPC as is recommended by the RICS (2022). MEES has also been criticised for not using enforcement and penalties which can make it less effective (Sayce and Hossain, 2020). The government needs to be using enforcements and penalties to take the full advantage of the smart regulation and the enforcement pyramids. Without doing so, the net zero target may not be achievable by 2050.

7.6 Concluding remarks

This research was undertaken to address commercial property valuers' perception of sustainability. It was revealed that though data collection on sustainability has improved since the last study (Michl et al., 2016), the main challenge for valuers is to be able to analyse these data and report value impacts. Value impacts of sustainability are still limited to the presence or absence of certification such as BREEAM and EPC. Other sustainability attributes are not making direct contribution to value; however, they are implicitly considered. Legislative changes such as MEES have created awareness and are changing the behaviours of market participants such as investors, lenders and owner-occupiers. They have also changed the due diligence of valuers as EPCs are now always checked and reported. However, valuers are still struggling to understand EPC and/or BREEAM and yet to report on the impacts on value for various levels of rating. Further research is required to help valuers overcome these challenges without which underestimation or overestimation of valuation could become a possibility, which would have wider financial and social implications.

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Appendix 1: Online survey questionnaire

Valuers' perception of sustainability

This survey is part of a PhD programme being conducted at the University of Reading, UK by Syeda Marjia Hossain (PhD student, Department of Real Estate and Planning) under the supervision of Dr Jorn van de Wetering and Professor Sarah Sayce. The content has been approved by the RICS. The study aims to establish the extent to which building sustainability characteristics of commercial property (retail and offices) are currently reflected within valuation practice in the UK. This study is, in part, a follow-up to one undertaken by the RICS in 2012 which revealed little impact on market values and very limited reporting of sustainability matters. Details of the previous study were reported in Michl, P., Lorenz, D., Lützkendorf, T. and Sayce, S., 2016. Reflecting sustainability in property valuation – a progress report. *Journal of Property Investment & Finance*, 34(6), pp.552-577. The questionnaire should take about 15 minutes to complete. There are a total 23 questions; however most only require 'tick box' responses. All results will be aggregated and full anonymity is assured. The study has been subject to an internal ethical review. Please see the University's [Research Privacy Notice](#). Your responses will be anonymous and the data stored in accordance with the University's Research Data Management Policy. Completing the survey will be taken as evidence that participants have consented to take part in this study.

1. Do you undertake valuations for commercial properties (offices and/or retail) under the RICS Valuation - Global Standards (2017)?

- Yes (1)
- No (2)

If you answered no to this question, please go no further. Thank you for your time.

2. For which purposes do you undertake valuations? *(Please tick all that apply)*

- Market Transaction (1)
- Secured Lending (2)
- Investment Advice (3)
- Company Accounts (4)
- Others, please specify (5) _____

3. What is your professional qualification?

- MRICS (1)
- FRICS (2)
- Others, please specify (3) _____

4. What is your highest academic qualification?

- A-levels (1)
- Bachelor degree (2)
- Masters degree (3)
- Doctorate (4)
- Other, please specify (5) _____

5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly.

- In-house training (1)
- Professional conferences (2)
- Academic courses (3)
- Professional journals (4)
- Academic Journals (5)
- Online training (7)
- Others, please specify (6) _____

6. Have you undertaken any specific CPD on sustainability and valuation?

- Yes (1)
- No (2)

7. Have you completed the RICS training module 'RenoValue'?

- Yes (1)
- No (2)

8. In which age group are you?

- Under 30 (1)
- 30-50 (2)
- Above 50 (3)

9. For how long have you been practicing as a commercial valuer?

- Less than 5 years (1)
- 5-10 years (2)
- 11-20 years (3)
- More than 20 years (4)

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence?

	Do not know about it (1)	Never (2)	Seldom (3)	Frequently (4)
Sustainability and Commercial Property Valuation, (RICS, 2013) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
References to sustainability in the RICS Valuation – Global Standards (2017) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Risks and Global Real Estate: an RICS Guidance Note (2018) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RICS Insight paper: MEES: Impact on UK Property Management and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. The RICS (sustainability checklist, 2013) advises valuers to **collect** data regarding sustainability where applicable or available. We wish to know how often you seek to **collect** the following types of data.

	Click to write Column 1			
	Never (1)	Seldom (2)	Not normally (3)	Routinely (4)
Certification EPC (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
BREEAM (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LEED (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WELL (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy and Carbon Energy consumption data (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carbon emissions data (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy source used (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Renewables for heating and cooling (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste Management Waste management facilities (e.g. sorting, compaction etc.) (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste management data (e.g. records, materials to landfill etc.) (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water Management Water conservation installation (e.g. sprinkler taps, leakage detection etc.) (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grey water system (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water consumption data (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of External Environment Proximity to open and green spaces (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Any pollution in areas contiguous to the property environment (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proximity of public transport (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Health and Well-being

Occupiers' satisfaction data (18)

Internal environment (e.g. indoor air quality data; levels of natural light) (19)

Adaptability and Resilience to Climate Change

Flexibility of internal layout (20)

Building component design for reuse (e.g. readily

demountable/reusable partitions) (21)

Site flood risk (22)

Resilience to extreme weather (e.g. roof design, good

heating/cooling) (23)

Use of

renewable/recyclable construction materials (24)

12. Do you **collect** any other data related to sustainability not listed above? Please list below:

13. Do you routinely **report** on the sustainability data you **collect** as indicated in question 11?

- Yes (5)
- No (6)

If you have answered no to question 13, please explain why?

14. How important do you consider the following issues are to commercial real estate **investors**? (1 being of no importance to 5 being very important)

	Investors				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Certification (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy and carbon (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste management (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water management (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of external environment (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health and well-being (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability and resilience to climate change (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. How important do you consider the following issues are to commercial real estate **lenders**? (1 being of no importance to 5 being very important)

	Lenders				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Certification (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy and carbon (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste management (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water management (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of external environment (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health and well-being (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability and resilience to climate change (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. How important do you consider the following issues are to commercial real estate **owner occupiers**? (1 being of no importance to 5 being very important)

	Owner occupiers				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Certification (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy and carbon (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste management (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water management (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of external environment (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health and well-being (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability and resilience to climate change (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. We have asked (questions 11 to 13) whether sustainability data are **collected** and **reported** by you as a valuer. Here we wish to establish whether and how you build in such data when calculating investment value (also known as worth).

	Investment Value					
	Adjustment of rental evidence (1)	Estimate of rental growth (2)	Discount rate (3)	Rate of obsolescence (4)	Exit yield (5)	None (6)
Certification (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy and carbon (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste management (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water management (4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of external environment (5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health and well-being (6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adaptability and resilience to climate change (7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Do you build in the following factors which calculating market value and if so how?

	Adjustment of rental evidence (1)	likelihood of voids (2)	capitalisation rate (3)	None (4)
Certification (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy and carbon (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste management (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water management (4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of external environment (5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health and well- being (6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adaptability and resilience to climate change (7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. In which region(s) do you practice? *(Please tick all that apply)*

- London (1)
- South East (2)
- South West (3)
- North East (4)
- North West (5)
- Midlands (6)
- East
- Scotland (7)
- Wales (8)
- National (9)

20. For what type of organisation do you work?

- Self employed (1)
- Public sector (2)
- Corporate (3)
- Charity (4)
- Consultancy (5)
- Other please specify (6) _____

21. In approximate terms, how many valuers work within your department?

- 0-5 (1)
- 6-20 (2)
- 21-100 (3)
- More than 100 (4)

22. In approximate terms, how many valuers work within your organisation?

- 0-5 (1)
- 6-20 (2)
- 21-100 (3)
- More than 100 (4)

23. Please provide any comments related to the content of the questionnaire that you would like to share with the researcher.

Thank you for participating in this survey. If you have any queries or anything further to add please do not hesitate to contact us. The survey will be followed up with some interviews, if you would like to participate in these, please tick the following box and leave your email address:

- Yes _____

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Appendix 2: Semi-structured interview questionnaire

Interview questions for Valuers

Basic information:

1. Please provide a brief description of your current role, nature of your client base and the type of properties that you value.
2. For what purposes do you regularly value commercial properties (offices and/or retail) and on what bases?
(Do you do MV or IV or both?)

Addressing R/Qs / going through the valuation process

3. When you take instructions, what factors do you regard as particularly important to bottom out with clients? (Do you raise the subject of sustainability and their requirements in respect of this at that stage?) (R/Q 4)
4. Do any of your clients ask for any sustainability data (If yes, which ones and why? How have client instructions changed over the years? With the rise in prominence of issues like climate change and sustainable development, has there been an effect on clients' consideration according to you? How has sustainability mattered in terms of purposes of valuation? Type of property? Lot size? (R/Q 4)
5. What data do you routinely collect related to sustainability? Is data availability an issue and do you collect even if you think it will not impact value? (R/Q 1)

(Break down the sustainability attributes from the survey questionnaire and ask about each one of them separately; certification, energy and carbon, waste management, water management, health and well-being, quality of external environment and adaptability and resilience to climate change. What are the sources of this data? Do you verify if collected from clients? Do you ever call in experts for example, environmental specialists, energy experts, etc. to understand a particular building's sustainability position? Does that depend on the purpose of the valuation or type of property? For data that you collect – do you store it for future use as part of a comparable database?)

6. How do you use/analyse sustainability-related data in your valuation computations? (R/Q 2 and 3)

(Is there any value impact for any of the attributes? Do you use these for analysis of comparables? Any evidence of premium or discount? Any value adjustments for the presence/absence of any certifications?)

7. When new information comes to the market, for example, the rise of the sustainability agenda and the recognition of a climate emergency, how do you absorb that to adjust your assumptions? (R/Q 1)
8. The RICS Red Book (2017) is recommending to valuers to collect data even if value impacts are not visible, how has it impacted on the due diligence process? (R/Q 1)
(How far is it possible for valuers to do so? What challenges have risen for the valuation profession? Have you had a look at the new Red Book?)

Concluding questions:

9. Is there anything else that you would like to add?
10. After the interviews - which will include valuers and some commissioning clients, I will be writing up findings. A summary with further questions will be sent to those who would be willing to answer some follow up questions that arise from the interviews by email. Would you like to participate in this? If you are I can supply further details but it will be conducted online, so you will be able to answer questions in your own time and get a chance to be informed about the views of other market participants (valuers, investors, occupiers and lenders). All responses will be kept anonymous.

To answer **research question 4**, commissioning clients will also be interviewed. The following section includes questions for three types of clients: investors, owner occupiers and lenders.

Interview questions for Investors

1. Please provide a brief description of your current role
2. What building attributes are critical to you when making investment decisions?
(How has this changed over the years? Has it been affected by the rise in prominence of the climate change agenda or sustainable development issues?)
3. Do you have ESG policies? How does it manifest in your investment policies?
4. What is driving your investment strategy and how is sustainability affecting it?
5. What are the critical investment risks that you currently consider in choosing property? How have they changed over the years? (Can you please tell us where sustainability concerns rank alongside other investment risks that you consider in choosing property?)
6. How has the rise of the issue sustainable development impacted on your decision-making strategy? (Can any of the sustainability issues be connected to risk or return of your investment?)
7. How do you choose your valuers? How do you instruct them to value an asset?
(Who instructs valuers and based on what requirements? How does it reflect your ESG policies? do you specify them to consider any of the sustainability issues)
8. Is there anything else that you would like to add?
9. After the interviews - which will include valuers and some commissioning clients, I will be writing up findings. A summary with further questions will be sent to those who would

be willing to answer some follow up questions by email that arise from the interviews. Would you like to participate in this? If you are I can supply further details but it will be conducted online, so you will be able to answer questions in your own time and get a chance to be informed about the views of other market participants (valuers, investors, occupiers and lenders). All responses will be kept anonymous.

Interview questions for Owner occupiers

1. Please provide a brief description of your current role
2. If you were commissioning your own building, to what extent would you consider sustainability attributes? (To what extent are the labels important like BREEAM, EPC? Are you happy to pay extra for superior ratings?)
3. To what extent are cost control/efficiency important in terms of sustainability issues?
4. Managing a property, do you consider any of the sustainability issues? (How do you think it may affect the valuation for accounting purposes?)
5. As you manage your property, what sort of data do you collect related to sustainability attributes? ((Water, waste, air quality, staff sickness, energy, pollution) do you pass it on to your valuers? How do your valuers use this data?)
6. When you commission valuers do you check if they have ESG or sustainability policy? (How do you choose your valuers? Who in the organisation instructs valuers? How important are the RICS sustainability requirements in these instructions? Do you specify them to consider any of the sustainability issues or ESG policies?)
7. Has the rise of sustainability issue had any impact on your decision-making strategy?
8. Is there anything else that you would like to add?
9. After the interviews - which will include valuers and some commissioning clients, I will be writing up findings. A summary with further questions will be sent to those who would be willing to answer some follow up questions by email that arise from the interviews. Would you like to participate in this? If you are I can supply further details but it will be conducted online, so you will be able to answer questions in your own time and get a chance to be informed about the views of other market participants (valuers, investors, occupiers and lenders). All responses will be kept anonymous.

Interview questions for Lenders:

1. Provide a brief description of your current role.
2. To what extent are building attributes critical for lending decisions? (Are you interested in the value only or do you look for other attributes?)
3. How is the riskiness of a lending decision affected by whether a borrower has ESG or sustainability policies?
4. Is climate change or sustainability affecting your overall lending strategy in any way? (How important are the RICS sustainability requirements in these instructions? Do you

have any specific plans to deal with these issues? If no, how are you planning to build it in?)

5. Do you always instruct RICS registered valuers and commission valuers to value according to Red book (2017)?

6. Do you have any standard pro-forma for valuation? (Does your pro-forma include sustainability issues? If not, do you plan to include any?)

7. How far do you think the valuations provided for lending decisions are future proofed? To what extent are you interested for them to be future proofed? (If a lending decision is for 10 years, does the value sustain up until then?)

8. Is there anything else that you would like to add?

9. After the interviews - which will include valuers and some commissioning clients, I will be writing up findings. A summary with further questions will be sent to those who would be willing to answer some follow up questions by email that arise from the interviews. Would you like to participate in this? If you are I can supply further details but it will be conducted online, so you will be able to answer questions in your own time and get a chance to be informed about the views of other market participants (valuers, investors, occupiers and lenders). All responses will be kept anonymous.

Appendix 3: crosstab results from online survey

Crosstab between Professional qualification and RICS standards and guidelines

	Do not know about it				Never				Seldom				Frequently			
Prof. qual	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
MRICS	2	3	5	7	10	6	13	8	21	24	16	17	7	7	6	8
FRICS	1	1	0	0	2	2	4	2	2	2	1	3	3	3	3	3
Other	0	0	0	0	0	0	0	3	4	4	3	0	1	1	2	2

Crosstab between CPD on sustainability and valuation and RICS standards and guidelines

	Do not know about it				Never				Seldom				Frequently			
CPD on sustainability	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
Yes	2	3	4	6	6	3	8	6	17	18	14	13	5	6	4	5
No	1	1	1	1	6	5	9	7	10	12	6	7	6	5	7	8

Crosstab between RenoValue and RICS standards and guidelines

	Do not know about it				Never				Seldom				Frequently			
RenoValue	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
Yes	0	0	0	2	2	1	3	1	3	3	1	1	1	2	2	2
No	3	4	5	5	10	7	14	12	24	27	19	19	10	9	9	11

Crosstab between regions and RICS standards and guidelines

Regions (Total)	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
London (19)	3	3	3	4	4	2	4	3	9	10	9	8	3	14	3	4
South East (20)	1	3	2	3	3	1	4	3	9	10	10	8	7	6	4	6
South West (13)	1	2	2	2	5	3	5	2	5	7	4	4	2	1	2	5
North East (9)	0	1	1	1	2	1	3	1	7	7	4	6	0	0	1	1
North West (11)	0	1	2	2	4	3	4	3	6	5	4	4	1	2	1	2
Midlands (9)	0	1	1	1	3	1	2	1	6	7	6	5	0	0	0	2
Scotland (3)	0	1	1	1	2	1	1	1	1	1	1	0	0	0	0	1
Wales (4)	0	1	1	1	2	1	1	1	2	2	2	1	0	0	0	1
National (16)	0	1	2	2	6	3	4	6	8	10	7	4	2	2	3	4

Crosstab between no of valuers in organisation and RICS standards and guidelines

No of valuers in department	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
0-5	1	2	3	4	5	6	10	8	13	12	6	7	6	5	6	6
6-20	1	1	1	1	2	0	4	1	8	10	5	7	1	1	2	3

21-100	1	1	1	1	4	1	2	3	2	4	6	4	3	4	1	2
more than 100	0	0	0	1	1	1	1	1	4	4	3	2	1	1	2	2

Crosstab between no of valuers in organisation and RICS standards and guidelines

No of valuers in organisation	Do not know about it				Never				Seldom				Frequently			
	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b	RICS 2013	RICS 2017	RICS 2018a	RICS 2018b
0-5	1	2	2	2	2	2	6	5	8	8	4	5	4	3	3	3
6-20	0	0	1	2	2	2	3	2	5	4	3	3	1	2	1	1
21-100	0	0	0	0	5	2	6	3	6	10	6	8	3	2	2	3
more than 100	2	2	2	3	3	2	2	3	8	8	7	4	3	4	5	6

Crosstab between professional qualification and certification

Professional qualification	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
MRICS	3	1	2	34	12	6	14	8
FRICS	0	0	0	8	2	0	2	4
Other	0	0	1	4	0	1	2	2

Crosstab between academic qualification and certification

Academic qualification	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
A-levels	1	0	0	0	1	0	0	0
Bachelor's degree	1	0	1	29	6	5	12	8
Master's degree	1	0	1	11	4	1	5	3
Other	0	1	1	5	2	1	1	3

Crosstab between CPD on sustainability and valuation and certification

CPD on sustainability and valuation	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	2	0	3	25	8	5	13	4
No	1	1	0	21	6	2	5	10

Crosstab between RenoValue and certification

RenoValue	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	0	0	0	6	0	0	4	2
No	3	1	3	40	14	7	14	12

Crosstab between regions and certification

Regions	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
London	1	0	0	18	4	4	6	5
South East	0	0	0	20	3	4	8	5
South West	0	0	0	13	5	3	2	3
North East	0	1	0	8	1	3	3	2
North West	1	0	0	10	2	2	3	4
Midlands	0	0	0	9	1	3	3	2

Scotland	0	0	0	3	0	1	0	2
Wales	0	0	0	4	1	1	0	2
National	1	0	2	13	3	3	4	6

Crosstab between type of organisation and certification

Type of organisation	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Self employed	0	0	0	4	1	0	1	2
Public sector	0	1	1	2	2	1	1	0
Corporate	0	0	1	14	1	4	6	4
Consultancy	3	0	1	22	8	0	10	8
Other	0	0	0	4	2	2	0	0

Crosstab between number of valuers in department and certification

No of valuers in department	EPC				BREEAM			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	2	0	2	21	10	2	7	6
6-20	1	0	0	11	3	1	6	2
21-100	0	0	1	9	1	3	2	4
more than 100	0	1	0	5	0	1	3	2

Crosstab between purposes of valuation and energy sources used, flexibility of internal layout and building component design for reuse

Purposes of valuation	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Market transaction	10	4	5	8	5	3	4	15	8	6	3	10

Secured lending	14	8	3	16	9	5	7	20	11	8	5	17
Investment advice	9	3	4	7	4	2	3	14	7	4	3	9
Company accounts	11	6	4	16	9	3	7	18	12	7	5	13
Other	5	1	1	8	3	1	2	9	4	2	3	6

Crosstab between professional qualification and energy sources used, flexibility of internal layout and building component design for reuse

Professional qualification	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
MRICS	14	8	5	13	10	4	7	19	12	8	5	15
FRICS	2	1	0	5	1	1	1	5	3	0	1	4
Other	0	1	2	2	0	0	1	4	0	2	1	2

Crosstab between academic qualification and energy sources used, flexibility of internal layout and building component design for reuse

Academic qualification	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
A-levels	1	0	0	0	1	0	0	0	1	0	0	0
Bachelor's degree	8	8	3	12	7	2	7	15	8	8	5	10
Master's degree	6	1	3	3	2	2	2	7	4	1	0	8
Other	1	1	1	4	1	0	0	6	2	0	2	3

Crosstab between CPD on sustainability and valuation and energy sources used, flexibility of internal layout and building component design for reuse

CPD on sustainability and valuation	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	9	7	4	10	9	2	6	13	9	6	5	10
No	7	3	3	10	2	3	3	15	6	4	2	11

Crosstab between RenoValue and energy sources used, flexibility of internal layout and building component design for reuse

RenoValue	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	2	2	0	2	0	0	1	5	1	0	0	5
No	14	8	7	18	11	5	8	23	14	10	7	16

Crosstab between regions and energy sources used, flexibility of internal layout and building component design for reuse

Regions	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
London	6	5	2	6	3	4	3	9	3	4	3	9
South East	5	3	1	11	2	4	4	10	3	4	3	10
South West	5	1	0	7	4	3	1	5	4	4	2	3
North East	4	2	0	3	2	3	1	3	2	2	3	2
North West	3	1	0	7	3	3	1	4	3	2	3	3
Midlands	2	2	0	5	1	3	1	4	1	3	3	2
Scotland	1	1	0	1	0	2	1	0	0	1	1	1
Wales	1	1	0	2	0	2	1	1	1	1	1	1
National	4	5	4	3	3	2	5	6	4	5	3	4

Crosstab between type of organisation and energy sources used, flexibility of internal layout and building component design for reuse

Type of organisation	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Self employed	0	1	0	3	0	0	1	3	1	1	0	2
Public sector	1	1	1	1	1	0	1	2	2	0	1	1

Corporate	4	4	3	4	2	2	3	8	1	3	4	7
Consultancy	10	3	3	10	6	2	3	15	9	4	2	11
Other	1	1	0	2	2	1	1	0	2	2	0	0

Crosstab between number of valuers in department and energy sources used, flexibility of internal layout and building component design for reuse

No of valuers in department	Energy sources used				Flexibility of internal layout				Building component design for reuse			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	6	2	3	14	6	2	4	13	10	4	2	9
6-20	5	2	3	2	3	1	1	7	3	3	1	5
21-100	4	3	1	2	1	1	3	5	2	1	3	4
more than 100	1	3	0	2	1	1	1	3	0	2	1	3

Crosstab between purposes of valuation and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Purposes of valuation	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Market transaction	2	0	3	22	7	4	12	4	8	7	7	5
Secured lending	1	1	1	38	13	7	15	6	10	11	12	8
Investment advice	2	0	3	18	5	3	10	5	5	4	7	7
Company accounts	2	0	2	33	11	6	12	8	11	9	10	7
Other	1	0	0	14	6	1	5	3	5	3	5	2

Crosstab between professional qualification and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Professional qualification	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
MRICS	3	1	2	34	12	9	13	6	11	13	10	6
FRICS	0	0	0	8	2	1	2	3	2	0	3	3
Other	0	0	1	4	0	0	4	1	1	0	2	2

Crosstab between academic qualification and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Academic qualification	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
A-levels	1	0	0	0	1	0	0	0	1	0	0	0
Bachelor's degree	0	0	2	29	7	4	14	6	7	8	11	5
Master's degree	2	1	0	10	3	5	3	2	4	3	3	3
Other	0	0	1	6	2	1	2	2	2	1	1	3

Crosstab between CPD on sustainability and valuation and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

CPD on sustainability and valuation	Site flood risk	Resilience to extreme weather	Use of renewables/recyclable construction materials

	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	2	0	3	25	10	3	15	2	9	6	9	6
No	1	1	0	21	4	7	4	8	5	7	6	5

Crosstab between RenoValue and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

RenoValue	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	0	0	0	6	1	1	4	0	2	2	2	0
No	3	1	3	40	13	9	15	10	12	11	13	11

Crosstab between experience and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Experience	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5 years	0	0	0	11	4	1	5	1	3	2	3	3
5-10 years	2	1	2	6	3	3	5	0	3	4	3	1
11-20 years	0	0	0	7	1	3	1	2	1	3	2	1
more than 20 years	1	0	1	22	6	3	8	7	7	4	7	6

Crosstab between regions and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Regions	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
London	1	1	2	15	3	6	6	4	3	6	6	4
South East	0	0	1	19	5	5	6	4	5	4	5	6
South West	0	0	1	12	5	4	2	2	4	4	3	2
North East	0	0	1	8	2	3	3	1	2	3	3	1
North West	0	0	1	10	3	2	3	3	2	2	5	2
Midlands	0	0	1	8	1	4	3	1	1	3	3	2
Scotland	0	0	0	3	1	1	0	1	1	1	0	1
Wales	0	0	0	4	1	2	0	1	1	1	1	1
National	2	0	0	14	3	3	7	3	5	5	4	2

Crosstab between type of organisation and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

Type of organisation	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Self employed	0	0	1	3	1	0	1	2	2	1	0	1

Public sector	0	0	0	4	0	3	0	1	1	1	1	1
Corporate	1	1	1	12	1	4	6	4	2	6	5	2
Consultancy	2	0	1	23	10	2	11	3	9	3	7	7
Other	0	0	0	4	2	1	1	0	0	2	2	0

Crosstab between number of valuers in department and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

No of valuers in department	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	2	0	2	21	9	4	7	5	9	5	6	5
6-20	1	1	0	10	3	2	5	2	2	3	4	3
21-100	0	0	0	10	2	0	5	3	3	1	3	3
more than 100	0	0	1	5	0	4	2	0	0	4	2	0

Crosstab between number of valuers in organisation and site flood risk, resilience to extreme weather and use of renewables/recyclable construction materials.

No of valuers in organisation	Site flood risk				Resilience to extreme weather				Use of renewables/recyclable construction materials			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	0	0	2	13	5	3	3	4	5	3	3	4
6-20	2	1	0	5	3	1	2	2	4	1	2	1

21-100	0	0	0	14	4	2	6	2	3	4	4	3
more than 100	1	0	1	14	2	4	8	2	2	5	6	3

Crosstab between purposes of valuation and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Purposes of valuation	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Market transaction	5	6	6	10	7	3	4	13	3	1	2	21
Secured lending	7	7	12	15	11	3	6	21	5	1	5	30
Investment advice	4	3	6	10	4	3	3	13	2	1	1	19
Company accounts	8	7	11	11	9	4	5	19	5	2	4	26
Other	1	5	4	5	4	0	2	9	2	0	2	11

Crosstab between professional qualification and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Professional qualification	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
MRICS	7	7	11	15	12	4	6	18	7	1	5	27
FRICS	3	0	2	3	1	0	0	7	0	1	0	7
Other	0	8	14	21	0	0	1	4	0	0	0	5

Crosstab between academic qualification and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Academic qualification	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
A-levels	1	0	0	0	1	0	0	0	1	0	0	0
Bachelor's degree	3	7	8	13	5	4	6	16	2	1	5	23
Master's degree	5	0	4	4	5	0	1	7	2	1	0	10
Other	1	0	2	4	1	0	0	6	1	0	0	6

Crosstab between CPD on sustainability and valuation and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

CPD on sustainability and valuation	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	6	5	8	11	9	3	4	14	6	0	2	22
No	4	3	6	10	4	1	3	15	1	2	3	17

Crosstab between RenoValue and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

RenoValue	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Yes	0	1	2	3	0	2	2	2	0	0	0	6
No	10	7	12	18	13	2	5	27	7	2	5	33

Crosstab between experience and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Experience	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5 years	1	2	3	5	3	0	2	6	1	0	1	9
5-10 years	2	1	1	7	4	1	1	5	3	0	0	8
11-20 years	3	1	1	2	4	1	0	2	2	1	0	4
more than 20 years	4	4	9	7	2	2	4	16	1	1	4	18

Crosstab between regions and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Regions	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
London	2	3	4	10	5	3	3	8	1	1	2	15
South East	1	4	6	9	3	1	3	13	1	2	2	15
South West	0	3	2	8	2	1	1	9	0	1	1	11
North East	1	3	2	3	2	1	0	6	1	1	1	6
North West	2	2	2	5	2	1	1	7	1	1	0	9
Midlands	0	2	2	5	1	1	0	7	0	1	0	8
Scotland	0	2	1	0	1	1	0	1	0	1	0	2
Wales	0	2	1	1	1	1	0	2	0	1	0	3
National	4	5	5	2	6	2	3	5	3	1	2	10

Crosstab between type of organisation and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

Type of organisation	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
Self employed	0	0	1	3	0	1	0	3	0	0	0	4
Public sector	1	0	1	2	1	0	0	3	1	1	0	2
Corporate	1	3	4	7	3	2	3	7	1	1	2	11
Consultancy	7	5	8	6	9	1	4	12	5	0	3	18
Other	1	0	0	3	0	0	0	4	0	0	0	4

Crosstab between number of valuers in department and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

No of valuers in department	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	6	2	4	13	6	1	1	17	4	1	1	19
6-20	2	2	5	3	3	0	3	6	2	0	2	8
21-100	2	3	4	1	4	1	1	4	1	0	1	8
more than 100	0	1	1	4	0	2	2	2	0	1	1	4

Crosstab between number of valuers in organisation and proximity to open and green space, any pollution in areas contiguous to the property environment and proximity to public transport

No of valuers in organisation	Proximity to open and green spaces				Any pollution in areas contiguous to the property environment				Proximity to public transport			
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	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely	Never	Seldom	Not normally	Routinely
0-5	3	2	2	8	3	1	0	11	2	1	1	11
6-20	2	0	3	3	3	0	2	3	2	0	1	5
21-100	3	4	4	3	4	1	2	7	2	0	2	10
more than 100	2	2	5	7	3	2	3	8	1	1	1	13

Crosstabs, Chi Square, Correlation and Significance level (p-value) Results:

Case Processing Summary

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
20. For what type of organisation do you work? - Selected Choice *	53	100.0%	0	0.0%	53	100.0%
22. In approximate terms, how many valuers work within your organisation?						

20. For what type of organisation do you work? - Selected Choice * 22. In approximate terms, how many valuers work within your organisation?

Crosstabulation

Count

		22. In approximate terms, how many valuers work within your organisation?				Total
		0-5	6-20	21-100	More than 100	
20. For what type of organisation do you work? - Selected Choice	Self employed	4	0	0	0	4
	Public sector	2	0	1	1	4
	Corporate	1	4	3	7	15
	Consultancy	6	4	9	7	26
	Other please specify	2	0	1	1	4
Total		15	8	14	16	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	19.150 ^a	12	.085
Likelihood Ratio	20.733	12	.054
Linear-by-Linear Association	1.176	1	.278
N of Valid Cases	53		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .60.

Correlations

		20. For what type of organisation do you work? - Selected Choice	22. In approximate terms, how many valuers work within your organisation?
20. For what type of organisation do you work? - Selected Choice	Pearson Correlation	1	.150
	Sig. (2-tailed)		.282
	N	53	53
22. In approximate terms, how many valuers work within your organisation?	Pearson Correlation	.150	1
	Sig. (2-tailed)	.282	
	N	53	53

Correlations

			20. For what type of organisation do you work? - Selected Choice	22. In approximate terms, how many valuers work within your organisation?
Spearman's rho	20. For what type of organisation do you work? - Selected Choice	Correlation Coefficient	1.000	.087
		Sig. (2-tailed)	.	.538
		N	53	53
	22. In approximate terms, how many valuers work within your organisation?	Correlation Coefficient	.087	1.000
		Sig. (2-tailed)	.538	.
		N	53	53

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
8. In which age group are you? *	52	98.1%	1	1.9%	53	100.0%
4. What is your highest academic qualification? - Selected Choice						

8. In which age group are you? * 4. What is your highest academic qualification? - Selected Choice Crosstabulation

Count

		4. What is your highest academic qualification? - Selected Choice				
		A-levels	Bachelor degree	Masters degree	Other, please specify	Total
8. In which age group are you?	Under 30	0	5	2	0	7
	30-50	0	15	9	4	28
	Above 50	1	11	2	3	17
Total		1	31	13	7	52

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.444 ^a	6	.488
Likelihood Ratio	6.782	6	.341
Linear-by-Linear Association	.113	1	.737
N of Valid Cases	52		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .13.

Correlations

		4. What is your highest academic qualification? - Selected Choice	8. In which age group are you?
4. What is your highest academic qualification? - Selected Choice	Pearson Correlation	1	.047
	Sig. (2-tailed)		.741
	N	53	53
8. In which age group are you?	Pearson Correlation	.047	1
	Sig. (2-tailed)	.741	
	N	53	53

Correlations

		4. What is your highest academic qualification? - Selected Choice	8. In which age group are you?
Spearman's rho	4. What is your highest academic qualification? - Selected Choice	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	52
8. In which age group are you?	4. What is your highest academic qualification? - Selected Choice	Correlation Coefficient	-.049
		Sig. (2-tailed)	.732
		N	52
			53

Warnings

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice In-house training. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Professional conferences. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic courses. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Professional journals. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic Journals. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Online training. At least one variable in each 2-way table upon which measures of association are computed is a constant.

No measures of association are computed for the crosstabulation of 20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Others, please specify. At least one variable in each 2-way table upon which measures of association are computed is a constant.

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice In-house training	45	84.9%	8	15.1%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Professional conferences	51	96.2%	2	3.8%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic courses	19	35.8%	34	64.2%	53	100.0%

20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Professional journals	37	69.8%	16	30.2%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic Journals	13	24.5%	40	75.5%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Online training	41	77.4%	12	22.6%	53	100.0%

20. For what type of organisation do you work? - Selected Choice *	5	9.4%	48	90.6%	53	100.0%
5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Others, please specify						

Crosstab

Count

		5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice In-house training	In-house training	Total
20. For what type of organisation do you work? - Selected Choice	Self employed		3	3
	Public sector		3	3
	Corporate		14	14
	Consultancy		23	23
	Other please specify		2	2
Total			45	45

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	45

a. No statistics are computed because

5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice In-house training is a constant.

Crosstab

Count

		5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Professional conferences	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	4	4
	Public sector	4	4
	Corporate	13	13

	Consultancy	26	26
	Other please specify	4	4
Total		51	51

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	51

a. No statistics are computed because
 5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice
 Professional conferences is a constant.

Crosstab

Count

	5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic courses		Total
Self employed	Academic courses	3	3

20. For what type of organisation do you work? - Selected Choice	Public sector	1	1
	Corporate	6	6
	Consultancy	8	8
	Other please specify	1	1
Total		19	19

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	19

a. No statistics are computed because

5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice

Academic courses is a constant.

Crosstab

Count

5. What sources do you use to fulfil your CPD requirements?
Please tick all that you use regularly. -
Selected Choice
Professional journals
Professional journals

		Professional journals	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	3	3
	Public sector	4	4
	Corporate	9	9
	Consultancy	18	18
	Other please specify	3	3
Total		37	37

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	37

a. No statistics are computed because
 5. What sources do you use to fulfil your
 CPD requirements? Please tick all that
 you use regularly. - Selected Choice
 Professional journals is a constant.

Crosstab

Count

		5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Academic Journals	Academic Journals	Total
20. For what type of organisation do you work? - Selected Choice	Self employed		2	2
	Public sector		3	3
	Corporate		1	1
	Consultancy		5	5
	Other please specify		2	2
Total			13	13

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	13

a. No statistics are computed because

5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice
Academic Journals is a constant.

Crosstab

Count

		5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Online training	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	3	3
	Public sector	4	4
	Corporate	11	11
	Consultancy	22	22
	Other please specify	1	1
Total		41	41

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	41

a. No statistics are computed because

5. What sources do you use to fulfil your

CPD requirements? Please tick all that

you use regularly. - Selected Choice

Online training is a constant.

Crosstab

Count

		5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice Others, please specify Others, please specify		Total
20. For what type of organisation do you work? - Selected Choice	Self employed	1		1
	Consultancy	3		3

Other please specify	1	1
Total	5	5

Chi-Square Tests

	Value
Pearson Chi-Square	. ^a
N of Valid Cases	5

a. No statistics are computed because

5. What sources do you use to fulfil your CPD requirements? Please tick all that you use regularly. - Selected Choice

Others, please specify is a constant.

Case Processing Summary

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
9. For how long have you been practicing as a commercial valuer? * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	53	100.0%	0	0.0%	53	100.0%

9. For how long have you been practicing as a commercial valuer? * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	53	100.0%	0	0.0%	53	100.0%
9. For how long have you been practicing as a commercial valuer? * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	53	100.0%	0	0.0%	53	100.0%

9. For how long have you been practicing as a commercial valuer? * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	53	100.0%	0	0.0%	53	100.0%
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Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)

		Do not know about it	Never	Seldom	Frequently	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	1	2	6	2	11
	5-10 years	1	2	7	1	11
	11-20 years	1	3	3	0	7
	More than 20 years	0	5	11	8	24
Total		3	12	27	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	8.855 ^a	9	.451
Likelihood Ratio	10.960	9	.278
Linear-by-Linear Association	1.529	1	.216
N of Valid Cases	53		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .40.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation –

		Global Standards (2017)				
		Do not know about it	Never	Seldom	Frequently	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	2	1	6	2	11
	5-10 years	1	2	7	1	11
	11-20 years	0	2	4	1	7
	More than 20 years	1	3	13	7	24
Total		4	8	30	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	5.702 ^a	9	.769
Likelihood Ratio	5.815	9	.758
Linear-by-Linear Association	2.003	1	.157
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .53.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS

Guidance Note (2018)

		Do not know about it	Never	Seldom	Frequently	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	2	4	3	2	11
	5-10 years	2	2	5	2	11
	11-20 years	1	3	2	1	7
	More than 20 years	0	8	10	6	24
Total		5	17	20	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	6.381 ^a	9	.701
Likelihood Ratio	8.375	9	.497
Linear-by-Linear Association	1.979	1	.159
N of Valid Cases	53		

a. 14 cells (87.5%) have expected count less than 5. The minimum expected count is .66.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property

Management and Valuation: Insight Paper (RICS, 2018)

		Do not know about it	Never	Seldom	Frequently	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	2	0	5	4	11
	5-10 years	3	3	4	1	11
	11-20 years	1	2	1	3	7
	More than 20 years	1	8	10	5	24
Total		7	13	20	13	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	10.969 ^a	9	.278
Likelihood Ratio	14.117	9	.118
Linear-by-Linear Association	.005	1	.943
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .92.

Correlations

			10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)
9. For how long have you been practicing as a commercial valuer?	Pearson Correlation	1	.171
	Sig. (2-tailed)		.220
	N	53	53

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	Pearson Correlation	.171	1
	Sig. (2-tailed)	.220	
	N	53	53

Correlations

			9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	.180
		Sig. (2-tailed)	.	.198
		N	53	53
	10. How often do you refer to/use the following RICS standards and	Correlation Coefficient	.180	1.000
		Sig. (2-tailed)	.198	.
		N	53	53

guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	N	53	53
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Correlations

		9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)
9. For how long have you been practicing as a commercial valuer?	Pearson Correlation	1	.196
	Sig. (2-tailed)		.159
	N	53	53
10. How often do you refer to/use the following RICS standards and	Pearson Correlation	.196	1
	Sig. (2-tailed)	.159	

guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	N	53	53
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Correlations

			9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	.183
		Sig. (2-tailed)	.	.189
		N	53	53
	10. How often do you refer to/use the following RICS standards and	Correlation Coefficient	.183	1.000
		Sig. (2-tailed)	.189	.

guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	N	53	53
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Correlations

			10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)
9. For how long have you been practicing as a commercial valuer?			
	Pearson Correlation	1	.195
	Sig. (2-tailed)		.162
	N	53	53
10. How often do you refer to/use the following RICS standards and			
	Pearson Correlation	.195	1
	Sig. (2-tailed)	.162	

guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	N	53	53
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Correlations

			9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	.186
		Sig. (2-tailed)	.	.183
		N	53	53
	10. How often do you refer to/use the following RICS standards and	Correlation Coefficient	.186	1.000
	Sig. (2-tailed)	.183	.	

guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	N	53	53
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Correlations

		9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)
9. For how long have you been practicing as a commercial valuer?	Pearson Correlation	1	.010
	Sig. (2-tailed)		.943
	N	53	53
10. How often do you refer to/use the following RICS standards and	Pearson Correlation	.010	1
	Sig. (2-tailed)	.943	

guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	N	53	53
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Correlations

			9. For how long have you been practicing as a commercial valuer?	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	-.021
		Sig. (2-tailed)	.	.879
		N	53	53

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	Correlation Coefficient	-0.021	1.000
	Sig. (2-tailed)	.879	.
	N	53	53

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
20. For what type of organisation do you work? - Selected Choice *	53	100.0%	0	0.0%	53	100.0%
10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)						

20. For what type of organisation do you work? - Selected Choice * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	53	100.0%	0	0.0%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	53	100.0%	0	0.0%	53	100.0%
20. For what type of organisation do you work? - Selected Choice * 10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	53	100.0%	0	0.0%	53	100.0%

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)

		Do not know about it	Never	Seldom	Frequently	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	0	0	3	1	4
	Public sector	0	0	3	1	4
	Corporate	0	4	9	2	15
	Consultancy	3	7	10	6	26
	Other please specify	0	1	2	1	4
Total		3	12	27	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.770 ^a	12	.803
Likelihood Ratio	10.715	12	.553
Linear-by-Linear Association	1.437	1	.231
N of Valid Cases	53		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .23.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)

		Do not know about it	Never	Seldom	Frequently	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	0	0	3	1	4
	Public sector	1	0	3	0	4
	Corporate	1	1	10	3	15
	Consultancy	2	5	12	7	26
	Other please specify	0	2	2	0	4
Total		4	8	30	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.126 ^a	12	.518
Likelihood Ratio	12.850	12	.380
Linear-by-Linear Association	.359	1	.549
N of Valid Cases	53		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .30.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS

Guidance Note (2018)

		Do not know about it	Never	Seldom	Frequently	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	0	2	0	2	4
	Public sector	0	1	2	1	4
	Corporate	2	3	8	2	15
	Consultancy	3	10	9	4	26
	Other please specify	0	1	1	2	4
Total		5	17	20	11	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.000 ^a	12	.616
Likelihood Ratio	11.693	12	.471
Linear-by-Linear Association	.311	1	.577
N of Valid Cases	53		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .38.

Crosstab

Count

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)

		Do not know about it	Never	Seldom	Frequently	Total
20. For what type of organisation do you work? - Selected Choice	Self employed	0	2	1	1	4
	Public sector	0	0	3	1	4
	Corporate	3	1	8	3	15
	Consultancy	4	9	7	6	26
	Other please specify	0	1	1	2	4
Total		7	13	20	13	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.066 ^a	12	.440
Likelihood Ratio	14.443	12	.273
Linear-by-Linear Association	.172	1	.678
N of Valid Cases	53		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .53.

Correlations

		10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	20. For what type of organisation do you work? - Selected Choice
10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	Pearson Correlation	1	.593**	.519**	.463**	-.166
	Sig. (2-tailed)		<.001	<.001	<.001	.234
	N	53	53	53	53	53
10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	Pearson Correlation	.593**	1	.583**	.496**	-.083
	Sig. (2-tailed)	<.001		<.001	<.001	.554
	N	53	53	53	53	53
	Pearson Correlation	.519**	.583**	1	.596**	-.077

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	Sig. (2-tailed)	<.001	<.001		<.001	.582
	N	53	53	53	53	53
10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	Pearson Correlation	.463**	.496**	.596**	1	-.058
	Sig. (2-tailed)	<.001	<.001	<.001		.682
20. For what type of organisation do you work? - Selected Choice	N	53	53	53	53	53
	Pearson Correlation	-.166	-.083	-.077	-.058	1
	Sig. (2-tailed)	.234	.554	.582	.682	
	N	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

			10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	20. For what type of organisation do you work? - Selected Choice
Spearman's rho	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Sustainability and Commercial Property Valuation, (RICS, 2013)	Correlation Coefficient	1.000	.634**	.538**	.471**	-.133
		Sig. (2-tailed)	.	<.001	<.001	<.001	.341
		N	53	53	53	53	53
	10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - References to sustainability in the RICS Valuation – Global Standards (2017)	Correlation Coefficient	.634**	1.000	.552**	.492**	-.109
		Sig. (2-tailed)	<.001	.	<.001	<.001	.436
		N	53	53	53	53	53
		Correlation Coefficient	.538**	.552**	1.000	.544**	-.053

10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - Environmental Risks and Global Real Estate: an RICS Guidance Note (2018)	Sig. (2-tailed)	<.001	<.001	.	<.001	.708
	N	53	53	53	53	53
10. How often do you refer to/use the following RICS standards and guidelines during your process of due diligence? - RICS Insight paper: MEES: Impact on UK Property Management and Valuation: Insight Paper (RICS, 2018)	Correlation Coefficient	.471**	.492**	.544**	1.000	-.045
	Sig. (2-tailed)	<.001	<.001	<.001	.	.749
	N	53	53	53	53	53
20. For what type of organisation do you work? - Selected Choice	Correlation Coefficient	-.133	-.109	-.053	-.045	1.000
	Sig. (2-tailed)	.341	.436	.708	.749	.
	N	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

Case Processing Summary

Valid		Missing		Total	
N	Percent	N	Percent	N	Percent

9. For how long have you been practicing as a commercial valuer? * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	53	100.0%	0	0.0%	53	100.0%
9. For how long have you been practicing as a commercial valuer? * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	53	100.0%	0	0.0%	53	100.0%

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification

		EPC				
		Never	Seldom	Not normally	Routinely	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	0	0	0	11	11
	5-10 years	1	1	2	7	11

	11-20 years	1	0	1	5	7
	More than 20 years	1	0	0	23	24
Total		3	1	3	46	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	12.949 ^a	9	.165
Likelihood Ratio	13.232	9	.152
Linear-by-Linear Association	.058	1	.809
N of Valid Cases	53		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .13.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM

		Never	Seldom	Not normally	Routinely	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	4	1	5	1	11
	5-10 years	4	3	4	0	11
	11-20 years	3	1	0	3	7
	More than 20 years	3	2	9	10	24
Total		14	7	18	14	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	15.424 ^a	9	.080
Likelihood Ratio	20.577	9	.015
Linear-by-Linear Association	6.322	1	.012
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .92.

Correlations

	9. For how long have you been practicing as a commercial valuer?	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM
Pearson Correlation	1	.033	.349 [*]

9. For how long have you been practicing as a commercial valuer?	Sig. (2-tailed)		.812	.011
	N	53	53	53
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write	Pearson Correlation	.033	1	.361**
Column 1 - Certification	Sig. (2-tailed)	.812		.008
EPC	N	53	53	53
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write	Pearson Correlation	.349*	.361**	1
Column 1 - BREEAM	Sig. (2-tailed)	.011	.008	
	N	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

			9. For how long have you been practicing as a commercial valuer?	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	.099	.369**
		Sig. (2-tailed)	.	.481	.006
		N	53	53	53
	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	Correlation Coefficient	.099	1.000	.316*
		Sig. (2-tailed)	.481	.	.021
		N	53	53	53
	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	Correlation Coefficient	.369**	.316*	1.000
		Sig. (2-tailed)	.006	.021	.
		N	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
20. For what type of organisation do you work? - Other please specify - Text * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	53	100.0%	0	0.0%	53	100.0%
20. For what type of organisation do you work? - Other please specify - Text * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	53	100.0%	0	0.0%	53	100.0%

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding
sustainab... - Click to write Column 1 - BREEAM

		Never	Seldom	Not normally	Routinely	Total
20. For what type of organisation		12	5	18	14	49
do you work? - Other please	Commercial Lender	0	1	0	0	1
specify - Text	Lender	0	1	0	0	1
	Private partnership	1	0	0	0	1
	small partnership	1	0	0	0	1
Total		14	7	18	14	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	19.315 ^a	12	.081
Likelihood Ratio	14.048	12	.298
N of Valid Cases	53		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .13.

Case Processing Summary

		Cases					
		Valid		Missing		Total	
N	Percent	N	Percent	N	Percent	N	Percent

22. In approximate terms, how many valuers work within your organisation? * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification	53	100.0%	0	0.0%	53	100.0%
EPC						
22. In approximate terms, how many valuers work within your organisation? * 11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	53	100.0%	0	0.0%	53	100.0%

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification

		EPC				
		Never	Seldom	Not normally	Routinely	Total
22. In approximate terms, how many valuers work within your organisation?	0-5	1	0	1	13	15
	6-20	1	0	1	6	8
	21-100	0	0	1	13	14

	More than 100	1	1	0	14	16
Total		3	1	3	46	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	5.639 ^a	9	.775
Likelihood Ratio	7.076	9	.629
Linear-by-Linear Association	.032	1	.857
N of Valid Cases	53		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .15.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM

		Never	Seldom	Not normally	Routinely	Total
22. In approximate terms, how many valuers work within your organisation?	0-5	6	1	4	4	15
	6-20	3	0	3	2	8
	21-100	4	2	6	2	14
	More than 100	1	4	5	6	16
Total		14	7	18	14	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	9.303 ^a	9	.410
Likelihood Ratio	11.099	9	.269
Linear-by-Linear Association	1.784	1	.182
N of Valid Cases	53		

a. 14 cells (87.5%) have expected count less than 5. The minimum expected count is 1.06.

Correlations

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification			11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	22. In approximate terms, how many valuers work within your organisation?
11. The RICS (sustainability checklist, 2013) advises valuers	Pearson Correlation	1	.361**	.025
	Sig. (2-tailed)		.008	.859

to collect data regarding sustainab... - Click to write Column 1 - Certification	N	53	53	53
EPC				
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	Pearson Correlation	.361**	1	.185
	Sig. (2-tailed)	.008		.184
22. In approximate terms, how many valuers work within your organisation?	N	53	53	53
	Pearson Correlation	.025	.185	1
	Sig. (2-tailed)	.859	.184	
	N	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

			11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification EPC	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	22. In approximate terms, how many valuers work within your organisation?
Spearman's rho	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Certification	Correlation Coefficient	1.000	.316*	.043
		Sig. (2-tailed)	.	.021	.761
		N	53	53	53
	EPC				
	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - BREEAM	Correlation Coefficient	.316*	1.000	.179
		Sig. (2-tailed)	.021	.	.201
		N	53	53	53
	22. In approximate terms, how many valuers work within your organisation?	Correlation Coefficient	.043	.179	1.000
		Sig. (2-tailed)	.761	.201	.
	N	53	53	53	

*. Correlation is significant at the 0.05 level (2-tailed).

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used

		Never	Seldom	Not normally	Routinely	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	5	2	1	3	11
	5-10 years	4	4	2	1	11
	11-20 years	1	0	2	4	7
	More than 20 years	6	4	2	12	24
Total		16	10	7	20	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.354 ^a	9	.252
Likelihood Ratio	12.984	9	.163
Linear-by-Linear Association	3.576	1	.059
N of Valid Cases	53		

a. 14 cells (87.5%) have expected count less than 5. The minimum expected count is .92.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change

		Flexibility of internal layout				Total
		Never	Seldom	Not normally	Routinely	
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	4	0	1	6	11
	5-10 years	3	2	1	5	11
	11-20 years	2	1	0	4	7
	More than 20 years	2	2	7	13	24
Total		11	5	9	28	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.888 ^a	9	.360
Likelihood Ratio	11.942	9	.217
Linear-by-Linear Association	1.751	1	.186
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .66.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)

		Never	Seldom	Not normally	Routinely	Total
9. For how long have you been practicing as a commercial valuer?	Less than 5 years	4	1	1	5	11
	5-10 years	2	2	2	5	11
	11-20 years	2	2	1	2	7
	More than 20 years	7	5	3	9	24
Total		15	10	7	21	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.410 ^a	9	.983
Likelihood Ratio	2.542	9	.980
Linear-by-Linear Association	.142	1	.706
N of Valid Cases	53		

a. 14 cells (87.5%) have expected count less than 5. The minimum expected count is .92.

Correlations

		9. For how long have you been practicing as a commercial valuer?	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change Flexibility of internal layout	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)
9. For how long have you been practicing as a commercial valuer?	Pearson Correlation	1	.262	.183	-.052
	Sig. (2-tailed)		.058	.188	.710
	N	53	53	53	53
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	Pearson Correlation	.262	1	.178	.108
	Sig. (2-tailed)	.058		.201	.442
	N	53	53	53	53
11. The RICS (sustainability checklist, 2013) advises valuers to	Pearson Correlation	.183	.178	1	.514**
	Sig. (2-tailed)	.188	.201		<.001

collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change	N	53	53	53	53
Flexibility of internal layout					
11. The RICS (sustainability checklist, 2013) advises valuers to	Pearson Correlation	-.052	.108	.514**	1
collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	Sig. (2-tailed)	.710	.442	<.001	
collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	N	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

			9. For how long have you been practicing as a commercial valuer?	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change Flexibility of internal layout	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)
Spearman's rho	9. For how long have you been practicing as a commercial valuer?	Correlation Coefficient	1.000	.250	.131	-.047
		Sig. (2-tailed)	.	.071	.348	.736
		N	53	53	53	53
	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	Correlation Coefficient	.250	1.000	.211	.119
		Sig. (2-tailed)	.071	.	.130	.398
		N	53	53	53	53
	11. The RICS (sustainability checklist, 2013) advises valuers to	Correlation Coefficient	.131	.211	1.000	.525**
		Sig. (2-tailed)	.348	.130	.	<.001

collect data regarding sustainab... - N		53	53	53	53
Click to write Column 1 - Adaptability and Resilience to Climate Change					
Flexibility of internal layout					
11. The RICS (sustainability	Correlation Coefficient	-.047	.119	.525**	1.000
checklist, 2013) advises valuers to	Sig. (2-tailed)	.736	.398	<.001	.
collect data regarding sustainab... - N		53	53	53	53
Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)					

** . Correlation is significant at the 0.01 level (2-tailed).

Crosstab

Count

		11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used				
		Never	Seldom	Not normally	Routinely	Total
22. In approximate terms, how many valuers work within your organisation?	0-5	2	1	1	11	15
	6-20	4	0	2	2	8
	21-100	6	2	3	3	14
	More than 100	4	7	1	4	16
Total		16	10	7	20	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	21.124 ^a	9	.012
Likelihood Ratio	20.918	9	.013
Linear-by-Linear Association	5.589	1	.018
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is 1.06.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change

		Flexibility of internal layout				Total
		Never	Seldom	Not normally	Routinely	
22. In approximate terms, how many valuers work within your organisation?	0-5	3	2	2	8	15
	6-20	2	1	2	3	8
	21-100	4	0	2	8	14
	More than 100	2	2	3	9	16
Total		11	5	9	28	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	3.764 ^a	9	.926
Likelihood Ratio	5.086	9	.827
Linear-by-Linear Association	.265	1	.607
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .75.

Crosstab

Count

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)

		Never	Seldom	Not normally	Routinely	Total
22. In approximate terms, how many valuers work within your organisation?	0-5	7	3	1	4	15
	6-20	2	0	1	5	8
	21-100	5	4	2	3	14
	More than 100	1	3	3	9	16
Total		15	10	7	21	53

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.909 ^a	9	.218
Likelihood Ratio	14.390	9	.109
Linear-by-Linear Association	3.678	1	.055
N of Valid Cases	53		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is 1.06.

Correlations

			11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	22. In approximate terms, how many valuers work within your organisation?
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	Pearson Correlation	1	.178	.108	-.328
	Sig. (2-tailed)		.201	.442	.017
	N	53	53	53	53
	Pearson Correlation	.178	1	.514**	.071

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainability - Click to write Column 1 - Adaptability and Resilience to Climate Change	Sig. (2-tailed)	.201		<.001	.612
Flexibility of internal layout	N	53	53	53	53
11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainability - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	Pearson Correlation	.108	.514**	1	.266
	Sig. (2-tailed)	.442	<.001		.054
	N	53	53	53	53
22. In approximate terms, how many valuers work within your organisation?	Pearson Correlation	-.328*	.071	.266	1
	Sig. (2-tailed)	.017	.612	.054	
	N	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

			11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change Flexibility of internal layout	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	22. In approximate terms, how many valuers work within your organisation?
Spearman's rho	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Energy source used	Correlation Coefficient	1.000	.211	.119	-.304*
		Sig. (2-tailed)	.	.130	.398	.027
		N	53	53	53	53
	11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainab... - Click to write Column 1 - Adaptability and Resilience to Climate Change	Correlation Coefficient	.211	1.000	.525**	.068
		Sig. (2-tailed)	.130	.	<.001	.628
		N	53	53	53	53
	Flexibility of internal layout					

11. The RICS (sustainability checklist, 2013) advises valuers to collect data regarding sustainability - Click to write Column 1 - Building component design for reuse (e.g. readily demountable/reusable partitions)	Correlation Coefficient	.119	.525**	1.000	.276*
	Sig. (2-tailed)	.398	<.001	.	.046
	N	53	53	53	53
22. In approximate terms, how many valuers work within your organisation?	Correlation Coefficient	-.304*	.068	.276*	1.000
	Sig. (2-tailed)	.027	.628	.046	.
	N	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Appendix 4: Sample Research Ethics Form

Real Estate and Planning Research Project Ethical Approval

Introduction

The University Research Ethics Committee has issued Guidance Notes outlining its Terms of Reference and procedures:

<http://www.reading.ac.uk/internal/res/ResearchEthics/reas-REethicshomepage.aspx>

In accordance with the Notes for Guidance, ethical propriety of all research relating to human subjects or human personal data must be assessed for undergraduate, masters, postgraduate and staff research projects. If project methods alter significantly subsequent to initial ethics clearance, then a new application form will need to be generated and approved.

Is it research?

It is not research if the activity is carried out solely for the purpose of teaching and learning, or if it constitutes Clinical or Social work practice or audit. With regard to the latter two categories, see Annex E in the [Guidance Notes \(PDF-299kb\)](#).

If the activity is not research, then it does not require ethical approval.

Is it research on human subjects, human samples or human personal data?

If the answer to this question is "yes" then the research requires ethical approval, subject to the following questions:

If it involves human data, are those data in the public domain? Do they relate to deceased persons?

If the answer to either of these questions is "yes", there is no need to obtain ethical approval; but ethical considerations may still be relevant.

If the answer to both these questions is "no", then ethical approval is needed.

Ethical concerns are usually strongest where data are gathered directly from the subject. If the project is funded by a Research Council or other external sources then ethical clearance should be sought via the University Research Ethics Committee (see page 5).

The responsibility for ethical conduct of research in the Department lies with the Head of Department. Under the exceptions procedure outlined in the Notes for Guidance, REP's Head of Department (HoD) can approve research project ethical applications (see Annex 1). Authority to sign off ethical approval forms lies with the HoD or nominated persons. **Students**

should gain approval for their applications from their supervisors prior to submitting to the HoD for countersigning. If the supervisor is not available, students should contact their Programme Director.

Procedure

Ethical review should be obtained before data collection or recruitment is initiated. This includes feasibility or pilot studies.

This form should be completed and signed by the student/member of academic staff as appropriate and submitted in pdf form to [ResearchEthics-REP](#)

- Ethics clearance must be obtained before the research project commences.
- There is an obligation on all students and academic staff to observe ethical procedures and practice, and raise any concerns or questions with the Head of Department. If the Head of Department is not available, please contact the Director of Research.
- Records will be maintained and audited as required by the University Research Ethics Committee.
- On project completion, completed participant Consent Forms must be submitted to [ResearchEthics-REP](#); [they will be retained](#) for a minimum period of five years from the date at which the project is completed. If ethical clearance is sought from a different Department, a copy of the clearance must also be retained in REP.
- The storage of consent forms may be audited from time to time.
- This form is designed to conform to the University's requirements with respect to research ethics. Approval under this procedure does not confirm the academic validity of the proposed project.
- Student research project ethical applications must be referred to the dissertation/thesis supervisor in the first instance for advice and approval, followed by countersignature by the HoD. Research project fieldwork may commence when supervisor-approved student applications have been submitted to the REP Departmental Office for HoD approval and countersignature. Research projects requiring ethical clearance undertaken in the absence of this form will not be marked. Submission deadlines are listed in dissertation module handbooks.
- If in the course of the work the nature of the project changes (including research methods and questionnaire), advice should be sought from the academic supervisor / Course Director and, if required, a further application form for ethical clearance submitted.
- Similarly, if appropriate, changes in the nature of staff research projects (including research methods and questionnaire), must be considered for re-submission for ethical clearance.
- The following must be submitted with this form for approval:
 - The information sheet (see Annex 2a, 2b and 2c)
 - Consent form (Annex 3)
 - (Survey) methods
 - Questionnaires or surveys (if appropriate)
 - Focus group or interview questions (if appropriate)
- Please allow sufficient time when seeking ethics approval. The following timescales are an indication:
 - Head of Department approval – 2 weeks
 - University's Research Ethics Committee – a minimum of 4 weeks

Real Estate and Planning Research Ethics Form

Title of Proposed Project:

Valuers' Perception of Sustainability in the UK Commercial Real Estate Market

Project Details:

Doctoral Research funded by RREF

Name & email address of principal researcher/student:

Syeda Marjia Hossain, Email: s.m.hossain@pgr.reading.ac.uk

Name and email address of supervisor (if applicable):

First Supervisor: Dr Jorn van de Wetering, Email: j.t.vandewetering@reading.ac.uk

Second Supervisor: Professor Sarah Sayce, Email: s.l.sayce@reading.ac.uk

Date of commencement: 18/09/2017

Date of completion: 17/09/2021

Project type (tick as appropriate):

*Staff research Masters

Undergraduate Doctoral

Other

*Staff research projects should be signed off by the Director of Research or Head of Department.

Brief Summary of Proposed Project and Research Methods

This application relates to the first empirical stage of a PhD Thesis. Further applications in relation to follow up stages will be submitted when the results of this stage work has been undertaken. The thesis will investigate the ways in which those responsible for the valuation of commercial buildings in the UK have adapted and continuing to adapt their practices in response to the burgeoning sustainability agenda, with special reference to climate change. These practices include due diligence, reporting, and the methodologies they use. It has been observed in many academic studies (Fuerst, 2009; Fuerst & McAllister, 2011a, 2011b; Fuerst & van de Wetering, 2015) that sustainability market pricing is taking place; however, it is not known precisely how valuers explicitly or implicitly play a role in this. This study is, in part, a follow up to one undertaken by RICS in 2012 which revealed little impact on market values and very limited reporting of sustainability matters. Details of the previous study were reported in Michl, P., Lorenz, D., Lützkendorf, T. and Sayce, S., 2016. Reflecting sustainability in property valuation—a progress report. [*Journal of Property Investment & Finance*, 34\(6\), pp.552-577.](#)

The overall **Research Questions** that will be addressed are:

1. How are valuers interpreting and implementing RICS requirements in their day to day practice and changing their role accordingly?
2. Is there validity in the perception that there is a gap between what UK commercial property valuers are reporting in terms of linkages between sustainability certification/ characteristics and the price differentials revealed by pricing studies?
3. To what extent do commercial property valuers see sustainability as being a value driver and if so how do they reflect this in their valuation processes?
4. How do valuation factors (clients' influence, purpose of valuation) affect sustainability consideration?

A mixed methodology combining both quantitative and qualitative methods has been deemed appropriate for this thesis

The first stage, to which this application refers, will be to conduct an **online survey** through RICS and the survey questionnaire will be uploaded to the community website of Registered Valuers in UK. The target respondents will be the valuers who value commercial properties (offices and retail) in the UK. The survey will help understand the general practices related to sustainability in the UK commercial property market.

At the second stage, for which a second application will be made, semi-structured interviews will be conducted to get in-depth knowledge of the research problem. As valuers have different client types, clients' demand can be a substantial value driver, at this stage along with valuers, clients will also be interviewed. Three groups have been identified for interviews; valuers, clients (investors and occupiers) and financiers.

After collecting the interview data it will be analysed to determine if follow-ups are required. The researcher plans to conduct a Delphi form of online focus group on a second and third level if it seems a requirement.

The last stage will be to conduct content analysis of some actual valuation reports to match and confirm valuers' inferences from the first two stages.

References:

- Fuerst, F. (2009). Building Momentum: An analysis of investment trends in LEED and Energy Star-certified properties *Journal of Retail & Leisure*, 8(4), 285-297.
- Fuerst, F., & McAllister, P. (2011a). Eco-Labeling in commercial office markets: Do Leed and Energy Star offices obtain multiple premiums? . *Ecological Economics*, 70(6), 1220-1230. doi:10.1016/j.ecolecon.2011.01.026
- Fuerst, F., & McAllister, P. (2011b). The impact of Energy Performance Certificates on the rental and capital values of commercial property assets. *Energy Policy*, 39, 6608-6614. doi:doi:10.1016/j.enpol.2011.08.005
- Fuerst, F., & van de Wetering, J. (2015). How does environmental efficiency impact on the rents of commercial offices in the UK? *Journal of Property Research*, 32(3), 193-216. doi:10.1080/09599916.2015.1047399
- Michl, P., Lorenz, D., Lützkendorf, T. and Sayce, S. (2016). Reflecting sustainability in property valuation—a progress report. [*Journal of Property Investment & Finance*, 34\(6\), pp.552-577](#)

Data Management

Research Data management is an important consideration within research ethics and is the sum of activities undertaken in relation to the **collection, processing, retention** and **disposal** of research data. Research data, by being well managed, can generate benefits for both the University and its researchers in terms of greater research impact, enhanced reputation, and increased return on investment. Further information on the University's Research Data Management Policy can be found here [here](#).

	Yes	No
Have all aspects of Research Data Management been considered? See What is Research Data Management	x	
Active data will be stored on a secure University drive (NOT on computer/laptop hard drives) Tools and Services	x	
Have appropriate processes for the retention of data been considered? Tools and Services	x	
The Data Protection Checklist for Researchers has been read and understood, with any issues identified and followed up with IMPS	x	
For personal and sensitive data have measures been put in place to make data of long-term value accessible to the fullest extent that is consistent with any confidentiality requirements and GDPR compliant ? Such measures might include using the initial consent process to secure broad consent for data sharing, and the use of anonymisation techniques, data aggregation, and editing of video or sound recordings to remove personal identifiers from data. The UK Data Archive has a comprehensive guide on consent and ethics	x	
Will the University of Reading Research Data archive be used?	x	
For sensitive data (e.g. industry data) appropriate arrangements for what can and cannot be done with the data, and who may or may not have access to the data, are defined by participation agreements or the terms of contract.	x	
Where appropriate, arrangements for disposal of data have been made	x	
Appropriate training and/or information resources have been accessed Training and General Information	x	
PhD students have identified data management training (section C1 of the Learning Needs Analysis) and undertaken the necessary training through the Reading Researcher Development Programme (RRDP)	x	
Postgraduate and Masters students in Planning have taken the Research Methods Module (to be replaced by Good Academic Content Course/Workshop in Autumn 2017)	N/A	
Undergraduate Year 3 research module students have taken the Research Methods Module (to be replaced by Good Academic Content Course/Workshop in Autumn 2017)	N/A	

Health and Safety

	Yes	No
Will the research be conducted away from an office environment or normal place of work?		x
Will the research be conducted outside normal working hours? please note the details below and comment on how the personal safety and security of the researcher(s) has been safeguarded:		x
<p>If you have answered “yes” to either of the above questions, please detail the steps taken to ensure the personal safety and security of the researcher(s)</p> <p>If “Yes” is ticked, then consider something along the lines:</p> <p>Steps taken to ensure personal safety & security are as follows:</p> <ul style="list-style-type: none"> • The research will be conducted in a public place such as a café • Carry a fully charged mobile phone at all times of undertaking research • Carry personal and university identification at all times • Ensure that a reliable personal contact is told when and where the research will be undertaken; the researcher will then ‘check-in’ and ‘check-out’ with this contact. In addition, this contact will be provided with information about steps to take if contact is not made by the researcher within the specified timeframe. 		
Training needs in Health and Safety have been assessed		
Where appropriate, PhD students have identified Health and Safety training (section C1 of Learning Needs Analysis) and undertaken the necessary training through the Reading Researcher Development Programme (RRDP)	x	
Postgraduate and Masters students in Planning have taken the Research Methods Module (to be replaced by Good Academic Content Course/Workshop in Autumn 2017)	N/A	
Undergraduate Year 3 research module students have taken the Research Methods Module (to be replaced by Good Academic Content Course/Workshop in Autumn 2017)	N/A	

Checklist for Investigator

I confirm that where appropriate a **consent form** and **information sheet** has been prepared in accordance with the checklist and will be made available to all participants. This contains details of the project, contact details for the principal researcher (or in the case of students, contact details for the supervisor and university email of the student only) and advises subjects that their privacy will be protected and that their participation is voluntary and that they may withdraw at any time without reason.

I confirm that **research instruments** (questionnaires, interview guides, etc) have been reviewed against the policies and criteria noted in The University Research Ethics Committee Notes for Guidance. Information obtained will be safeguarded and personal privacy and commercial confidentiality will be strictly observed in accordance with the University's Data Management Policy.

I confirm that where appropriate a copy of the **Consent Form** and details of the **Research Instruments/Protocols** are attached and submitted with this application. Arrangements have also been made for the storage of the forms for a minimum period of five years from the date of project completion (students should make arrangements with their supervisors). Please submit signed consent forms electronically to [ResearchEthics-REP](#) once the project is completed

For student research, I can confirm that I have consulted with my dissertation supervisor or Programme Director prior to submitting this form, and attended the necessary RRDP training courses (*for PhD – postgraduate research students*) or Research Methods Module lectures / workshops (*for MSc/BSc students*).

Approval by HoD or nominee

I have reviewed this application as **APPROVED** and confirm that it is consistent with the requirements of the University Research Ethics Committee procedures

This proposal is **NOT APPROVED** and is returned to the applicant for further consideration / revision.

This proposal is **NOT APPROVED** and will now be submitted to the University Research Ethics Committee

COMMENTS (e.g. where application has been refused):

.....

Signed (Staff or Student Investigator):

Date: 25/07/2019

Signed (HoD for staff, or supervisor for students)**Date:**

Countersigned (HoD for students):**Date:**

Annex 1

Exceptions

The HoD can approve Ethical Clearance applications with some exceptions. Please confirm whether your work falls within the exceptions process by answering the following:

	Yes/Agree	No
To the best of my knowledge the participants and subjects of the study are <u>not</u> patients or clients of the National Health Service (NHS) or social services.	Agree	
Participants and subjects of the study have the capacity to give free and informed consent within the meaning of the Mental Capacity Act 2005 to the best of my knowledge.	Agree	
Questions are not likely to be considered impertinent or to cause distress to any of the participants	Agree	
The participants and subjects of the study are not involved in a special relationship with the investigator.	Agree	
The personal safety of the researcher(s) has been considered and the research does not involve any element of risk to the researchers or participants	Agree	

If you have answered “no” to any of the above, please speak to the Head of Department, as the scope of the project falls outside the exceptions procedure, and the project will need to be referred to the University’s Research Ethics Committee.

If the work is to be funded by RCUK, then the project will also need to be referred to the University’s Research Ethics Committee. Other funders may also stipulate this as a requirement for funding, so please check with your funder.

If you have answered “yes”, please complete the form.

ANNEX 2A

Information Sheet: checklist and issues for inclusion (see suggested text Annex 2b and mandatory GDPR text in 2c)

The information sheet may be combined with the consent form if appropriate.

	Yes	No
Information Sheets and Consent Forms have been prepared in line with University guidelines for distribution to participants	Yes	
Having read the Data Protection Checklist for Researchers , mandatory GDPR text (outlined in Annex 2c) has been added to the Participant Information Sheet.	Yes	
The subject and/or parent is invited to sign a Consent Form. Where minors are subjects, consult the Guidance Notes	Yes	
Copies of the Information Sheet and Consent Form are provided for retention by the subject/parent	Yes	
Arrangements for the completed consent forms to be retained upon completion of the project have been made; consent forms will be retained by the Departmental Office for a minimum of five years from the date at which the project is completed.	Yes	
The information sheet is on headed notepaper and includes a contact name and telephone number.	Yes	
A summary of the research to be undertaken and its purpose together with a full and clear account of what will be required of the subject.	Yes	
The Information Sheet and Consent Form include the name and designation of a member of staff with responsibility for the project together with a staff contact address or staff telephone number. If any of the project investigators are students, this information must be included and ONLY their name provided (BUT DO NOT include personal mobile numbers or personal email addresses).	Yes	
A standard statement be included on the Information Sheet/Consent Form, indicating the process of ethical review at the University undergone by the project, as follows: "This project has been subject to ethical review, according to the procedures specified by the University Research Ethics Committee, and has been given a favourable ethical opinion for conduct"	Yes	
How the participants have been selected is explained	Yes	
If applicable, arrangements for expenses and other payments to participants	Yes	
Arrangements to allow participants to withdraw at any stage if they so wish.	Yes	
Arrangements to ensure the confidentiality, storage and security of material (including data and audio recordings) during and after the project, and for the disposal of material (see data management section).	Yes	
Arrangements for providing subjects with research results if they so wish	Yes	
The arrangements for publishing the research results and, if confidentiality might be affected, for obtaining written consent, have been considered.	Yes	
Where appropriate, a statement to the effect that the results of the investigation are to contribute to the attainment of a qualification of this or any other University. In such cases, the students involved must be named on the Information Sheet.	Yes	

Annex 2b

Participant Information Sheet – suggested text, see checklist (Annex 2a)

Note: Under GDPR, it is mandatory to add the text in Annex 2c (below) to Participant Information Sheets

Note: If you intend to conduct an online survey, Henley Business School has subscribed to the Qualtrics online survey tool; this software is available for staff and students to use. The introduction to the survey will need to summarise the text in the Participant Information Sheet. Key points to summarise are:

- Detail of the study and its purpose
- Whether the research is being conducted as part of a degree
- Withdrawing consent (although bear in mind that it would be impossible to withdraw from a completed survey where the data are completely anonymized, although aborting the survey, prior to completion, would constitute withdrawal of consent). Instead state that completing the survey will be taken as evidence that participants have consented (i.e. a Consent Form is not required for online surveys)
- Data management and security
- Data protection: Replace Annex 2C with [Research Privacy Notice](#)

Participant Information Sheet

Title of Proposed Project:

Valuers' Perception of Sustainability in the UK Commercial Real Estate Market
Conducted by: Syeda Marjia Hossain

. Email:

s.m.hossain@pgr.reading.ac.uk

Who is doing this research and why?

This research is being conducted by Syeda Marjia Hossain, a third year PhD student from the University of Reading, UK under the supervision of Dr. Jorn van de Wetering and Prof. Sarah Sayce. It is funded by the Reading Real Estate Foundation (RREF). The research is part of a PhD thesis.

Supervisor's contacts:

First Supervisor: Dr Jorn van de Wetering, Email:

j.t.vandewetering@reading.ac.uk,

Contact no:

Second Supervisor: Professor Sarah Sayce, Email: s.l.sayce@reading.ac.uk,
Contact no:

What is the purpose of the study?

The purpose of this study is to observe valuers' perception of sustainability in the UK real estate market and to the extent they are able to collect data, analyse and report on sustainability attributes. The study will also be an attempt to investigate barriers or challenges faced by valuers on including sustainability into valuation methodology and their views on RICS's current role and effectivity on supporting valuers in this regard. It will also investigate what roles clients can have in this matter and how it has been changing over the years based on the rise of issues like climate change.

How long will it take?

The interviews will be conducted either face to face or over telephone call or video call. It will take approximately 40 minutes to an hour. Two groups will be interviewed: valuers and commissioning clients (investors, lenders and owner occupiers).

Are there any exclusion criteria? N/A

Once I take part, can I change my mind?

Yes. After you have read this information and asked any questions you may have, we will ask you to complete an Informed Consent Form. However, if at any time, before, during or after the sessions you wish to withdraw from the study please just contact the main investigator, Syeda Marjia Hossain. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing.

Will I be required to attend any sessions and where will these be? N/A

Is there anything I need to do before the session? N/A

Is there anything I need to bring with me? N/A

Who should I send the questionnaire back to?

Syeda Marjia Hossain
Email: s.m.hossain@pgr.reading.ac.uk

What will I be asked to do?

For the first level of semi-structured interviews participants will be asked questioned on the following topics:

For Valuers: client base and instructions, purposes and bases of valuation undertaken, data collection, analysis of data and RICS suggestions and requirements.

For Investors: Investment strategy, ESG policies, critical risk factors, sustainability consideration and instructions to valuers.

For Owner occupiers: Purchasing strategy, ESG policies, critical risk factors, sustainability consideration and instructions to valuers.

For Lenders: Important building attributes for lending decisions, security and risk of property, sustainability issues and its impacts on decision making strategy and instructions to valuers.

What personal information will be required from me? N/A

Are there any risks in participating? N/A

Will my taking part in this study be kept confidential?

Yes. Data storage, processing and deletion will comply with the University of Reading's Policy on Research Data Management and the University of Reading Data Protection Policy. If you agree to the interview being recorded, the audio recording will be destroyed after the data have been transferred to a different format. The data will be coded, encrypted and stored on a secure University of Reading network drive. Pseudonyms will be used for each participant (for example, Participant #1, Participant #2 etc) and personally identifiable data will then be deleted.

What will happen to the results of the study?

The results will inform a student PhD thesis. The results may also be published in a journal or presented at a conference. You will not be identified in any report or publication. If you wish to receive a copy of the final results of the study, please indicate on the consent form and provide an email address for the results to be sent to.

What do I get for participating? N/A

If I have some more questions who should I contact?

Syeda Marjia Hossain

Email: s.m.hossain@pgr.reading.ac.uk

What if I am not happy with how the research was conducted? The University has a policy relating to Research Misconduct. Please see University Code of Good Practice in Research (Annex 2c)

This project has been subject to ethical review, according to the procedures specified by the University Research Ethics Committee, and has been given a favourable ethical opinion for conduct

Annex 2c

Data protection for information sheets

Information that we are required by law to provide to research participants under Article 13/14 of the GDPR. This can be added into Participant Information Sheets or included as an extra page.

To be added to all participant information sheets.

Please note, if you are providing this information to children, or individuals that may need more simple terms to help them understand this information please amend to suit your audience. If you need advice please contact imps@reading.ac.uk.

The organisation responsible for protection of your personal information is the University of Reading (the Data Controller). Queries regarding data protection and your rights should be directed to the University Data Protection Officer at imps@reading.ac.uk, or in writing to: Information Management & Policy Services, University of Reading, Whiteknights, P O Box 217, Reading, RG6 6AH.

The University of Reading collects, analyses, uses, shares and retains personal data for the purposes of research in the public interest. Under data protection law we are required to inform you that this use of the personal data we may hold about you is on the lawful basis of being a public task in the public interest. If you withdraw from a research study, which processes your personal data, dependant on the stage of withdrawal, we may still rely on this lawful basis to continue using your data if your withdrawal would be of significant detriment to the research study aims. We will always have in place appropriate safeguards to protect your personal data.

If we have included any additional requests for use of your data, for example adding you to a registration list for the purposes of inviting you to take part in future studies, this will be done only with your consent where you have provided it to us and should you wish to be removed from the register at a later date, you should contact.....

You have certain rights under data protection law which are:

- Withdraw your consent, for example if you opted in to be added to a participant register
- Access your personal data or ask for a copy
- Rectify inaccuracies in personal data that we hold about you
- Be forgotten, that is your details to be removed from systems that we use to process your personal data
- Restrict uses of your data
- Object to uses of your data, for example retention after you have withdrawn from a study

Some restrictions apply to the above rights where data is collected and used for research purposes.

You can find out more about your rights on the website of the Information Commissioners Office (ICO) at <https://ico.org.uk>

You also have a right to complain the ICO if you are unhappy with how your data has been handled. Please contact the University Data Protection Officer in the first instance.

Below information to be added unless already covered in other areas of the Information Sheet (see [guidance](#) for what needs to be included):

- The purposes of the use of personal data (what the study is for)
- The categories of personal data that are not obtained directly from the participant (*if applicable*)
- The recipients or categories of recipients of the personal data (to include third parties the data may be shared with, for example, other researcher at HEI's, organisation or job role)
- The details of transfers of the personal data to any countries outside the EU including international organisations (*if applicable*).
- The retention periods for the personal data.
- The details of the existence of automated decision-making, including profiling (*if applicable – more information on whether this would apply to your study can be found [here](#).*)

Annex 3

Consent Form

1. I have read and had explained to me by Syeda Marjia Hossain the accompanying Information Sheet relating to the project on: **Valuers' Perception of Sustainability in the UK Commercial Real Estate Market**
2. I have had explained to me the purposes of the project and what will be required of me, and any questions I have had have been answered to my satisfaction. I agree to the arrangements described in the Information Sheet in so far as they relate to my participation.
3. I have had explained to me what information will be collected about me, what it will be used for, who it may be shared with, how it will be kept safe, and my rights in relation to my data.
4. I understand that participation is entirely voluntary and that I have the right to withdraw from the project any time, and that this will be without detriment.
5. Researcher to select from following options:
 - a. I understand that the data collected from me in this study will be preserved and made available in anonymized form, so that they can be consulted and re-used by others
 - b. I understand that the data collected from me in this study will be preserved, and subject to safeguards will be made available to other authenticated researchers*
6. This application has been reviewed in accordance with the procedures specified by the University Research Ethics Committee, and has been given a favourable ethical opinion for conduct by the Head of Department (through the delegated powers stipulated within University Research Ethics Committee Guidance).
7. I have received a copy of this Consent Form and of the accompanying Information Sheet.

Name:

Signed:

Date:

I am happy to be included on a register of research participants for the purposes of being contacted about further stages (2nd and 3rd rounds) of the same research project by Syeda Marjia Hossain. Please tick the appropriate box:

- Yes
 No

Appendix 5.1 Data collection by valuers in terms of experience

Data collection on sustainability attributes based on experience			
Less than 5 years	5-10 years	11-20 years	20+ years
EPC, EPC expiry, flood, Energy sources. (Valuer 2)	EPC, any improvements required based on EPC, flood, BREEAM. (Valuer 14)	EPC, BREEAM, water recycling, waste recycling, contamination on site, gas towers, pile overhead, mining, current uses (any contamination), substations, energy source, M & E, flood risk, environmental risk, electric carpark (modern industrial), external environment for offices, adaptability and resilience for offices and retail. (Valuer 4)	Environmental survey, EPCs, EPC expiry, subsequent EPCs, nature of construction, modern building specifications in terms of running costs, asbestos register, disability access, BREEAM. (Valuer 1)
EPC, BREEAM, LEED, environmental survey, flood risk (valuer 18)	EPC, DEC, air conditioning, type of heating, windows, age of building, construction type, plants and machinery. (Valuer 15)	EPC, flood, pile overhead, environmental assessments, waste and water recycling, health risk assessments, contamination, adjacent occupier use, asbestos, LED lights (Valuer 6)	EPC, waste recycling, flood plans, adaptability and resilience. (Valuer 3)
EPC, flood, contamination. (Valuer 20)	EPC, cladding, flood, contamination. (Valuer 19)	EPC, flood, environmental, public transport, car parking, ground condition, adjacent use, energy efficiency, water recycling, waste recycling, natural light, ventilation, alternative use or adaptability and resilience (Valuer 8)	EPC, EPC expiry, flood, has it flooded recently, inadequate ventilation, too cold/hot, air condition system, pollution on highways (rarely), adaptability and resilience. (Valuer 5)
		EPC, EPC expiry, air conditioning, environmental assessment (very	EPC, flood, BREEAM, environmental issues, energy usage and carbon emissions (if

		rarely), flexibility (Valuer 10)	available), health and wellbeing (only a small minority of clients have it) (Valuer 7)
		EPC, EPC recommendations, any other certificates, biomass heating systems (hotels), BREEAM, flood risk, (Valuer 11)	EPC, heating and cooling plant and their age and efficiency, opportunities for installing solar panels, air source or heat sourcing pumps, charging points, DEC, water transfer license (very little), natural light, insulation, flexibility and resilience, flood risk assessments, environmental assessments (landfills, petrol pumps) (Valuer 13)
		EPC, flood, environmental issues, car parking, utility bills (Valuer 12)	EPC, flood, magic website for contamination, radon gas, BREEAM (Valuer 16)
			EPC, flood, contamination, hazardous materials, radon, sustainability issue regarding planning (Valuer 21)
			EPC, flood, air conditioning, disability access (Valuer 9)

Appendix 5.2 List of Themes and Sub-themes

1. Awareness of sustainability
2. Sustainability within the valuation process
 - a. Changes to clients' instructions
 - b. Data collection on sustainability attributes
 - Certification
 - Energy and carbon
 - Waste and water management
 - Health and well-being
 - Quality of external environment
 - Adaptability and resilience to climate change
 - c. Data analysis
 - Explicit consideration through CAPEX
 - Implicit consideration
 - ✓ Insurance
 - ✓ Reduce void or increase let ability or impact on saleability
 - ✓ Rental value or yield
 - ✓ Comparable property information
 - d. Reporting
3. Differences in terms of asset classes
4. Motivation
 - a. Demands from clients
 - ✓ Demand for sustainable attributes
 - Demand from investors
 - Demand from lenders
 - Demand from owner occupiers
 - ✓ Evidence in the market
 - ✓ Protect clients' image
 - b. Legislative pressure/transitional risks
 - c. Regulative pressure
 - d. Purposes of valuation
 - i. To understand future risk
 - e. Incidental factors
5. Experience
 - a. Understanding of sustainability based on experience
 - b. Big vs. small firm valuer experience
 - c. Locale experience
6. Barriers to include sustainability within the valuation framework
 - a. Reliance on third parties
 - b. Lack of data
 - c. Time, fee, cost, and clients' pressure
 - d. Education and training of valuers
 - e. Traditional methodology